SHIPMAN & GOODWIN LLP®

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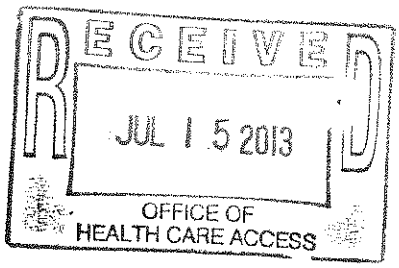


July 15, 2013

Kimberly Martone
Director of Operations
Department of Public Health
Office of Health Care Access
410 Capitol Avenue, MS#13HCA
P.O. Box 340308
Hartford, CT 06134-0308

RE: Establishment of an Orthopedic Outpatient Surgery Facility at The Hospital of Central Connecticut at New Britain General and Bradley Memorial - Bradley Campus "HHC Southington Surgery Center, LLC"

Dear Ms. Martone:

On behalf of HHC Southington Surgery Center, LLC, enclosed please find a Certificate of Need Application for the establishment of an Orthopedic Outpatient Surgery Facility at The Hospital of Central Connecticut at New Britain General and Bradley Memorial - Bradley Campus. As requested, I have included 1 original and 4 hard copies of the Certificate of Need Application in 3-ring binders along with a CD with the electronic version of the enclosed documents and materials. Also attached to this letter is a check in the amount of $500.00 for the filing fee.

Please do not hesitate to contact me at 860-251-5104 if you have any questions.

Sincerely,

Joan Feldman

Joan W. Feldman

Jwf/tja
Enclosures

Application Checklist

Instructions:

1. **Please check each box below, as appropriate; and**
2. **The completed checklist *must* be submitted as the first page of the CON application.**

☑ **Attached is the CON application filing fee in the form of a certified, cashier or business check made out to the "Treasurer State of Connecticut" in the amount of $500.**

For OHCA Use Only:

Docket No.: 3185-2 **Check No.:** 221958
OHCA Verified by: KR **Date:** 7 16 15

☑ **Attached is evidence demonstrating that public notice has been published in a suitable newspaper that relates to the location of the proposal, 3 days in a row, at least 20 days prior to the submission of the CON application to OHCA. (*OHCA requests that the Applicant fax a courtesy copy to OHCA (860) 418-7053, at the time of the publication)Place notice after the checklist page***

☑ **Attached is a paginated hard copy of the CON application including a completed affidavit, signed and notarized by the appropriate individuals.**

☑ **Attached are completed Financial Attachments I and II.**

☑ **Submission includes one (1) original and four (4) hard copies with each set placed in 3-ring binders.**

Note: A CON application may be filed with OHCA electronically through email, if the total number of pages submitted is 50 pages or less. In this case, the CON Application must be emailed to ohca@ct.gov.

Important: For CON applications(less than 50 pages) filed electronically through email, the signed affidavit and the check in the amount of $500 must be delivered to OHCA in hardcopy.

☑ **The following have been submitted on a CD**

1. **A scanned copy of each submission in its entirety, including all attachments in Adobe (.pdf) format.**
2. **An electronic copy of the documents in MS Word and MS Excel as appropriate.**

RECEIVED
APR 22 2013

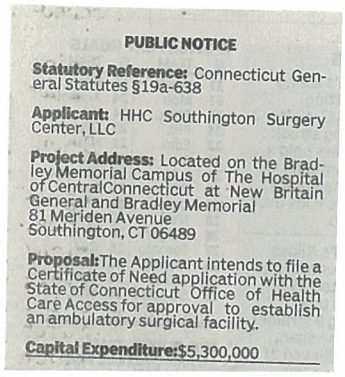
The Hartford Courant.
A TRIBUNE PUBLISHING COMPANY

Affidavit of Publication

State of Connecticut

Wednesday, April 17, 2013

County of Hartford



PUBLIC NOTICE

Statutory Reference: Connecticut General Statutes §19a-638

Applicant: HHC Southington Surgery Center, LLC

Project Address: Located on the Bradley Memorial Campus of The Hospital of CentralConnecticut at New Britain General and Bradley Memorial
81 Meriden Avenue
Southington, CT 06489

Proposal: The Applicant intends to file a Certificate of Need application with the State of Connecticut Office of Health Care Access for approval to establish an ambulatory surgical facility.

Capital Expenditure: $5,300,000

I, Rena Matus, do solemnly swear that I am Financial Operations Assistant of the Hartford Courant, printed and published daily, in the state of Connecticut and that from my own personal knowledge and reference to the files of said publication the advertisement of Public Notice was inserted in the regular edition.

On dates as follows:	4/15/2013	$103.04
	4/16/2013	$93.04
	4/17/2013	$93.04

In the amount of $289.12
MINTZ & HOKE/HARTFORD HEAL
254662
Full Run

Financial Operations Assistant
Rena Matus

Subscribed and sworn to before me on April 17, 2013

Notary Public

WILLIAM B. McDONALD
NOTARY PUBLIC, CONNECTICUT
MY COMMISSION EXPIRES FEB. 28, 2014

2542822

MIDSTATE MEDICAL CENTER
ATTN: ACCOUNTS PAYABLE
PO BOX 5037
HARTFORD, CT 06102-5037

51-57
119

Check Number
221988
Bank of America

THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER

Five hundred and 00/100 Dollars

Pay to the order of

TREASURER STATE OF CONNECTICUT
OFFICE OF HEALTHCARE ACCESS
410 CAPITAL AVE #MS13HCA
PO BOX 340308
HARTFORD, CT 06134-0308

Date: 06/20/2013

Payment Amount: *******$500.00

VOID AFTER 90 DAYS

THE BACK OF THIS DOCUMENT CONTAINS LAID LINES AND AN ARTIFICIAL WATERMARK. HOLD AT AN ANGLE TO VIEW.

[redacted]

TREASURER STATE OF CONNECTICUT
OFFICE OF HEALTHCARE ACCESS
410 CAPITAL AVE #MS13HCA
PO BOX 340308
HARTFORD, CT 06134-0308

Entity	Vendor ID / Location	Check Number
VPNK	08112 008	221988

MIDSTATE MEDICAL CENTER

Invoice Number	Invoice Date	Gross Amount	Discount Amount	Withholding Amount	Net Amount
CON APPLICATION FEE 696-6237 HOLD FOR CHARLIE	06/18/2013	500.00			500.00
TOTALS		**$500.00**	**0.00**	**0.00**	**$500.00**

0003

HH571485 1/03

AFFIDAVIT

Applicant: HHC Southington Surgery Center, LLC

Project Title: The Establishment of an Orthopedic Ambulatory Surgical Center in Southington, Connecticut at the Bradley Memorial Campus of The Hospital of Central Connecticut at New Britain General and Bradley Memorial.

I, Clarence Silvia, President & CEO of The Hospital of Central Connecticut at New Britain General and Bradley Memorial and a representative member of HHC Southington Surgery Center, LLC being duly sworn, depose and state that the HHC Southington Surgery Center, LLC information submitted in this Certificate of Need Application is accurate and correct to the best of my knowledge.

Clarence Silvia

7/11/13
Date

Subscribed and sworn to before me on July 11/2013

Notary Public/Commissioner of Superior Court

KELLY ULLMAN
NOTARY PUBLIC OF CONNECTICUT
My Commission Expires 11/30/2014

My commission expires: _____

State of Connecticut
Office of Health Care Access
Certificate of Need Application

Instructions: Please complete all sections of the Certificate of Need ("CON") application. If any section or question is not relevant to your project, a response of "Not Applicable" may be deemed an acceptable answer. If there is more than one applicant, identify the name and all contact information for each applicant. OHCA will assign a Docket Number to the CON application once the application is received by OHCA.

Docket Number:	
Applicant:	**HHC Southington Surgery Center, LLC**
Contact Person:	**Barbara A. Durdy**
Contact Person's Title:	**Director, Strategic Planning, Hartford HealthCare**
Contact Person's Address:	**181 Patricia Genova Drive Newington, CT 06111**
Contact Person's Phone Number:	**860-972-4231**
Contact Person's Fax Number:	**860-972-4650**
Contact Person's Email Address:	**bdurdy@midstatemedical.org**
Project Town:	**Southington**
Project Name:	**Proposal to Establish an Orthopedic Outpatient Surgery Facility at The Hospital of Central Connecticut at New Britain General and Bradley Memorial-Bradley Campus**
Statute Reference:	Section 19a-638, C.G.S.
Estimated Total Capital Expenditure:	**$5,300,000**

1. **Project Description: Outpatient Surgical Facility**

a. Please provide a narrative detailing the proposal.

Summary:

MidState Medical Center (the "MidState") and The Hospital of Central Connecticut at New Britain General and Bradley Memorial (the "HOCC"), both affiliates of Hartford HealthCare (the "System"), are proposing to jointly operate an ambulatory surgical center dedicated to orthopedic surgical services on the HOCC Bradley campus, along with a group of regional physicians who specialize in orthopedic surgery (the "Physicians"), and Constitution Surgery Centers, LLC, a management company with expertise in the management of ambulatory surgery centers (the "CSC"), through a limited liability company known as HHC Southington Surgery Center, LLC (the "Applicant" or "SSC").

The Applicant's decision to establish a freestanding ambulatory surgery center (the "ASC") dedicated to the provision of high-quality and cost-effective orthopedic surgical services on the HOCC Bradley campus is based upon the following: (i) the physicians who are affiliated with MidState and HOCC desire to perform their orthopedic surgery in an ambulatory surgical center dedicated to the delivery of cost-effective and high-quality orthopedic surgical services in the Central Connecticut region; (ii) patients in the Central Connecticut region desire and would benefit from access to outpatient surgical facilities dedicated to the provision of high-quality, cost-effective and efficient orthopedic surgical services; (iii) payers are expecting providers to offer enhanced value at a lower cost; and (iv) HOCC has the capacity to cost-effectively transform its currently underutilized operating room space on the HOCC Bradley campus to an ASC by renovating its existing space. More succinctly, the Application allows MidState and HOCC to jointly and more efficiently align with their affiliated orthopedic surgeons to address all of the foregoing challenges to ensure the delivery of cost-effective ambulatory orthopedic surgical services in the Central Connecticut region.

i. Organizational Structure:

SSC will be organized as a Connecticut limited liability company with HOCC and MidState collectively owning a 51% controlling membership interest. The remaining 49% membership interest will be held by the Physicians and CSC. All of the Physicians will be on the medical staff of either HOCC or MidState. See Exhibit 1 attached hereto for a copy of the draft Operating Agreement and the Articles of Organization of SSC.

ii. Ambulatory Surgical Center:

The proposed ASC will utilize approximately 10,000 square feet of the existing space associated with three of the four inpatient/outpatient operating rooms currently located

on HOCC's Bradley campus.[1] The Applicant will lease from HOCC, at fair market value, approximately 10,000 square feet (consisting of the three operating rooms on the Bradley campus) for the operation of the ASC. One of the key advantages of using the existing HOCC Bradley campus operating room space is that the HOCC existing operating rooms are currently underutilized and in need of renovation. By renovating existing space for the ASC, the Applicant can cost-effectively transform the currently underutilized HOCC space into an ASC that will better meet the needs of patients in HOCC's and MidState's respective service areas as later defined.[2] More specifically, three of the four HOCC operating rooms located on the Bradley campus will undergo significant renovations to create three operating rooms dedicated to orthopedic surgery along with related preoperative/recovery and sterile processing/supplies support space for the sole use of the ASC. Existing space will be allocated for a fourth operating room that will remain separate from the ASC's leased space and will be used by HOCC for the surgeries that will continue to be performed on the HOCC Bradley campus.

Accordingly, this Application does not propose to increase the number of operating rooms, but rather to utilize existing operating room space on the Bradley campus in a more efficient and cost-effective manner. To the extent that the shifting of outpatient volume from the HOCC New Britain campus and MidState creates additional operating room capacity at the respective hospitals, MidState and HOCC plan to utilize the additional operating room capacity for other surgical specialties, including general, thoracic, inpatient orthopedics, and ear, nose and throat surgeries. With respect to HOCC operating room capacity on the Bradley campus, as previously stated, the operating rooms on the Bradley campus are currently underutilized.[3] Affiliated physicians will continue to perform surgery at each of the hospitals for those patients who prefer to have their surgery in a hospital setting or for patients with co-morbidities or other clinical conditions that make a hospital setting the more appropriate site for their care.

Health care reform has made it more important than ever for hospitals and physicians to collaborate in developing new health-care delivery models that offer higher quality care at a lower cost. In the instant case, the Applicant believes that by offering a lower cost health-care delivery model for the provision of outpatient orthopedic surgical services, the Applicant will be more responsive to the demands of the payers and its patients.

b. Provide letters that have been received in support of the proposal.

See Exhibit 2 attached hereto for copies of letters in support of this Application.

c. Report the number of proposed operating rooms, identifying the number to be equipped and utilized and the number to be built and shelled for future use.

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[1] HOCC's Bradley campus has four operating rooms but currently only utilizes two of the four. One of the operating rooms is shelled.

[2] If the Applicant were to build a freestanding new ambulatory surgery center, the cost estimate for construction would be between six and seven million dollars.

[3] The two HOCC Bradley campus operating rooms currently utilized are operating at 60% capacity for fiscal year 2012, including outpatient orthopedics.

The proposed ASC will have three fully equipped operating rooms dedicated to orthopedic surgery. There will be no ASC operating rooms built and shelled for future use.

2. Clear Public Need

a. Explain why there is a clear public need for the proposal. Provide evidence that demonstrates this need.

This Application reflects a desired shift in the provision of orthopedic surgical services from a more expensive and expansive care setting (and often one that is less accessible and convenient to the patient) to a lower cost, more accessible care setting. See Exhibit 3 attached hereto. The proposed ASC creates a patient care environment that, by virtue of its focus on a single service line, can more easily facilitate the implementation of evidence-based surgical practices, offer greater flexibility in scheduling operating room time, and accommodate specific physician preferences by having a dedicated staff that can accommodate the needs of the orthopedic surgeon. More precisely, the Applicant believes that there is a clear public need for the services for the following reasons:

i. <u>The Provision of High Quality Services in a Lower Cost Environment</u>.

The ASC will be considered a freestanding ambulatory surgical center for reimbursement purposes. As a result, the payment rates paid by payers and patients will be substantially lower than those paid for hospital-based ambulatory surgical services. See Exhibit 3 attached hereto. As Table 1 below illustrates, significant savings, (i.e. on average, of 35%) accrue to both the payer and the patient when the orthopedic surgical services are provided in a freestanding ambulatory surgery center setting. Id.

Table 1: Comparison of Medicare Rates for Hospital-based Versus Freestanding Select Orthopedic Procedures[4]

			Medicare Rates - Hartford County				Savings					
			2013 ASC		2013 HOPD - National		CMS		Patient		System	
CPT Description	GSC Cases	Dist	CMS Pays	Patient Pays	CMS Pays	Patient Pays	$	%	$	%	$	%
64721 Carpal tunnel surgery	346	19%	$ 699.33	$ 174.83	$ 1,075.77	$ 268.95	$ 376.44	35%	$ 94.12	35%	$ 470.56	35%
29881 Knee arthroscopy/surgery	271	15%	$ 1,098.16	$ 274.54	$ 1,689.29	$ 422.33	$ 591.13	35%	$147.79	35%	$ 738.92	35%
29827 Arthroscop rotator cuff repr	236	13%	$ 2,017.92	$ 504.48	$ 3,104.17	$ 776.05	$ 1,086.25	35%	$271.57	35%	$1,357.82	35%
26055 Incise finger tendon sheath	175	10%	$ 616.49	$ 154.12	$ 948.35	$ 237.09	$ 331.86	35%	$ 82.97	35%	$ 414.83	35%
29848 Wrist endoscopy/surgery	151	8%	$ 1,098.16	$ 274.54	$ 1,689.29	$ 422.33	$ 591.13	35%	$147.79	35%	$ 738.92	35%
25447 Repair wrist joints	98	5%	$ 1,491.52	$ 372.88	$ 2,294.40	$ 573.61	$ 802.88	35%	$200.73	35%	$1,003.61	35%
29880 Knee arthroscopy/surgery	92	5%	$ 1,098.16	$ 274.54	$ 1,689.29	$ 422.33	$ 591.13	35%	$147.79	35%	$ 738.92	35%
20680 Removal of support implant	91	5%	$ 863.85	$ 215.96	$ 1,328.86	$ 332.22	$ 465.01	35%	$116.26	35%	$ 581.27	35%
62311 Inject spine l/s (cd)	61	3%	$ 294.22	$ 73.56	$ 452.60	$ 113.15	$ 158.38	35%	$ 39.59	35%	$ 197.97	35%
29888 Knee arthroscopy/surgery	58	3%	$ 3,048.81	$ 762.20	$ 4,689.98	$ 1,172.50	$ 1,641.17	35%	$410.30	35%	$2,051.47	35%
26160 Remove tendon sheath lesion	42	2%	$ 616.49	$ 154.12	$ 948.35	$ 237.09	$ 331.86	35%	$ 82.97	35%	$ 414.83	35%
64718 Revise ulnar nerve at elbow	36	2%	$ 699.33	$ 174.83	$ 1,075.77	$ 268.95	$ 376.44	35%	$ 94.12	35%	$ 470.56	35%
29806 Shoulder arthroscopy/surgery	29	2%	$ 2,017.92	$ 504.48	$ 3,104.17	$ 776.05	$ 1,086.25	35%	$271.57	35%	$1,357.82	35%
25111 Remove wrist tendon lesion	21	1%	$ 808.85	$ 202.21	$ 1,244.24	$ 311.07	$ 435.39	35%	$108.86	35%	$ 544.25	35%
29877 Knee arthroscopy/surgery	19	1%	$ 1,098.16	$ 274.54	$ 1,689.29	$ 422.33	$ 591.13	35%	$147.79	35%	$ 738.92	35%
29879 Knee arthroscopy/surgery	9	1%	$ 1,098.16	$ 274.54	$ 1,689.29	$ 422.33	$ 591.13	35%	$147.79	35%	$ 738.92	35%
29873 Knee arthroscopy/surgery	7	0%	$ 1,098.16	$ 274.54	$ 1,689.29	$ 422.33	$ 591.13	35%	$147.79	35%	$ 738.92	35%
29826 Shoulder arthroscopy/surgery	6	0%	$ 1,098.16	$ 274.54	$ 1,689.29	$ 422.33	$ 591.13	35%	$147.79	35%	$ 738.92	35%
64483 Inj foramen epidural l/s	5	0%	$ 294.22	$ 73.56	$ 452.60	$ 113.15	$ 158.38	35%	$ 39.59	35%	$ 197.97	35%

[4] Center for Medicare and Medicaid Services (CMS), Addendum B of the 2013 CMS OPPS.

MidState and HOCC are proactively reforming their health care delivery systems to capture these cost savings. MidState and HOCC are not unique in taking this initiative. According to the Ambulatory Surgery Center Association (the "ASCA"), the reduction in Medicare spending has been approximately $2.6 billion a year as a result of shifting surgical cases from a hospital-based setting to an ambulatory setting, and "...shifting just 50% of outpatient procedures from hospitals to ASCs would save Medicare an additional $2.6 billion dollars per year." Please see Exhibit 4 and Exhibit 5 attached hereto.

ii. Patient and Physician Preference.

Most patients prefer receiving their healthcare services outside of a hospital in a convenient, easily accessible location with shorter wait times, favorable scheduling options, focused customer service and less likelihood of cancellations due to emergencies. Additionally, most patients would prefer to recover in their home rather than remain in the hospital as an inpatient. See Exhibits 4, 5 and 6 attached hereto. Patient satisfaction surveys consistently demonstrate that patients are highly satisfied when receiving services in an ambulatory surgery center. According to a 2008 Press Ganey Pulse Report which surveyed 1,039,289 patients treated at ambulatory surgical facilities between January 1, 2007 and December 31, 2007, overall patient satisfaction score averaged at or above 92%. See Exhibit 6 attached hereto.

Physicians also prefer working in an environment that allows them to have greater input with respect to operations, equipment and scheduling. In the instant case, the Physicians have been the impetus for the development of the subject ASC. This is likely attributable to the fact that physicians in an ASC setting: (i) obtain more favorable scheduling because they are not competing for time with other surgeons from other specialties; (ii) can more easily assemble teams of specially-trained and highly skilled staff; (iii) can ensure that the appropriate and necessary equipment and supplies are being used for their patients (i.e. one size does not fit all in the operating room); and (iv) operate more efficiently with quicker turnover time between orthopedic surgical cases (i.e. less down time for the physician). See Exhibit 3 and 5 attached hereto. Simply stated, physicians tend to enjoy the fact that they can exercise more professional control over their work environment in a freestanding ambulatory surgery center. Id. "The entire system benefits from the repetition and specialization: preoperative nursing care, interoperative medical care of an anesthesiologist, radiologist or surgeon, and postoperative care....and the patient benefits." See Exhibit 4 attached hereto.

iii. Strong Volume Growth for Orthopedic Surgery Projected.

Strong volume growth is projected for outpatient orthopedic surgery both on a national and a regional level. The Advisory Board Company projects inpatient orthopedic surgical growth at 5% and outpatient orthopedic surgical growth at 29% over the next ten years for the area to be serviced by the proposed ASC (the "Service Area").[5] See

[5] The Service Area includes the following towns: Berlin, Newington, New Britain, Plainville, Southington, Meriden, Wallingford and Cheshire.

Exhibit 7 attached hereto for a copy of the Orthopedic Growth Projections for Service Areas from the Advisory Board Company.

The two factors contributing the most to the overall projected growth in orthopedic surgery are an aging population and a rise in the incidence of obesity. See Exhibit 8 attached hereto. Obesity is believed to significantly contribute to osteoarthritis which often leads to joint problems that require joint surgery. See Exhibit 9 attached hereto. Specifically, osteoarthritis affects roughly 15% of adults over 25 and 34% of adults over age 65. According to a recent study by the Robert Wood Johnson Foundation, the percentage of adults in Connecticut who are considered obese was 24.4% in 2011 and it is projected to continue to increase significantly over the next ten years. See Exhibit 10 attached hereto for a copy of a Robert Wood Johnson Foundation study on obesity along with articles addressing the relationship between joint problems and obesity.

While the proposed ASC does not increase the overall number of operating rooms at the HOCC Bradley campus, the demand (now and projected) for outpatient orthopedic surgery will allow the Applicant to be more responsive to the patient and physician needs in the Service Area.

iv. Optimal Use of the HOCC Bradley Campus.

The HOCC Bradley campus currently staffs twenty-six inpatient beds, operates an emergency department and provides surgical services. In 2012, HOCC engaged an independent consultant to assist in the development of a strategy for the future use of the Bradley campus. One of the primary objectives of this engagement was to determine how to most effectively leverage the strengths of the Bradley campus to better meet the needs of the community. As the result of the assessment and evaluation, the consultant recommended that the Bradley campus be the focus of ambulatory services. More specifically, the consultant recommended that the Bradley campus develop an ambulatory services component and not duplicate the more complex and costly services provided on the New Britain campus of HOCC. As earlier stated, the operating rooms and related support space at the Bradley campus are currently underutilized and are in need of renovation. This proposal will optimize the use of three of the operating rooms and will reallocate resources to better address the clinical needs of the community.

Please see Exhibit 11 attached hereto for relevant portions of the Health Strategies and Solutions Recommendations for the use of the Bradley campus.

b. Provide the calculations used to determine the proposed number of operating rooms (relate this to the projected volumes, including information such as the estimated number of procedures per room), and include any documentation to support these estimates.

The number of operating rooms to be included in the ASC was determined based on the criteria established by OHCA in the State Facilities Plan as detailed below in Table 2.

Table 2: Three Year Projected Utilization for ASC

Projected Number of Procedures and Operating Rooms

	FY2014	FY2015	FY 2016
Hand, Wrist, Elbow	752	775	800
Foot, Ankle	84	86	89
Knee, Shoulder	1,461	1,499	1,535
General	117	118	120
	2,414	2,478	2,544
Minutes of Surgery / Cleanup	217,260	223,020	228,960
OR need calculated	2.26	2.32	2.39
Number of ORs required	3	3	3

Calculation: OHCA Facility Plan Guidelines
(Unless otherwise supported by documentation from Applicant):

Capacity of the proposed facility will be based on 8 hours per day, 5 days per week, 50 weeks per year, for a total of 2,000 per year

Optimal utilization of an OR = 80%
Average time per case = 60 minutes
Cleanup time = 30 minutes per case

Optimal OR utilization in minutes = 96,000

c. Provide the following regarding the proposal's location:

i. The rationale for choosing the proposed service location;

In addition to the reasons stated above, the Bradley campus was chosen as the location for the proposed ASC because: (i) the Bradley campus location is easily accessible for residents of the Service Area; and (ii) the Bradley campus has existing operating room capacity and space.

ii. The service area towns and the basis for their selection;

See Exhibit 12 attached hereto for a listing of Service Area towns and associated Zip codes.

iii. The population to be served, including specific evidence such as incidence, prevalence, or other demographic data that demonstrates need;

There will be no increase in the number of operating rooms. Existing MidState and HOCC outpatient orthopedic surgical cases will be shifted from the operating rooms of MidState and HOCC to the proposed ASC.

iv. How and where the proposed patient population is currently being served;

The proposed patient population is currently being served by MidState and HOCC.

v. Complete the following table concerning the existing providers in the towns listed above and also in nearby towns; and

OHCA Table 1: Utilization and Capacity of Existing Providers in Service Area

Provider Name Street Address Town, Zip Code	Number of Operating Rooms				Estimated Capacity for Proposal						Current Utilization FY 2012		
	Avail-able [1]	Utilized [2]	Not Utilized [3]	Equipped for Proposal [4]	2012 % IP	Assumed Case Length	Minimum [5] per OR	Minimum [5] Total	Maximum [6] per OR	Maximum [6] Total	Total Cases	per OR	% of Max
The Hospital of Central Connecticut, 100 Grand Street, New Britain 06050	23	23	0	13	33%	119.53	602	7,830	803	10,441	9,962	766	95%
Bradley Memorial Campus of Hospital of Central Connecticut, 81 Meriden Ave, Southington 06489	4	2	1	3	17%	105.52	682	2,047	910	2,729	1,647	549	60%
MidState Medical Center, 435 Lewis Avenue, Meriden 06451	9	9	0	9	24%	111.57	645	5,808	860	7,744	8,162	907	105%
				Total				**15,686**		**20,914**	**19,771**		**95%**

[1] Include used, equipped, and shell space. Data for facilities not associated with Applicants are based on Connecticut Department of Public Health, OHCA Inventory of Health Care Facilities, Services and Equipment for 2011

[2] Include those actually used to perform surgeries.

[3] Include those not used and those that are equipped or are only shell space.

[4] Excludes endoscopy rooms when known.

[5] Minimum number of surgeries to be performed in a single operating room for one year is 800 outpatient cases or 400 inpatient cases which represents 60% utilization of capacity, 20% below optimal. This is equivalent to 4 outpatient cases or 2 inpatient cases per day. The capacity of an operating room is based on eight (8) hours per day, five (5) days per week fifty (50) weeks per year for a total of 2,000 hours (120,000 minutes) per year consistent with the guidelines included in Section 2, Chapter 4 of the October 2012 OHCA Statewide Healthcare Facilities and Services Plan. Outpatient case lengths are assumed to be 60 minutes with a 30 minute room turnover time for an average of 90 minutes consistent with the guidelines included in Section 2, Chapter 4 of the October 2012 OHCA Statewide Healthcare Facilities and Services Plan. As some of the operating rooms covered in the application perform both inpatient and outpatient cases, a separate average case length for inpatient cases was defined as 180 minutes including room turnover time consistent with the standard used by the state of North Carolina for CON applications (see Chapter 6 of the 2013 State Medical Facilities Plan) as Connecticut does not appear to have a published inpatient average case length standard. The 2012 inpatient/outpatient case mix by facility were used for calculating a blended utilization rate of existing operating rooms. The 2012 percent inpatient case were: 33% for HOCC New Britain, 17% for the Bradley Memorial Campus and 24% for MidState Medical Center.

[6] Maximum number of surgeries to be performed in a single operating room for one year is 1,067 outpatient cases or 533 inpatient cases based on 80% utilization of capacity consistent with the optimal utilization guidelines established by OHCA. The capacity of an operating room is based on eight (8) hours per day, five (5) days per week fifty (50) weeks per year for a total of 2,000 hours (120,000 minutes) per year consistent with the guidelines included in Section 2, Chapter 4 of the October 2012 OHCA Statewide Healthcare Facilities and Services Plan. Outpatient case lengths are assumed to be 60 minutes with a 30 minute room turnover time for an average of 90 minutes consistent with the guidelines included in Section 2, Chapter 4 of the October 2012 OHCA Statewide Healthcare Facilities and Services Plan. As some of the operating rooms covered in the application perform both inpatient and outpatient cases, a separate average case length for inpatient cases was defined as 180 minutes including room turnover time consistent with the standard used by the state of North Carolina for CON applications (see Chapter 6 of the 2013 State Medical Facilities Plan) as Connecticut does not appear to have a published inpatient average case length standard. The 2012 inpatient/outpatient case mix by facility were used for calculating a blended utilization rate of existing operating rooms. The 2012 percent inpatient case were: 33% for HOCC New Britain, 17% for the Bradley Memorial Campus and 24% for MidState Medical Center.

Total utilization of surgical facilities within the Service Area for this proposal is at 95% (including the underutilized Bradley facility) of maximum capacity as defined by OHCA in the 2012 Statewide Healthcare Facilities and Services Plan. The shift of volume to the proposed ASC is necessary to free up operating room capacity at both HOCC and MidState so that new surgical recruits can be accommodated. MidState is actively recruiting one thoracic, one general, two ear, nose and throat and two orthopedic surgeons. MidState's projected incremental cases by surgical specialty is presented in Table 3 below:

Table 3: MidState Projected Cases Associate with Newly Recruited Physicians

MidState Medical Center
Projected Case Volumes by Specialty

	2014	2015	2016
Thoracic	150	150	150
Orthopedic	125	245	245
ENT	75	100	100
General Surgery	125	168	168
Totals	475	663	663

The projections in Table 3 above represent the number of cases that are projected to be added to MidState as a result of the newly recruited physicians. MidState is currently operating at 105% of maximum capacity and without shifting outpatient volume to the proposed ASC, there

will be inadequate operating room capacity at MidState to accommodate the new surgeons. HOCC is currently recruiting for a fellowship trained breast surgeon, a urologist, a neurosurgeon, an ear, nose and throat surgeon and a bariatric surgeon. The projected incremental volumes for these newly recruited surgeons are presented in Table 4 below:

Table 4: HOCC Projected Cases Associated With Newly Recruited Physicians

Hospital of Central Connecticut
Projected Cases by Specialty

	2014	2015	2016
ENT	100	125	138
Breast Surgery	75	150	175
Urology	125	183	240
Bariatrics	125	175	225
Neurosurg	75	100	125
Total	500	733	903

vi. The effect of the proposal on existing providers;

There will be little or no impact on existing providers since the orthopedic physicians that are performing their orthopedic surgical cases in the Service Area will be the same physicians who will be performing orthopedic surgery at the proposed ASC. Specifically, this Application does not add additional operating rooms, but rather shifts outpatient orthopedic volume from the MidState and HOCC operating rooms to a more cost-effective, patient accessible and operationally efficient environment.

b. Explain why the proposal will not result in an unnecessary duplication of existing or approved health care services.

This proposal does not add additional operating rooms, but simply transforms existing HOCC Bradley campus operating rooms into a non-hospital based ambulatory surgical center.

c. Attach a copy of any articles, studies, or reports that support the need to establish the proposed service, along with a brief explanation regarding the relevance of the selected articles.

See Exhibits 3-10 attached hereto for literature in support of this Application. The literature supports the clear public need with respect to orthopedic surgery in an ambulatory setting.

3. Projected Volume

a. Complete the following tables for the first three projected FYs of the proposal, for the outpatient surgical volume of each of the Applicants and physicians involved in the proposal. In OHCA Table 2a, report the units of service by service or procedure type, and in OHCA Table 2b, report the units of service by each existing and proposed operating room. Add lines as necessary.

OHCA Table 2a: Projected Outpatient Surgical Volume by Procedure Type

	Projected Volume (First 3 Full Operational FYs)*		
	FY 2014	**FY 2015**	**FY 2016**
Service or procedure type**			
Hand, Wrist, Elbow	**752**	**775**	**800**
Foot, Ankle	**84**	**86**	**89**
Knee, Shoulder	**1,461**	**1,499**	**1,535**
General	**117**	**118**	**120**
Total	**2,414**	**2,478**	**2,544**

* If the first year of the proposal is only a partial year, provide the first partial year and then the first three full FYs. Add columns as necessary.
** Identify each service/procedure type and add lines as necessary.
*** Fill in years. In a footnote, identify the period covered by the Applicant's FY (e.g. July 1-June 30, calendar year, etc.).

OHCA Table 2b: Projected Outpatient Surgical Volume by Operating room

	Projected Volume (First 3 Full Operational FYs)*		
	FY 2014	**FY 2015**	**FY 2016**
Operating room**			
OR 1	**850**	**850**	**850**
OR 2	**850**	**850**	**850**
OR 3	**714**	**778**	**844**
Total	**2,414**	**2,478**	**2,544**

* If the first year of the proposal is only a partial year, provide the first partial year and then the first three full FYs. Add columns as necessary.
** Identify each operating room by location and any other identifier, and add lines as necessary.
*** Fill in years. In a footnote, identify the period covered by the Applicant's FY (e.g. July 1-June 30, calendar year, etc.)

The fiscal year for the proposed ASC will be October 1 through September 30.

b. Provide a detailed description of all assumptions used in the derivation/calculation of the projected volumes.

The projected volumes in OHCA Tables 2a and 2b above are based on the actual case volumes of the Physicians who will be shifting their outpatient orthopedic cases to the proposed ASC. Physician volumes were increased by 2% to 4% for the first three (3) years. The growth rate of between 2% to 4% used to develop the volume projections for this proposal is very conservative in comparison to the growth forecast for this service line as projected by the Advisory Board Company. See Exhibit 7 attached hereto.

Table 5: FY 2012 Outpatient Orthopedic Volumes by Physicians

FY 2012 Actual Outpatient Volumes by Physician

	Hand/Wrist /Elbow	Foot / Ankle	Knee/ Shoulder	General	Total
Physician 1	39	5	109	1	154
Physician 2	22	1	198	2	223
Physician 3	29	3	148	10	190
Physician 4	226	1	0	50	277
Physician 5	26	11	351	6	394
Physician 6	73	12	138	12	235
Physician 7	52	13	172	2	239
Physician 8	51	3	37	8	99
Physician 9	91	11	129	5	236
Physician 10	56	11	79	11	157
Physician 11	67	11	67	4	149
	732	82	1428	111	2353

4. Quality Measures

a. Submit a list of all key professional, administrative, clinical, and direct service personnel related to the proposal. Attach a copy of their Curriculum Vitae.

Please see Exhibit 13 for copies of Curriculum Vitae for key professional, administrative, clinical and direct service personnel related to this project.

b. Explain how the proposal contributes to the quality of health care delivery in the region.

Specialized care protocols specific to orthopedics, consistent with best clinical practices, will be developed and implemented by clinical staff to ensure high quality standards are met and sustained. Clinical focus on a single specialty allows greater opportunity for patient education and engagement, quality enhancement, improved outcomes, better efficiency in facility utilization and focused follow-up and coordination of care. See Exhibit 14 attached hereto.

c. Identify the Standard of Practice Guidelines that will be utilized in relation to the proposal. Attach copies of relevant sections and briefly describe how the Applicant proposes to meet each of the guidelines.

Please see Exhibit 14 attached hereto for relevant portions of the Standard of Practice Guidelines for Ambulatory Surgery Centers, Accreditation Association for Ambulatory Health Care Centers (the "AAAHC"). The ASC will meet and maintain all national standards required to achieve accreditation by the AAAHC.

d. <u>For non-hospital Applicants only</u>, provide transfer agreements with hospitals closest to the proposed facility.

Please see Exhibit 15 attached hereto for a copy of the draft transfer agreements between MidState and SSC and between HOCC and SSC.

5. Organizational and Financial Information

a. Identify the Applicant's ownership type(s) (e.g. Corporation, PC, LLC, etc.).

SSC is a Connecticut limited liability company, (LLC).

b. Describe the proposed ownership structure for the outpatient surgical facility.

Ownership of SSC:
HOCC and MidState 51%
CSC and Physicians 49%

c. Provide copies of Articles of Incorporation, Articles of Organization, or Partnership Agreements (all that are appropriate) related to the proposal.

Please see Exhibit 1 attached hereto for a copy of the draft Operating Agreement and Articles of Organization of HHC Southington Surgery Center, LLC.

d. Does the Applicant have non-profit status?

No.

e. Provide copies of all signed written agreements or memorandum of understanding including all exhibits/attachment etc., between the Applicants related to the proposal.

Please see Exhibit 1 attached hereto for a copy of the draft Operating Agreement and Articles of Organization of HHC Southington Surgery Center, LLC.

f. Provide audited financial statements for the most recently completed fiscal year. If audited financial statements do not exist, in lieu of audited financial statements, provide other financial documentation (e.g. unaudited balance sheet, statement of operations, tax return, or other set of books.)

Copies of the FY 2012 audited financial statements for MidState and HOCC are on file with OHCA.

g. Submit a final version of all capital expenditures/costs as follows:

OHCA Table 3: Proposed Capital Expenditures/Costs

Medical Equipment Purchase	**$1,800,000**
Imaging Equipment Purchase	
Non-Medical Equipment Purchase	
Land/Building Purchase *	
Construction/Renovation **	**$2,200,000**[6]
Other Non-Construction (Specify)	**$1,300,000 (working capital)**
Total Capital Expenditure (TCE)	**$5,300,000**
Medical Equipment Lease (Fair Market Value) ***	$
Imaging Equipment Lease (Fair Market Value) ***	
Non-Medical Equipment Lease (Fair Market Value) ***	
Fair Market Value of Space ***	
Total Capital Cost (TCC)	**$**
Total Project Cost (TCE + TCC)	**$5,300,000**
Capitalized Financing Costs (Informational Purpose Only)	
Total Capital Expenditure with Cap. Fin. Costs	$

* If the proposal involves a land/building purchase, attach a real estate property appraisal including the amount; the useful life of the building; and a schedule of depreciation.
** If the proposal involves construction/renovations, attach a description of the proposed building work, including the gross square feet; existing and proposed floor plans; commencement date for the construction/renovation; completion date of the construction/renovation; and commencement of operations date.
*** If the proposal involves a capital or operating equipment lease and/or purchase, attach a vendor quote or invoice; schedule of depreciation; useful life of the equipment; and anticipated residual value at the end of the lease or loan term.

See Exhibit 16 attached hereto for facility floor plans. Construction is expected to commence during FY 2013.

h. List all funding or financing sources for the proposal and the dollar amount of each. Provide applicable details such as interest rate; term; monthly payment; pledges and funds received to date; letter of interest or approval from a lending institution.

The operations of the ASC will be funded though capital contributions by the members, income from operations and lender financing at market rates.

i. Provide a copy of the Applicant's charity care policy and sliding fee scale applicable to the proposal.

SSC will adopt the Hartford HealthCare financial assistance policy attached hereto as Exhibit 17.

[6] HOCC will incur the renovation expense and then recover such expense through amortization of such cost over the term of the lease.

j. Demonstrate how this proposal will affect the financial strength of the state's health care system.

The ASC will provide high-quality and low-cost orthopedic surgical services. Both quality and lower costs will contribute to the financial strength of the State's health care system.

6. Patient Population Mix: Current and Projected

a. Provide the current and projected patient population mix (based on the number of patients, not based on revenue) with the CON proposal for the proposed program.

OHCA Table 4: Patient Population Mix

	Current** FY 2012	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016
Medicare*	18.3%	18.3%	18.3%	18.3%
Medicaid*	3.8%	3.8%	3.8%	3.8%
CHAMPUS &TriCare				
Total Government	**22.6%**	**22.6%**	**22.6%**	**22.6%**
Commercial Insurers*	66.0%	66.0%	66.0%	66.0%
Uninsured	0.3%	0.3%	0.3%	0.3%
Workers Compensation	11.1%	11.1%	11.1%	11.1%
Total Non-Government	**77.4%**	**77.4%**	**77.4%**	**77.4%**
Total Payer Mix	**100.0%**	**100.0%**	**100.0%**	**100.0%**

* Includes managed care activity.
** New programs may leave the "current" column blank.
*** Fill in years. Ensure the period covered by this table corresponds to the period covered in the projections provided.

b. Provide the basis for/assumptions used to project the patient population mix.

The projected patient population mix is based on the current patient population mix for both MidState and HOCC.

7. Financial Attachments A & B

a. Provide a summary of revenue, expense, and volume statistics, without the CON project, incremental to the CON project, and with the CON project. Complete Financial Attachment A. (Note that the actual results for the fiscal year reported in the first column must agree with the Applicant's audited financial statements.) The projections must include the first three <u>full</u> fiscal years of the project.

See Exhibit 18 for Financial Attachment A for MidState, HOCC and SSC.

b. Provide a three year projection of incremental revenue, expense, and volume statistics attributable to the proposal by payer. Complete Financial Attachment B. The projections must include the first three <u>full</u> fiscal years of the project.

See Exhibit 19 for Financial Attachment B for MidState, HOCC and SSC.

c. Provide the assumptions utilized in developing <u>both</u> Financial Attachments A and B (e.g., full-time equivalents, volume statistics, other expenses, revenue and expense % increases, project commencement of operation date, etc.).

- Case volume is derived from existing volume of all affiliated physicians who are expected to perform surgery in the ASC.
- Volume growth is based on historical growth, physician practice patterns, and projections discussed herein.
- Net revenue per case is based on the Medicare and Medicaid fee schedules for ASCs.
- Required staffing and other operating expenses are based on CSC's experience in Connecticut.
- Depreciation expense is based on 5-year average useful life.
- Interest expense assumes capital is borrowed at 6.5% and amortized over 5 years.

d. Provide documentation or the basis to support the proposed rates for each of the FYs as reported in Financial Attachment B. Provide a copy of the rate schedule for the proposed service(s).

Medicare and Medicaid rates are based upon actual rates for ambulatory surgery centers in Connecticut.

e. Identify the entity that will be billing for the proposed service(s).

HHC Southington Surgery Center, LLC.

f. Provide the minimum number of units required to show an incremental gain from operations for each fiscal year.

The Applicant projects that the volumes indicated in OHCA Tables 2a and 2b above will result in profitable operations because of lower cost structure.

g. Explain any projected incremental losses from operations contained in the financial projections that result from the implementation and operation of the CON proposal.

HOCC's incremental losses in the financial projections reflect the depreciation expense associated with the project. Please note that such transitional losses are less than would be associated with a higher cost facility.

h. Describe how this proposal is cost effective.

The ASC will provide greater value with respect to orthopedic surgical services for less cost. For all the reasons described herein, the ASC is an important health-care delivery model in a value-based purchasing environment. By reducing costs and enhancing value,

the ASC will have an overall positive impact on the health care delivery system with little or no adverse impact on other providers.

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EXHIBIT LIST
HHC SOUTHINGTON SURGERY CENTER, LLC

Exhibit Number	Description
1	• Draft Operating Agreement for HHC Southington Surgery Center, LLC • Articles of Organization
2	Letters of Support • Emil Altobello, Assistant Deputy Speaker, 82nd District • Letterio Asciuto, MD, President of the Medical Staff of The Hospital of Central Connecticut • Michael Genovesi, MD, MBA, President & CEO Grove Hill Medical Center • Sean W. Moore, President, Greater Meriden Chamber of Commerce • James J. Ieronimo, Chief Professional Officer, United Way of Meriden and Wallingford
3	• *Ambulatory Surgery Centers, A Positive Trend In Health Care,* Ambulatory Surgery Center Association, October 08, 2011 • *Growth of Ambulatory Surgical Centers, Surgery Volume and Savings to Medicare*, Lane Koenig, PhD and Qian Gu, PhD, The American Journal of Gastroenterology, Vol. 108, January 2013
4	*Can Ambulatory Care Fix Our Costly Healthy-Care System?,* Barbara Mannino, FOXBusiness, March 8, 2012, available at http://foxbusiness.com/personal-finance/2012/03/08/can-ambulatory-care-fix-our-costly-healthy-care-system/
5	MEDPAC 2013 Report to Congress, Chapter 5
6	Press Ganey 2008 Pulse Report
7	• Advisory Board Orthopedic Growth Projections for Hartford County • Advisory Board - Ambulatory Surgery Investment: 2013 Outlook, November 27, 2012
8	*The Role of Knee Alignment in Disease Progression and Functional Decline in Knee Osteoarthritis*, JAMA, July 11, 2001, Col 286, No. 2, Leena Sharma, MD; Jing Song, MS; David T. Felson, MD, MPH; September Cahue, BS; Eli Shamiyeh, MS; Dorothy D. Dunlop, PhD

9	*Obesity and Osteoarthritis; more complex than predicted!* NCBI, P. Pottie; N. Presle; B. Terlian; P. Netter; D. Mainard and F. Berenbaum, November, 2006
10	• *Bending the Obesity Cost Curve in Connecticut,* Robert Wood Johnson Foundation, September 2012 • *F as in Fat: How Obesity Threatens America's Future, 2012,* Robert Wood Johnson Foundation, September 2012
11	Bradley Memorial Campus Strategy, Draft Final Recommendations, April 23, 2013
12	Primary Service Area Towns
13	*Curriculum Vitae* of Key Personnel • Lucille Janatka, President & CEO, MidState Medical Center • Clarence J. Silvia, President & CEO, The Hospital of Central Connecticut • Paul Zimmering, MD, Comprehensive Orthopaedics And Musculoskeletal Care, LLC • Kristian M. Mineau, II, President & CEO, Constitution Surgery Centers, LLC
14	*Standard of Practice Guidelines for Ambulatory Surgery Centers,* Accreditation Association for Ambulatory Health Care
15	Draft Transfer Agreements
16	Facility Plans
17	Hartford HealthCare Financial Assistance Policy
18	Financial Attachment A
19	Financial Attachment B

DRAFT

OPERATING AGREEMENT
HHC SOUTHINGTON SURGERY CENTER, LLC

A CONNECTICUT LIMITED LIABILITY COMPANY DATED AS OF

_____

Operating Agreement of _____ Surgery Center

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OPERATING AGREEMENT OF
_____SURGERY CENTER, LLC

This Operating Agreement (this "Agreement") is entered into as of this ___ day of ____, 2013, by and among the signatories hereto.

EXPLANATORY STATEMENT

WHEREAS, the parties have agreed to organize and operate a limited liability company in accordance with the terms of, and subject to the conditions set forth in, this Agreement; and

WHEREAS, the parties wish to establish a facility for the provision of outpatient orthopedic surgery and related care services as contemplated by the vision of the Members, including, without limitation, creating a facility focused on providing services which are high quality, cost efficient, coordinated and collaborative, and patient centric, and as and to the extent compatible with and in furtherance of the charitable purposes of the Class B Members; and

WHEREAS, the parties have agreed to organize and operate a limited liability company pursuant to Internal Revenue Service Revenue Ruling 2004-51, 2004-22 I.R.S. 974, in such a manner as to neither (i) jeopardize the status of either Class B Member as an organization exempt from federal income taxation pursuant to Code Section 501(a) as an organization described in Code Section 501(c)(3), nor (ii) generate any "unrelated business taxable income" for either Class B Member as such term is used in Code Section 512(a).

NOW, THEREFORE, for good and valuable consideration, the sufficiency of which is hereby acknowledged, the parties, intending legally to be bound, agree as follows:

ARTICLE I
ORGANIZATION OF THE COMPANY

1.01 Organization.

On April 4, 2013, the Company was organized as a Connecticut limited liability company by the acceptance for filing of the Articles of Organization by the Connecticut Secretary of the State in accordance with and pursuant to the Act.

1.02 Name of the Company.

The name of the Company shall be "_____, LLC". The Company may do business under that name and under any other name or names that the Management Committee may select. If the Company does business under a name other than that set forth in its Articles of Organization, then the Company shall amend its Articles of Organization or file a trade name certificate as required by Applicable Law.

1.03 Principal Place of Business.

The principal place of business and the office of the Company initially shall be located at and the Company's business shall be conducted from _____, Connecticut. At such time as the Center is constructed and operations commence in Southington, Connecticut the Company shall move its principal place of business and office to that location. The Company may locate its place of business at any other place or places as the Management Committee may deem advisable.

1.04 Statutory Agent.

The name of the statutory agent of the Company for service of process on the Company in the State of Connecticut shall be Winship Service Corporation whose address is One Constitution Plaza, Hartford Connecticut, 06103-1919 . The Company may change its statutory agent if it is deemed advisable by the Management Committee. If the Company changes its statutory agent, the Company shall file the name and address of the new statutory agent with the Connecticut Secretary of State as required by the Act.

1.05 Term.

The existence of the Company shall be perpetual and shall continue unless and until the Company is dissolved, wound up and terminated in accordance with this Agreement.

1.06 Purposes.

The purposes to be promoted or carried out by the Company shall be to engage in the following:

(a) To operate a fully licensed, certified and accredited outpatient surgical center specializing primarily in musculoskeletal procedures, including, but not limited to, orthopedics, neurosurgery and pain management, applying best practice principles, envisioned by the Members, all in furtherance of the charitable purposes of the Class B Members by promoting health for a broad section of the community as further described in Section 1.07 and including, without limitation, a facility focused on providing services which are high quality, cost efficient, coordinated and collaborative, and patient centric; and

(b) The Members understand that the Company's and the Center's operations are subject to various state and federal laws regulating permissible relationships between the Members and entities such as the Company, including 42 U.S.C. § 1320a-7b(b) (the "Fraud and Abuse Statute"), and 42 U.S.C. § 1395nn (the "Stark Act"). It is the intent of the parties that the Company operate in a manner consistent with the foregoing statutes. The Members also acknowledge that the Stark Act, the regulations promulgated thereunder and similar Connecticut laws and regulations may restrict the Center (as presently formed) from providing "designated health services" (as defined by the Stark Act) or other services to patients referred by the Members or physician with a direct or indirect ownership or financial arrangement with the Company. The Center shall not provide "designated health services. If, in the future, any of the

services that the Center provides are deemed to be "designated health services," such services shall be provided by the Center only if such services may be provided in compliance with one or more exceptions to the ban on self-referrals set forth in the Stark Act, the regulations promulgated thereunder, or any successor statutes and/or regulations thereto. The Company shall adopt appropriate billing policies regarding "designated health services" and shall allow any Member to audit the Company's billing and collection activities to assure compliance with this Section 1.06(b).

(c) To engage in any other lawful act or activity for which limited liability companies may be formed under the Act consistent with the foregoing.

1.07 Tax-Exempt Organization Limitations.

Notwithstanding any other provision of this Agreement:

(a) So long as the Midstate or THOCC (or an entity owned by Hartford HealthCare Corporation) remains a Member of the Company, all acts, activities, and business carried on by the Company shall be consistent with, and in furtherance of, the charitable health care and community benefit missions and tax-exempt status under Section 501(c)(3) of the Code, of Midstate and THOCC (the "Charitable Purposes"). The Members hereby agree and acknowledge that the foregoing duty of the Company to operate consistent with, and in furtherance of, the Charitable Purposes shall override any duty that the Company or its Member(s) may have to operate the Company for the financial benefit of any individual or for-profit Member. Accordingly, in the event of a conflict between the operation of the Company in accordance with the Charitable Purposes, on the one hand, and any duty to maximize the Company's profits, on the other hand, the Company, its Members and the Management Committee shall satisfy the Charitable Purposes without regard to the consequences for maximizing the Company's profitability.

(b) The Company shall not carry on propaganda, attempt to influence legislation, or participate or intervene in (including the publication or distribution of statements) any political campaign on behalf of (or in opposition to) a candidate for public office.

1.08 Independent Medical Judgment. No provision of this Agreement shall limit the independent medical judgment of any participating physician with Medical Staff privileges at the Center with regard to the providing of patient care.

ARTICLE II
MEMBERS AND MEMBER REPRESENTATIVES

2.01 Members.

The name, present mailing address, and Percentage Interest of each Member are set forth on Exhibit A, attached hereto, as such Exhibit A may be amended from time to time. There shall initially be three (3) authorized classes of Members of the Company: Class A Members, Class B Members and Class C Members. Except as otherwise specifically provided in this Agreement,

all Members shall have (based on Percentage Interest held) the same economic rights. Except in the case of an action taken by the Class B Members in accordance with Sections 4.06(b), 6.09(b) and 17.05(b) of this Agreement, the Members, acting as Members, shall have no right to act for or bind the Company. The initial Class A Members, Class B Members and Class C Members are identified in Exhibit A hereto. Additional Members may be admitted to the Company only upon the satisfaction of the provisions of Section 13.01 herein.

2.02 Member Representations.

(a) Each Member represents and warrants that neither it, he or she, nor any owners of the Member (i) has received loans for the purpose of investing in the Company from the Company, a Member or their Affiliates, or from any direct or indirect investor in the Company; (ii) has offered (and will not offer) terms for investment in the Member based upon previous, actual or expected referrals, services furnished or the amount of business otherwise generated from that owner to the Center; (iii) has or will make payment to an owner in return for the owner's investment in the Member that is not directly proportional to the owner's capital investment in the Member; and (iv) has or will make any other payments, direct or indirect, to an owner that are based, in any manner, upon the volume or value of referrals the owner has made or directed to the Center (or is expected to refer to the Center).

(b) No Person shall be eligible to become a physician owner, directly or indirectly, of a Class A Member (or remain an owner of a Class A Member) or a Class C Member (or remain an owner, directly or indirectly, of a Class C Member) (collectively, the "Physician Member") unless the following eligibility requirements are satisfied: (i) each Physician Member shall be a physician, licensed and registered, in good standing, to practice medicine in the State of Connecticut; (ii) each Physician Member has not been barred or suspended from participation in any governmental program, including, but not limited to, the Medicare and/or Medicaid programs; (iii) each Physician Member shall derive at least approximately one-third (1/3) of his or her medical practice income from all sources for the previous fiscal year or previous twelve (12)-month period from his or her own performance of procedures that are ambulatory surgical procedures (or procedures that are required to be provided in an inpatient or outpatient hospital operating room), and, those Physician Members who provide services in the Center shall directly perform not less than approximately one-third (1/3) of such procedures at the Center; (iv) each Physician Member shall fully inform each patient, prior to referring patients to the Center, of his or her investment interest in the Center; (v) each Physician Member shall treat patients receiving medical benefits or assistance under any federal health care program in a nondiscriminatory manner at the Center; (vi) if the Physician Member refers patients to the Center, such Physician Member shall maintain active privileges at the Center (and any physician subject to a Board of Managers action under the Medical Staff Bylaws that results in probation or suspended privileges may be deemed, at the Board of Managers sole discretion, ineligible to remain a Physician Member); and (vii) under Applicable Law, such Physician Member's ownership shall not disqualify (and, without further action, would not disqualify) the Company or the Center from engaging in operations as a Medicare-certified ambulatory surgery center for any reason, or from having such Physician Member perform cases at the Center. A physician who meets such requirements may be referred to herein as an "Eligible Physician Investor".

(c) Any entity which is an owner of a Class A Member or a Class C Member and has physician owners shall either be (i) a "group practice" as defined 42 CFR 1001.952(r)(5) or (ii) an entity established for the sole purposes of investing in a Class A Member or Class C Member and all physician owners shall be an Eligible Physician Investor as defined Section 2.02(b), above. Such Class A Member or Class C Member owners shall also comply with Section 2.02(a) above.

(d) The Class B Members further represent and warrant that they (i) will not require or encourage employed or affiliated physicians to refer patients to the Center or any Physician Member (or physician on staff at the Center); (ii) will not track referrals made by its employed or affiliated physicians to the Center, directly or indirectly, for inappropriate purposes including without limitation, determination of compensation; (iii) any compensation paid to employed or affiliated physicians will be at fair market value and will not take into account, in any manner, the volume or value of referrals to the Center or physicians on staff at the Center; (iv) will annually inform its employed and affiliated physicians of these requirements; (v) will treat patients receiving medical benefits or assistance under any federal health care program in a nondiscriminatory manner; and (vi) will not include any payment or cost associated with the Center on its cost report unless such costs are required to be included by a Federal health care program.

2.03 Member Representatives.

Each Member of the Company, which is not an individual, shall designate in writing one Member Representative who shall be entitled to exercise all of the rights of the Member, including voting rights, set forth in this Agreement. Such Member Representative shall have the authority to act on behalf of such Member until such time that the Management Committee receives written notice from the applicable Member of the replacement of such Member Representative. The initial Member Representative of each Member is set forth in Exhibit B hereto. A Member Representative may be removed or replaced at any time, with or without cause or notice, by the Member which designated such Member Representative.

ARTICLE III
CONTRIBUTIONS AND CAPITAL ACCOUNTS

3.01 Initial Capital Contributions.

The Members hereby agree to an initial capitalization plan for the Company pursuant to which the Company initially shall be capitalized with aggregate equity capital and debt of not more than $_____.00 during the period from the date of this Agreement through _____. The Class A Members, the Class B Members and the Class C Members shall make an initial Capital Contribution to the Company as set forth on Exhibit C payable in accordance with a schedule to be determined by the Management Committee; provided, that each interim payment of the initial capital contribution by the Members shall be divided amongst the Members in proportion to each Member's respective Percentage Interest. The Members hereby further agree to cause the Company to incur debt up to an aggregate maximum principal amount

of $_____ (inclusive of the working capital line of credit referenced below). If nonrecourse financing for the Company is unavailable or insufficient, it is hereby agreed and acknowledged that, upon the approval of the Management Committee, each Member (and its owners) shall be required to guarantee debt of the Company, solely on a pro-rata (based on Percentage Interest) and several basis. Each Member further agrees to execute and deliver such agreements and instruments as the Company may require with respect to such Member's guarantee. The foregoing initial capitalization plan is intended to fund the design, development, construction, furnishing, equipping and initial working capital for the Center, in a manner to timely pay all such costs and to permit the Center to commence commercial operation in _____, with an available working capital line of credit of at least $_____. Notwithstanding the foregoing, the Management Committee may amend the initial capitalization plan described in this Section 3.01 as to both the amount and timing of the payment of the initial Capital Contributions based upon the actual timing and costs associated with the development of the Center.

3.02 Additional Capital Contributions.

(a) If (i) the Management Committee at any time, or from time to time, determines by unanimous written consent or (ii) the Class B Member, pursuant to Section 6.09(b) of this Agreement, determines that the Company requires Capital in addition to the initial Capital Contributions provided for in Section 3.01, then the Management Committee, or the Class B Members, as applicable, shall give written notice to each Member of (i) the aggregate amount of additional Capital Contribution required, (ii) the reason the additional Capital Contribution is required, (iii) each Member's proportionate share of the aggregate additional Capital Contribution (determined in accordance with this Section), and (iv) the date each Member's additional Capital Contribution is due and payable, which date shall be no sooner than thirty (30) days after the notice has been given. A Member's proportionate share of the total additional Capital Contribution shall be equal to the product obtained by multiplying the Member's Percentage Interest and the aggregate additional Capital Contribution required. A Member's proportionate share shall be payable in cash, by certified check or by wire transfer.

(b) Except as provided in this Article III, no Member shall be required to contribute any additional capital to the Company, and no Member shall have any personal liability for any obligation of the Company.

3.03 Capital Contribution Defaults.

(a) If a Member (the "Defaulting Member") does not make a Capital Contribution required pursuant to Section 3.01 or Section 3.02(a) on or before the date such Capital Contribution is due, such failure shall be a material breach of this Agreement and if not cured within thirty (30) days after notice from the disinterested members of the Management Committee, the disinterested members of the Management Committee may remove the Defaulting Member in accordance with the terms of Section 14.02 as an Involuntary Withdrawal by the Defaulting Member. If the Management Committee does not assert its right to remove the Defaulting Member through an Involuntary Withdrawal as described above, (i) the Defaulting Member's Membership Interest shall be converted to an Economic Interest until such time (the "Cure Date") that the Defaulting Member has made the delinquent Capital Contribution, plus interest, at a variable annual rate equal to the Prime Rate as in effect from time to time plus two percent (2%), from the date such Capital Contribution was due to the date of payment, (ii) the Defaulting Member shall automatically forfeit until the Cure Date its voting rights hereunder and its right to designate a Member Representative or any representative on the Management Committee (provided, however, in the case that a Class B Member is the Defaulting Member, the Class B Member who is not the Defaulting Member shall have the right to appoint all three HHC Managers), (iii) the Managers designated by the Defaulting Member to the Management Committee shall automatically be removed from the Management Committee, and (iv) the Company shall be entitled to set off against any Cash Flow or other amounts due to such Defaulting Member hereunder any amounts due to the Company attributable to such Capital Contribution and the interest thereon.

(b) As used in Section 3.03(a), "Prime Rate" means the Prime Rate as published from time to time in the "Money Rates" section of The Wall Street Journal or any successor publication, or in the event that such rate is no longer published in The Wall Street Journal or such successor journal, a comparable index or reference as may be selected by a majority of the Class A and B Members which are not at such time Defaulting Members.

3.04 Interest on and Return of Capital Contributions.

No Member shall be entitled to interest on such Member's Capital Contribution or to a return of such Member's Capital Contribution, unless otherwise provided herein.

3.05 Form of Return of Capital Contributions.

If a Member is entitled to receive a return of a Capital Contribution, the Member shall not have the right to receive anything but cash in return of the Member's Capital Contribution.

3.06 Capital Accounts.

A separate Capital Account shall be maintained for each Member and Economic Interest Owner.

3.07 Loans to the Company.

Any Member may at any time, with the consent of the Management Committee, make or cause a loan to be made to the Company in any amount and on those terms upon which (i) the Company and the Member agree and (ii) are in compliance with all Applicable Laws, including but not limited to, the Fraud and Abuse Statute and Stark Act.

ARTICLE IV
MEMBER MEETINGS

4.01 Meetings.

Meetings of the Members, for any valid purpose or purposes, may be called by the Management Committee or by any Member.

4.02 Place of Meetings.

The Members may designate any place, either within or outside the State of Connecticut, as the place of meeting for any meeting of the Members. If no designation is made, the place of meeting shall be the principal place of business of the Company. One or more Member may participate in a meeting of the Members by use of a conference telephone or similar communications equipment that allows all persons participating in the meeting to communicate with one another.

4.03 Notice of Meetings.

Except as provided in Section 4.01 written notice stating the place, day and hour of a meeting of the Members and the purpose or purposes for which the meeting is called shall be delivered not less than five (5) nor more than thirty (30) days before the date of the meeting either personally or by mail, by or at the direction of the Management Committee or Member calling the meeting, to each Member (and to each Member Representative designated in Section 2.02) entitled to vote at such meeting.

4.04 Meeting of All Members.

If all of the Members shall meet at any time and place either within or outside of the State of Connecticut, and consent to the holding of a meeting at such time and place, such meeting shall be valid without call or notice and at such meeting lawful action may be taken.

4.05 Record Date.

For the purpose of determining the Members entitled to notice of or to vote at any meeting of the Members or any adjournment thereof, the date on which notice of the meeting is mailed shall be the record date for such determination. When a determination of the Member entitled to vote at any meeting of the Members has been made as provided in this Section, such determination shall apply to any adjournment thereof.

4.06 Manner of Acting.

(a) The vote of at least one (1) of the Class A Members and the unanimous vote of the Class B Members shall be required to take or approve any matter coming before the Members, unless the vote of a lesser or greater proportion or number is otherwise required by the Act, by the Articles of Organization, or by this Agreement. Except as otherwise required by the Act, by the Articles of Organization, or by this Agreement, the Class C Member shall not have any voting rights.

(b) Notwithstanding the foregoing or Section 5.05, the exclusive and unanimous vote of the Member Representatives selected by the Class B Members shall be required to take or approve any Exempt Status Matter coming before the Members. In the exercise of its special powers hereunder, the Class B Members Member Representatives shall act reasonably and on the written advice of counsel, and shall give not less than ten (10) days' prior notice to, and shall, during such ten (10) day period, seek the advice and input of, the other Members.

4.07 Proxies.

At all meetings of the Members, a Member may vote in person (or through its Member Representative) or by proxy executed in writing by the Member or Member Representative or by a duly authorized attorney-in-fact. Such proxy shall be filed with the Company before or at the time of the meeting. No proxy shall be valid after eleven months from the date of its execution, unless otherwise provided in the proxy.

4.08 Action by Members Without a Meeting.

Any action required by this Agreement or the Act to be taken at a meeting of the Members, or any other action that may be taken at a meeting of the Members, may be taken without a meeting and without a vote, if a consent in writing, setting forth the action so taken, shall be signed by at least the minimum number of Member and Member Representatives who could approve such action at a meeting of the Members.

4.09 Waiver of Notice.

When any notice is required to be given to any Member, a waiver thereof in writing signed by the person entitled to such notice, whether before, at, or after the time stated therein, shall be equivalent to the giving of such notice.

ARTICLE V
RIGHTS, DUTIES AND OBLIGATIONS OF MEMBERS

5.01 Limitation of Liability.

Each Member's liability shall be limited as set forth in this Agreement, the Act and other Applicable Law.

5.02 Liability for Company Debt.

A Member shall not be personally liable for the debts or losses of the Company except as otherwise required by Applicable Law.

5.03 Member Duties.

No Member shall be required to perform services for the Company solely by virtue of being a Member. Unless approved by the Management Committee, no Member shall perform services for the Company or be entitled to compensation for services performed for the Company.

5.04 Limitation on Authority of Members.

The Members shall have no right to take any part in, or interfere in any manner with, the conduct, control or management of the Company's business and shall have no right or authority to act for or bind the Company, said powers being vested solely and exclusively in the Management Committee. Except as otherwise expressly provided herein, the Members shall have only those rights granted exclusively to members pursuant to the Act or under this Agreement. Any Member who takes any action or binds the Company in violation of this Agreement shall be solely responsible for any loss and expense incurred by the Company as a result of the unauthorized action and shall indemnify and hold the Company harmless with respect to the loss or expense.

5.05 Transactions with Members.

Each Member understands and acknowledges that the conduct of the Company's business may involve business dealings and undertakings with Members and their Affiliates. Any business dealings and undertakings between the Company and a Member or one or more of its Affiliates shall be at arm's length, at fair market value and on commercially reasonable terms and approved solely by the disinterested Management Committee members. In addition, any decision to amend, renew or terminate (including, without limitation, asserting without cause termination rights or rights to terminate for breach) such business dealings and undertakings between the Company and a Member or one or more of its Affiliates shall reside solely with the disinterested Management Committee members except as otherwise set forth in Section 4.06(b) or 6.09(b).

5.06 Restrictive Covenants.

(a) **Non-Competition**. Each Member agrees that while it is a Member or Economic Interest Owner and for a period of two (2) years thereafter, it and its Competition Affiliates shall not directly or indirectly develop, manage, consult with (other than infrequent patient medical consultations), finance or invest in any ambulatory surgery center offering musculoskeletal surgical services similar to those provided by the Company (the "Competing Activity") in the Connecticut municipalities of Andover, Avon, Barkhamsted, Beacon Falls, Berlin, , Bloomfield, Bolton, Bozrah, Bristol, Burlington, Canterbury, Canton, Chaplin, Cheshire, Colchester, Columbia, Coventry, Cromwell, Durham, East Granby, East Hampton, East Hartford, East Windsor, Ellington, Enfield, Farmington, Franklin, Glastonbury, Granby, Griswold, Groton, Hartford, Harland, Harwinton, Hebron, Lebanon, Ledyard, Manchester, Mansfield, Marlborough, Meriden, Middlebury, Middlefield, Middletown, Montville, Naugatuck, New Britain, New Hartford, Newington, North Haven, Norwich, Plainfield, Plainville, Plymouth, Portland, Prospect, Rocky Hill, Scotland, Simsbury, South Windsor, Southington, Sprague, Suffield, Thomaston, Torrington, Vernon, Wallingford, Waterbury, Watertown, West Hartford, Wethersfield, Windham, Windsor, Windsor Locks, Wolcott, Woodbury (collectively, the "Territory"). This restrictive covenant does not prohibit referrals to, or the use of, any other ambulatory surgery center by Members, Economic Interest Owners or Competition Affiliates. Anything to the contrary notwithstanding, the following actions by the Class B Members shall not be in violation of this Section 5.06(a): (i) any surgical services provided by an entity wholly owned by Hartford HealthCare in a licensed hospital inpatient or outpatient department, (ii) any Hartford HealthCare surgical joint venture whose revenues from orthopedic services are less than ten (10%) of total revenues in any given year, or (iii) any ambulatory surgery center acquired as part of a merger or acquisition of a hospital or health system by Hartford HealthCare.

(b) **Confidentiality.**

(i) Each Member hereby acknowledges that any disclosure of the Company's or another Member's Confidential Information, as defined below, even inadvertent disclosure, would cause irreparable and material damage to the Company or to the other Member. Each Member hereby agrees that it and each of its Competition Affiliates shall (A) maintain as confidential all of the Company's and the other Members' Confidential Information made known to it; (B) protect the confidentiality thereof in the same manner in which it protects the confidentiality of similar Confidential Information of its own, at all times exercising at least a reasonable degree of care in the protection of the Confidential Information; and (C) not disclose such Confidential Information to any third party without the express written consent of the owner of the Confidential Information. Each Member agrees to transfer to the Company and the other Members. as applicable, upon the termination of its Membership Interest, the Confidential Information made known to it as a result of it being a Member and in its possession upon the termination and to continue to maintain the confidentiality of the Confidential Information as provided herein. The obligations of each Member under this Section shall survive the termination of the Member's Membership Interest and the termination of this Agreement.

(ii) "Confidential Information" includes, but is not limited to, all: (A) financial information; (B) products, and services and product and service information, including but not limited to product and service costs, prices, profits and sales; (C) new business ideas; (D) business strategies; (E) product and service plans; (F) marketing plans and studies; (G) forecasts and models; (H) all intellectual property, including but not limited to property or information, (1) that is protected by copyright or is copyrightable, (2) that is protected by patent or that is patentable, or (3) that is valuable and not generally known in the trade, including trade secrets, financial data,. business plans, and data, and any developments relating to foregoing, whether or not patentable or copyrightable; (I) databases (and the documentation and information contained therein); (J) research projects and all information connected with research and development efforts; (K) records (including the records of the Company and the medical records of patients); (L) business relationships, methods and recommendations; (M) patient lists (including the identities of patients and prospective patients; (P) competitive analyses; (Q) all information relating to the operation of the Company's business; and (R) other confidential, proprietary or trade secret information that has not been made lawfully available to the general public.

(c) **Limitation of Covenants**. The restrictions in this Section 5.06:

(i) shall not prohibit any Member or its Competition Affiliates from taking any action on behalf of the Company;

(ii) shall not apply to the activities of a Member, a former Member or its Competition Affiliates if the Members unanimously consent to allow the Member or Former Member to undertake the prohibited activity after full disclosure of all the relevant facts;

(iii) shall not prohibit any Member and its Competition Affiliates from owning individually or collectively, directly or indirectly securities of any Person traded in a public market provided that the Member and its Competition Affiliates do not own more than two percent (2%) of any class of securities of such Person and have no relationship with such Person other than as a stockholder; and

(iv) shall not prohibit any Member or its Competition Affiliates from using for its own benefit or the benefit of others or to disclose or publish any information that (A) was rightfully in its possession prior to the date of this Agreement, (B) was rightfully obtained from others without violation of its obligations to the Company or the other Members, (C) was independently developed by the Member without the use of the Company's or the other Members' Confidential Information or (D) is or becomes within the public domain without breach of this Agreement.

(d) **Injunctive Relief**. Each Member acknowledges that any violation of any provision of Section 5.06 will cause irreparable harm to the Company and/or the other Member(s), that damages for such harm will be incapable of precise measurement and that, as a result, the Company and/or the other Member(s) will not have an adequate remedy at law to redress the harm caused by such violation. Therefore, in the event of such a violation, the parties agree that, in addition to other remedies, the aggrieved party or parties shall be entitled, without the necessity of either proof of actual damage or the posting of a bond, to injunctive relief,

including but not limited to an immediate temporary injunction, temporary restraining order and/or preliminary or permanent injunction to restrain or enjoin any such violation, and to reimbursement of any reasonable attorneys' fees and expenses incurred to enforce the provisions of this Section 5.06. Nothing in this Agreement shall be construed to prohibit the Company and/or an aggrieved Member from pursuing any other remedy, the parties having agreed that all remedies are cumulative and that a Member is liable for any and all acts or omissions of such Member and/or any of its Competition Affiliates that violate any provision of this Section 5.06.

(e) **Acknowledgment**. Each Member hereby acknowledges the reasonableness of the restrictions contained in this Section 5.06 in view of the purposes of the Company and the relationship of the Members. Each Member acknowledges that the restrictions contained in this Section 5.06 represent mandatory conditions precedent to the execution of this Agreement, and that in the absence of such restrictions, neither Member would have consented to, or entered into, this Agreement.

ARTICLE VI
RIGHTS AND DUTIES OF MANAGEMENT COMMITTEE

6.01 Management Committee

(a) The management of the Company shall be vested in a Management Committee, which shall consist of eight individuals (each individually referred to as a "Manager", and collectively as the "Managers"). Each Class A Member shall be responsible for designating two of such eight Managers (each of which shall be referred to individually as a "Class A Manager", and collectively as the "Class A Managers") to the Management Committee. The Class B Members, as determined by the Class B Members, shall be responsible for designating four of such eight Managers (each of which shall be referred to individually as an "HHC Manager", and collectively as the "HHC Managers") to the Management Committee. No Class C Member shall be appointed as a Manager, nor shall the Class C Members have the right to designate a Manager. The initial Managers designated by each Member are set forth on Exhibit B hereto.

(b) The annual meeting of the Management Committee shall be held on the _____ each year, or at such other time as is selected by the Management Committee. Regular meetings of the Management Committee may be held at such times and places as may be determined by the Management Committee, and once such determination has been made and notice given to each Manager, regular meetings may be held without any further notice. Special meetings of the Management Committee may be called by the Chairman, a Member, a Member Representative, or by two or more Managers upon at least forty-eight (48) hours' notice. Attendance at a meeting of the Management Committee, in person or as otherwise permitted under this Agreement or the Act, by a majority of the HHC Managers and a majority of the Class A Managers shall constitute a quorum.

(c) Action may be taken by the Management Committee without a meeting by consent, in writing, setting forth the action to be taken, signed by the number of Managers entitled to vote on such action as would be required to approve such action at a meeting at which

all the Managers entitled to vote thereon were present. Such consent shall be filed with the records of the meetings of the Management Committee and shall be treated for all purposes as the act of the Management Committee.

(d) Managers may participate in a Management Committee meeting by means of conference telephone or similar communications equipment that enables all persons participating in the meeting to hear each other.

(e) The Management Committee may, from time to time, designate by resolution one or more subcommittees with such powers and authority as may be prescribed in such resolution. to serve at the request of the Management Committee. Each subcommittee. which shall be comprised of an equal number of the Class A Member and Class B Members representatives (and such non-voting Class C Members (or Class C Member representatives) as designated by the Management Committee), may determine the procedural rules for its meetings and conducting its business and shall act in accordance therewith. Adequate provision shall be made for notice to subcommittee members of all meetings; a majority of the subcommittee members shall constitute a quorum; and all matters shall be determined by the vote of a majority of the subcommittee members present at a meeting at which a quorum is present.

6.02 Powers of Management Committee.

The Management Committee shall have full exclusive, and complete discretion, power, and authority (subject in all cases to Section 6.03, Section 6.04, Section 6.09. the other provisions of this Agreement and the requirements of Applicable Law), to manage, control. administer, and operate the business and affairs of the Company so as to further the purpose of the Company as set forth in Sections 1.06 and 1.07, and to make all decisions affecting such business and affairs (subject to Section 5.05 regarding transactions with a Member or an Affiliate of a Member), including without limitation, for Company purposes, the power to:

(a) acquire by purchase, lease, or otherwise any real property or any personal property, tangible or intangible;

(b) construct, operate, maintain, finance, and improve any real property or any personal property;

(c) sell, convey, assign, or lease any real property or any personal property;

(d) open and use bank accounts in the Company's name and to withdraw funds or issue checks, drafts or orders for the payment of money from such accounts;

(e) enter into agreements and contracts and to give receipts, releases and discharges;

(f) appoint, employ or otherwise contract with any Person to perform services for or on behalf of the Company, and to grant to any such Person such authority to act on behalf of the Company as the Management Committee may from time to time deem appropriate;

(g) purchase liability and other insurance to protect the Company's assets and business;

(h) execute any and all other instruments and documents that may be necessary or in the opinion of the Management Committee desirable to carry out the intent and purpose of this Agreement;

(i) make any and all expenditures that the Management Committee, in its sole discretion, deems necessary or appropriate in connection with the management of the affairs of the Company and the carrying out of its obligations and responsibilities under this Agreement, including, without limitation, all legal, accounting, and other related expenses incurred in connection with the organization, financing, and operation of the Company;

(j) invest and reinvest Company reserves in short-term instruments or money market funds;

(k) adopt and amend Medical Staff Bylaws and Medical Staff Rules and Regulations for the organization and operation of the Center (as provided further in Section 8.02 below);

(l) appoint and credential members of the Medical Staff and delineate their privileges at the Center, and otherwise discharge its responsibilities under the Medical Staff By-Laws and Medical Staff Rules and Regulations in effect from time to time;

(m) oversee quality assurance, quality improvement, and best practices medicine;

(n) arrange for managed care contracting;

(o) control the proper and efficient use of operating room time;

(p) oversee the review peers using the Company's Center pursuant to procedures adopted by the Management Committee from time to time;

(q) take and approve all actions and matters required of a governing authority of an ambulatory orthopedic surgical center under Applicable Law; and

(r) enter into any activity necessary to, in connection with, or incidental to, the accomplishment of the purposes of the Company.

6.03 Management of Outpatient Surgery Center.

The Management Committee shall arrange for the management and administration of the business affairs of the Company's Center. It shall do so either through the employment or engagement of individuals with the necessary credentials to do so, or through contract with a

third party engaged in the business of outpatient surgical center management (subject to Section 5.05 if a Member or an Affiliate of a Member is engaged). The Members and the Management Committee hereby adopt and agree to comply with the Charity Care Policy. The Management Committee may amend the Charity Care Policy from time to time and shall enforce the Charity Care Policy in a manner to ensure the compliance of the Company and the Center with the Charity Care Policy and Applicable Law.

6.04 Extraordinary Transactions.

Notwithstanding anything herein to the contrary, excepting actions taken pursuant to Section 4.06(b) or Section 6.09(b), the Management Committee may not take action with regards to any of the following matters without the unanimous vote of the Class A and B Members (subject to Section 5.05 regarding transactions with a Member or an Affiliate of a Member):

(a) sell all or substantially all of the assets of the Company;

(b) merge or consolidate the Company with any other Person;

(c) acquire all or substantially all the assets of, or ownership interests in, another Person;

(d) borrow money or incur any debt for, or on behalf of, the Company in excess of $250,000, other than in the ordinary course of business;

(e) execute for or on behalf of the Company any mortgage or deed of trust or prepay, in whole or in part, refinance, amend, modify, or extend any mortgage or deeds of trust for or on behalf of the Company securing a debt in excess of $250,000;

(f) create a security interest in or cause a lien securing a debt in excess of $250,000 to be placed on any real property of the Company or, other than in the ordinary course of business, any personal property of the Company;

(g) acquire by purchase, lease or otherwise any real property;

(h) admit additional Members to the Company;

(i) enter into any management agreement relating to all or substantially all of the assets and/or operations of the Company or any other contract or series of related contracts that require aggregate expenditures by the Company or will result in aggregate gross payments to the Company, in excess of $100.000;

(j) hire or fire key personnel; and

(k) open additional offices.

6.05 Term of Managers.

Each Manager shall hold office until his or her death, resignation, incapacitation or removal as provided herein.

6.06 Resignation of Manager

Any Manager of the Company may resign at any time by giving written notice to the Company and to the Member who designated such Manager. The resignation of any Manager shall take effect upon receipt by the Member and the Company of the notice thereof or at such later date specified in such notice, and unless specified therein, the acceptance of such resignation shall not be necessary to make it effective.

6.07 Removal of Manager.

A Manager may be removed at any time, with or without cause or notice, by the Member that originally designated such Manager or as described in Section 3.03(a)(iii); provided, however, any Manager committing fraud against the Company, commission of a felony, or any other action in violation of his/her fiduciary duty to the Company shall be removed upon the request of a Member.

6.08 Vacancies.

Manager vacancies shall be filled by the Member who originally designated such Manager within ten (10) days after such vacancy arises.

6.09 Manner of Acting.

(a) **In General**. The affirmative vote of a majority of the Class B Managers present at a meeting at which quorum exists plus at least two (2) of the Class A Managers shall be required to take or approve any action by the Management Committee.

(b) **Special Powers of HHC Managers**. Notwithstanding anything contained herein to the contrary, HHC Managers shall have the unilateral and exclusive right to (i) take or approve any action by the Management Committee with respect to any Exempt Status Matter, provided, however, that approval of such action may also be given by the Class B Members Member Representatives pursuant to Section 4.06(b); or (ii) take or approve any and all actions on matters of financial policy, including, without limitation, approval of the Company's annual capital and operating budgets and any material modifications to such budgets, any borrowings or other financings, distribution policies and decisions, capital calls, cash management decisions, creation of financial reserves and investment policies. In the exercise of their special powers under clause (i) above, the HHC Managers shall act reasonably and on the written advice of counsel, and shall give not less than ten (10) days' prior written notice to, and shall, during such ten (10) day period, seek the advice and input of, the Class A Managers. Actions taken pursuant to this Section 6.09(b) shall not be subject to Section 5.05.

(c) **Compliance Plan and Conflict of Interest Policy**. The Management Committee shall adopt, and the Company shall operate consistently with, a compliance plan and a conflict of interest policy that is complimentary to the corporate compliance plan of the Class B Members in existence as of the Effective Date.

6.10 Duties of Managers.

Each Manager shall devote such time to the business and affairs of the Company as is necessary to carry out the duties set forth in this Agreement. The Management Committee shall manage the Company so as to further the purpose of the Company as set forth in Sections 1.06 and 1.07 including, without limitation, furthering the Class B Members' Charitable Purposes without regard to maximizing profitability.

6.11 Liability of Managers.

In no event will any Manager be personally liable to the Company, the Members or any other Manager for the debts, obligations, or liabilities of the Company whether arising in contract, tort or otherwise, in acting on behalf of the Company or in his or her capacity as a Manager, except as otherwise required by Applicable Law, provided that his or her actions or omissions did not constitute fraud, bad faith, gross negligence, or willful misconduct. No Manager shall be personally liable for failure to perform in accordance with, or to comply with the terms and conditions of, this Agreement or for any other reason unless such failure to conform or to comply or such other reason constitutes fraud, bad faith. gross negligence, or willful misconduct by such Manager.

6.12 Indemnity of Managers.

The Company shall indemnify and hold harmless each Manager against any and all liability, loss, expense, or damage incurred or sustained by reason of any act or omission in the conduct of the business of the Company, except if such Manager shall have been guilty of fraud, bad faith, gross negligence or willful misconduct. Such indemnification shall include the reasonable expenses (including reasonable attorneys' fees and costs) incurred by a Manager in connection with the defense of any action to which he or she may be made a party by reason of his or her interest in or activities on behalf of the Company. Any indemnity under this Section shall be provided out of and to the extent of Company assets only and no Member shall have any personal liability on account thereof.

6.13 Reliance upon Third Parties.

The Management Committee and each Manager shall be fully protected in relying in good faith upon information, opinions, reports, or statements furnished by any Person as to matters the Management Committee or Manager reasonably believes are within such other Person's professional or expert competence and who has been selected with reasonable care.

6.14 Compensation

The salary and/or other compensation of the Managers, if any, shall be fixed from time to time by the unanimous vote of the Class A and B Members.

ARTICLE VII
OFFICERS OF THE COMPANY

7.01 General.

The Management Committee annually at its annual meeting shall appoint a Medical Director and a Chairman, and may elect such other officers of the Company, which may include a President, a Vice President, a Treasurer, a Secretary and other officers and assistant officers, as the Management Committee may deem necessary or advisable for the efficient operation of the Company's affairs. Any two or more offices may be held by the same person. The Medical Director shall be nominated by Class A Member, subject to the approval of the Management Committee, and must at all times be on the active medical staff of at least one of the Class B Members. The Chairman shall be one of the six Managers and such position shall be held for alternating one-year terms by an HHC Manager and a Class A Manager, such that the Chairman shall be designated by the HHC Managers during the annual meeting of the Management Committee held during an even-numbered year, and shall be designated by the Class A Managers during the annual meeting of the Management Committee held during an odd-numbered year.

7.02 Authority and Duties.

Officers of the Company, if any, shall have such authority and perform such duties in the management of the Company as may be provided in this Agreement or, to the extent not so provided by resolution of the Management Committee.

7.03 Election and Term of Office.

Officers of the Company, if any, shall be elected annually by the Management Committee at the annual meeting of the Management Committee. Each officer shall hold office until his or her successor shall have been duly elected or until his or her prior death, resignation or removal.

7.04 Removal.

Any officer of the Company may be removed by the Management Committee whenever in its judgment the best interest of the Company would be served thereby; provided, however, (a) except as permitted under Section 6.09(b), the removal of a Chairman can only be by vote of the Managers who designated such Chairman; and (b) the removal of any officer shall be without prejudice to the contract rights, if any, of the person so removed. Election or appointment shall not of itself create contract rights.

7.05 Resignations.

Any officer of the Company may resign his or her office at any time by giving written notice thereof to the Chairman of the Company, if any, or to the Management Committee. Such resignation shall take effect at the time specified therein, or if no time is specified therein, at the time of the receipt thereof, and the acceptance thereof shall not be necessary to make it effective.

7.06 Vacancies.

A vacancy in any office shall be filled by the Management Committee for the unexpired portion of the term; provided, however, that any vacancy in the position of Chairman shall be filled by the Managers who designated the Chairman at the immediately preceding annual meeting of the Management Committee.

7.07 Medical Director.

The Medical Director shall be the chief operating officer of the Company's Center, with such powers and duties, including without limitation responsibility for the day-to-day operations of the Center, as may be contemplated by Applicable Law, or as may be established by the Management Committee. The Medical Director shall be responsible for the implementation of the Company's Charity Care Policy. The Medical Director shall be invited to attend all meetings of the Management Committee, except as otherwise directed by the Management Committee, provided, however that (a) the Medical Director's presence shall not be required to conduct a meeting of the Management Committee; and (b) the Medical Director shall recuse himself or herself from any deliberations or votes of the Management Committee concerning the evaluation and/or compensation of the Medical Director.

7.08 Chairman.

The Chairman shall preside at all meetings of the Management Committee and the Members, and shall have such powers and duties as may from time to time be delegated or assigned to the Chairman by the Management Committee. The Chairman shall be required to place on the agenda for a meeting of the Management Committee any agenda item proposed by a Manager at least two (2) business days before such meeting.

7.09 President.

The President, if any, shall be the chief executive officer of the Company. He or she shall see that all orders and resolutions of the Management Committee are carried into effect. In general, the President shall perform all duties incident to the office of President and such other duties as may from time to time be assigned to the President by the Management Committee.

7.10 Vice President.

The Vice President, if any, shall have such general responsibility as may be assigned to him or her from time to time by the Management Committee or the President. At the request of the President, or in case of the President's absence or inability to act, any Vice President designated by the Management Committee or by the President shall perform the duties of the

President, and when so acting shall have all the powers of and be subject to all the restrictions upon the President.

7.11 Treasurer.

The Treasurer, if any, shall have charge and custody of and be responsible for all the funds and securities of the Company; he or she shall keep full and accurate accounts of assets, liabilities, receipts and disbursements and other transactions of the Company in books belonging to the Company; and he or she shall deposit all moneys and other valuable effects of the Company in the name of and to the credit of the Company in such banks or other depositories as may be designated by the Management Committee. The Treasurer shall disburse or oversee the disbursement of the funds of the Company as may be ordered by the Management Committee, taking proper vouchers for disbursements, and shall render to the President and to the Managers at the meetings of the Management Committee, or whenever they may require it, a statement of all his or her transactions as Treasurer and an account of the financial condition of the Company. In general, he or she shall perform all the duties incident to the office of Treasurer and such other duties as may from time to time be assigned to the Treasurer by the Management Committee or by the President.

7.12 Secretary.

The Secretary, if any, shall keep the minutes of the meetings of the Members and the Management Committee in one or more books provided for that purpose. In general. he or she shall perform all the duties incident to the office of Secretary and such other duties as may from time to time be assigned to the Secretary by the Management Committee or by the President.

7.13 Other Assistants and Acting Officers.

The Management Committee may from time to time appoint such other officers as the Management Committee may deem necessary or advisable, each of whom shall hold office for such period, have such authority and perform such duties as the Management Committee may from time to time determine.

ARTICLE VIII
MEDICAL STAFF

8.01 Medical Staff.

The Management Committee shall cause to be created and shall continue to provide for a medical staff organization known as the "Medical Staff of the _____ Center", which shall include all physicians, dentists and members of allied professions who are granted by the Management Committee the privilege of caring for or contributing to the care of patients at the Center (the "Medical Staff"). Membership on the Medical Staff shall be a prerequisite to the exercise of clinical privileges at the Center, except as otherwise may be provided in the Medical Staff Bylaws.

8.02 Medical Staff Bylaws.

The Management Committee shall adopt prior to the commencement of medical procedures at the Center, and may amend from time to time, the Medical Staff Bylaws and the Medical Staff Rules and Regulations to govern the organization, appointment and removal of the Medical Staff. The Medical Staff Bylaws shall provide that it shall be the responsibility of any member of the Medical Staff to assist the Company to comply with the Charity Care Policy as established pursuant to this Agreement, amended from time to time and enforced by the Management Committee.

8.03 Staff Status; Privileges; Corrective Action.

The Medical Staff Bylaws shall provide for the procedure to be followed in matters relating to Medical Staff membership status, clinical privileges, and corrective action. Final action on all such matters shall be taken by the Management Committee. The terms and conditions of membership status on the Medical Staff, and of the exercise of clinical privileges, shall be as specified in the Medical Staff Bylaws, the Medical Staff Rules and Regulations, or as more specifically defined in the notice of individual appointment to the Medical Staff.

8.04 Management Committee Exclusive Appointing Authority.

Anything to the contrary herein notwithstanding, the Management Committee shall have the exclusive authority and responsibility to make appointments or reappointments to the Medical Staff, after considering the recommendations and reports of the Medical Staff.

ARTICLE IX
ALLOCATION OF PROFIT AND LOSS AND DISTRIBUTIONS

9.01 Distributions.

(a) **General**. Except as otherwise provided in Sections 9.01(b) and 9.06(e), distributions of cash or other assets of the Company shall be made in accordance with Section 9.01(a)(i) and at such times and in such amounts as the Management Committee may determine. Distributions, other than tax distributions made in accordance with Section 9.01(b), Exempt Status Matter Distributions made in accordance with Sections 9.01(c) and 9.06(e), and liquidating distributions that shall be made in accordance with Section 15.03, shall be made to the Members and Economic Interest Owners in proportion to their Percentage Interests in the Company.

(i) **Free Cash Flow Distributions**. The Management Committee shall cause a calculation of Free Cash Flow to be made for each calendar quarter by the thirtieth (30) day after the end of each quarter. To the extent reasonably practicable in accordance with generally accepted commercial standards, the Management Committee shall cause a distribution of Free Cash Flow to be made to each Member, based on such calculation and on each Member's Percentage Interest, within thirty (30) days after the quarterly calculation of Free Cash Flow. The Management Committee may reserve as much of such quarterly distribution as may be

reasonably required for working capital; to pay taxes, insurance, debt service or other costs or expenses incident to the ownership or operation of the Company's business; for the replacement or restoration of Company assets; and for other contingencies or emergencies.

(b) **Tax Distributions**. With respect to each fiscal year of the Company, or part thereof, the Company shall distribute (the "Tax Distribution"), to the extent that it has cash or other liquid investments, to each Member and Economic Interest Owner (who is a Member or Economic Interest Owner as of the date of the distribution) an amount of cash equal to forty percent (40%) of the net amount of Profit and Loss allocated to such Member or Economic Interest Owner for such year under this Article IX, less any "Net Distributions" to such Member or Economic Interest Owner. In the event that the Company does not have cash or other liquid assets available to make such distribution the Company is authorized to borrow the necessary funds to make such distribution. The Tax Distribution required under this Section 9.01(b) shall be made on or before the April 1st following the close of each fiscal year of the Company. "Net Distributions" shall mean any distribution of cash or property to a Member or Economic Interest Owner with respect to its Membership Interest or Economic Interest (i) made during the first quarter of the subject fiscal year (but only if the Management Committee designates that such distribution is allocable to that fiscal year) or (ii) made during the twelve month period ending on April 1 after the close of the fiscal year (to the extent not designated for another fiscal year), but shall not include any payment for services, any guaranteed monthly payment, any reimbursement for expenses incurred by a Member on the Company's behalf, and any payment in redemption of a Member's or Economic Interest Owner's Membership Interest or Economic Interest. The Tax Distributions shall be made without regard to the taxable or tax-exempt status of the Member or Economic Interest Owner.

(c) **Authority to Withhold; Treatment of Withheld Tax**. Notwithstanding any other provision of this Agreement, each Member and Economic Interest Owner hereby authorizes the Company to withhold and to pay over or otherwise, to pay any withholding or other taxes payable by the Company (pursuant to the Code or any provision of United States federal, state or local or foreign law) with respect to such Member or Economic Interest Owner or as a result of such Member's or Economic Interest Owner's participation in the Company; and if and to the extent that the Company shall be required to withhold or pay any such withholding or other taxes, such Member or Economic Interest Owner shall be deemed for all purposes of this Agreement to have received a payment from the Company as of the time such withholding or other tax is required to be paid, which payment shall be deemed to be a distribution with respect to such Member's or Economic Interest Owner's Interest in the Company. To the extent that the aggregate amount of such payments to a Member or Economic Interest Owner for any fiscal year exceeds the amount of distributions that such Member or Economic Interest Owner would have received for such fiscal year, the Company shall notify such Member or Economic Interest Owner as to the amount of such excess and such Member or Economic Interest Owner shall make a prompt payment to the Company of such amount by wire transfer. The Company shall promptly notify each Member or Economic Interest Owner of any withholding or other taxes payable by the Company with respect to such Member or Economic Interest Owner and, upon the request of such Member or Economic Interest Owner, shall use reasonable efforts to assist such Member or Economic Interest Owner to secure any available tax refunds, credits or exemptions (including exemptions from withholding) with respect to such withholding taxes.

9.02 Allocation of Profit and Loss.

After giving effect to the special allocations set forth in Section 9.03, for any taxable year of the Company, Profit or Loss shall be allocated to the Members and the Economic Interest Owners in proportion to their Percentage Interests, subject to any special allocation required by Section 9.06.

9.03 Regulatory Allocations.

(a) **Qualified Income Offset**. No Member or Economic Interest Owner shall be allocated Loss or deductions if the allocation causes the Member or the Economic Interest Owner to have an Adjusted Capital Account Deficit, after the allocation of all Profit and gains. If a Member or an Economic Interest Owner receives (i) an allocation of Loss or deduction (or item thereof) or (ii) any distribution, that causes the Member or the Economic Interest Owner to have an Adjusted Capital Account Deficit at the end of any taxable year, then all items of income and gain of the Company (consisting of a *pro rata* portion of each item of Company income, including gross income and gain) for that taxable year shall be allocated to that Member or Economic Interest Owner, before any other allocation is made of Company items for that taxable year, in the amount and in proportions required to eliminate the excess as quickly as possible. This Section 9.03(a) is intended to comply with, and shall be interpreted consistently with the "qualified income offset" provisions of the Regulations promulgated under Code Section 704(b). Any special allocations of items of Profit or Loss pursuant to this Section 9.03(a) shall be taken into account in computing subsequent allocations of Profit and Loss pursuant to this Agreement, so that the net amount of any items so allocated and the Profit, Loss, and other items allocated to each Member and Economic Interest Owner shall, to the extent possible, be equal to the net amount that would have been allocated to each such Member or Economic Interest Owner pursuant to this Agreement if such special allocation had not occurred.

(b) **Minimum Gain Chargeback**. Except as set forth in Regulation Sections 1.704-2(f)(2), (3) and (4), if during any taxable year, there is a net decrease in Minimum Gain, each Member and Economic Interest Owner, prior to any other allocation pursuant to this Article IX, shall be specially allocated items of gross income and gain for such taxable year (and if necessary, subsequent taxable years) in an amount equal to that Member's or Economic Interest Owner's share of the net decrease of Minimum Gain, computed in accordance with Regulation Section 1.704-2(g). Allocations of gross income and gain pursuant to this Section shall be made first from gain recognized from the disposition of Company assets subject to nonrecourse liabilities (within the meaning of the Regulations promulgated under Code Section 752), to the extent of the Minimum Gain attributable to those assets, and thereafter, from a *pro rata* portion of the Company's other items of income and gain for the taxable year. It is the intent of the parties hereto that any allocation pursuant to this Section 9.03(b) shall constitute a "'minimum gain chargeback" under Regulation Section 1.704-2(f).

(c) **Member Nonrecourse Debt Minimum Gain**. Except as set forth in Regulation Section 1.704-2(i)(4), if during any taxable year, there is a net decrease in Member Nonrecourse Debt Minimum Gain, each Member and Economic Interest Owner, prior to any

other allocation pursuant to this Article IX, shall be specially allocated items of gross income and gain for such taxable year (and if necessary, subsequent taxable years) in an amount equal to that Member's or Economic Interest Owner's share of the net decrease of Member Nonrecourse Debt Minimum Gain. computed in accordance with Regulation Section 1.704-2(i)(5). Allocations of gross income and gain pursuant to this Section shall be made first from gain recognized from the disposition of Company assets subject to nonrecourse liabilities (within the meaning of Regulation Section 1.704-2(b)(4)), to the extent of the Member Nonrecourse Debt Minimum Gain attributable to those assets, and thereafter, from a *pro rata* portion of the Company's other items of income and gain for the taxable year. It is the intent of the parties hereto that any allocation pursuant to this Section 9.03(c) shall constitute a "chargeback of partner nonrecourse debt minimum gain" under Regulation Section 1.704-2(i)(4).

(d) **Code Section 754 Adjustments**. To the extent an adjustment to the tax basis of any Company asset pursuant to Code Section 734(b) or Code Section 743(b) is required, pursuant to Regulation Section 1.704-1(b)(2)(iv)(m), to be taken into account in determining Capital Accounts, the amount of the adjustment to the Capital Accounts shall be treated as an item of gain (if the adjustment increases the basis of the asset) or loss (if the adjustment decreases basis), and the gain or loss shall be specially allocated to the Members and the Economic Interest Owners in a manner consistent with the manner in which their Capital Accounts are required to be adjusted pursuant to that Section of the Regulations.

(e) **Nonrecourse Deductions**. Nonrecourse Deductions for a taxable year or other period shall be specially allocated among the Members and the Economic Interest Owners in proportion to their Percentage Interests.

(f) **Member Nonrecourse Deductions**. Any Member Nonrecourse Deduction for any taxable year or other period shall be specially allocated to the Member or the Economic Interest Owner who bears the risk of loss with respect to the loan to which the Member Nonrecourse Deduction is attributable in accordance with Regulation Section 1.704-2(i).

(g) **Fractions Rule Adjustment**. Notwithstanding anything to the contrary in this Agreement, the Company shall (i) make allocations of Profit (or any item thereof) to the Class B Members only to the extent that the Class B Members have actually received a distribution under Section 9.01 attributable to such Profit, and (ii) make such special, curative, and/or offsetting allocations of Profit or Net Loss (or any item thereof) to the extent necessary to cause the allocations of Company income, gain, loss, and deduction to meet the requirements of Code Section 514(c)(9)(E) and the Treasury Regulations thereunder; provided, however, in the event any such allocation made under this subsection (g) would reduce the amounts distributable to any Member under this Agreement, the parties shall in good faith negotiate an amendment to the allocation provisions of this Agreement such that no such reduction occurs (unless the Class B Members waive such right with respect to a reduction in any amount distributable to it).

(h) **UBTI Limitation**. Notwithstanding anything to the contrary in this Agreement, the Company shall make such special, curative, and/or offsetting allocations of Profit or Loss (or any item thereof) to the extent necessary and to the extent supported by advice of tax counsel, to cause any amounts otherwise allocable to the Class B Members that would

constitute unrelated business taxable income to instead be allocated to the other Members; provided, however, in the event any such allocation made under this subsection (h) would reduce the amounts distributable to any Member under this Agreement, the parties shall in good faith negotiate an amendment to the allocation provisions of this Agreement such that no such reduction occurs (unless the Class B Members waive such right with respect to a reduction in any amount distributable to it).

9.04 Contributed Property and Book-ups.

In accordance with Code Section 704(c) and the Regulations thereunder, as well as Regulation Section 1.704-1(b)(2)(iv)(d)(3), income, gain, loss, and deduction with respect to any property contributed (or deemed contributed) to the Company shall, solely for tax purposes, be allocated among the Members and the Economic Interest Owners so as to take account of any variation between the adjusted basis of the property to the Company for federal income tax purposes and its fair market value at the date of contribution (or deemed contribution). If the adjusted book value of any Company asset is adjusted as provided herein, subsequent allocations of income, gain, loss, and deduction with respect to the asset shall take account of any variation between the adjusted basis of the asset for federal income tax purposes and its adjusted book value in the manner required under Code Section 704(c) and the Regulations thereunder. Any elections or decisions relating to such allocations shall be made by the Management Committee in a manner that reasonably reflects the intent of this Agreement. Allocations pursuant to this Section 9.04 are solely for tax purposes and shall not affect any Member's or any Economic Interest Owner's Capital Account.

9.05 General.

(a) **Distributions of Property**. If any assets of the Company are distributed in kind to any Member or Economic Interest Owner, those assets shall be valued on the basis of their Agreed Value, and any Member or any Economic Interest Owner entitled to any interest in those assets shall receive that interest as a tenant-in-common with all other Members and Economic Interest Owners so entitled. The Profit or Loss for each distributed asset shall be determined as if the asset had been sold at its Agreed Value, and the Profit or Loss shall be allocated as provided in Section 9.02 and shall be properly credited or charged to the Capital Accounts of the Members and the Economic Interest Owners prior to the distribution of the assets.

(b) **Members of Record for Allocations**. All Profit and Loss shall be allocated to the Persons shown on the records of the Company to have been Members or Economic Interest Owners during the year, as of the last day of the taxable year for which the allocation is to be made. Notwithstanding the foregoing, unless the Company elects to separate its taxable year into segments, if there is a Transfer or an Involuntary or Voluntary Withdrawal during the taxable year, the Profit and Loss shall be allocated between the original Member or Economic Interest Owner and his or her successor or, in the case of a Transfer to the Company or a Voluntary Withdrawal, among the remaining Members and Economic Interest Owners, on the basis of the number of days each was a Member or an Economic Interest Owner during the taxable year. However, the Company's taxable year shall be segregated into two or more

segments in order to account for Profit, Loss, or proceeds attributable to any extraordinary non-recurring items of the Company.

(c) **Members of Record for Distributions**. All *pro rata* distributions shall be made to the Persons shown on the records of the Company to be Members or Economic Interest Owners as of the day of the distribution.

(d) **Guaranteed Payments**. To the extent any compensation for goods or services, that is paid to a Member or an Economic Interest Owner by the Company, is determined by the Internal Revenue Service not to be a guaranteed payment under Code Section 707(c) or is not paid to the Member or the Economic Interest Owner other than in the Person's capacity as a Member or an Economic Interest Owner within the meaning of Code Section 707(a), the Member or the Economic Interest Owner shall be specially allocated gross income of the Company in an amount equal to the amount of that compensation, and the Member or the Economic Interest Owner's Capital Account shall be adjusted to reflect the payment of that compensation.

(e) **Amendment of Regulatory Allocations**. The Management Committee is hereby authorized, upon the advice of the Company's tax counsel, to amend this Article IX to comply with the Code and the Regulations promulgated under Code Section 704(b). However, no amendment shall materially affect distributions to a Member or an Economic Interest Owner without the Member's or Economic Interest Owner's prior written consent.

9.06 Exempt Status Matter Special Allocations and Distributions.

(a) In the event with respect to any taxable year of the Company, an Exempt Status Matter Action is taken, then, upon seven (7) days prior written notice by a Class A Member, the Class B Members shall meet with the Class A Members within thirty (30) days after the close of such taxable year to determine whether such Exempt Status Matter Action(s) have had a negative impact on the Profit of the Company for such taxable year, and/or are likely to have a negative impact on the Profit of the Company in subsequent taxable years, that would have otherwise have been realized had such Exempt Status Matter Action(s) not been taken. The failure of Class A Members to give notice of such a meeting within thirty (30) days of the end of a taxable year shall constitute an irrevocable waiver of the rights of Class A Members to claim an Exempt Status Matter Special Allocation pursuant to this Section 9.06 for such taxable year, except with respect to an Exempt Status Matter Action taken in a prior taxable year with respect to which the Class B Members and the Class A Members, or the Company's independent auditors, determined in accordance with this Section 9.06, was likely to have a negative impact on the Profit of the Company in succeeding taxable years (a "Qualifying Prior Year Exempt Status Matter Action").

(b) In the event that the Class B Members and the Class A Members determine, after the meeting referred to in Section 9.06(a), that any Exempt Status Matter Action(s) taken during the taxable year, or Qualifying Prior Year Exempt Status Matter Action, did not have an adverse effect on the Profit of the Company for such taxable year, then there shall be no Exempt Status Matter Special Allocation to Class A or C Members for such taxable

year. In the event that the Class B Members and the Class A Members determine that there has been an adverse impact on the Profit of the Company for said taxable year (or in the event that the parties are unable to reach agreement as to whether there was an adverse impact on such Profit), the Managers of the Company shall instruct the Company's independent auditors to review the specifics of the Exempt Status Matter Action(s) that occurred during such taxable year, and any Qualifying Prior Year Exempt Status Matter Action, and to render a report, within thirty days after being retained, which will outline in reasonably sufficient detail, the economic impact, or lack thereof, that the Exempt Status Matter Action(s), and any Qualifying Prior Year Exempt Status Matter Action, had on the Company's Profit for such taxable year and/or will likely have on the Company's Profit in succeeding years ("Special Report"). The Special Report will be finalized in all events prior to filing the tax return for the fiscal year in question.

For purposes of determining whether and to what extent there has been or will be an impact on the Company's Profit, and of preparing said report; (i) the value of additional free or partial pay care required as part of an Exempt Status Matter Action shall be determined on a fee equivalent basis using Medicare rates; (ii) the cost of additional free health educational programs and seminars required as part of an Exempt Status Matter Action shall include only those additional out-of-pocket costs and expenses attributable to the publicity for or operation of such programs and seminars, and shall not include an allocation of the Center's overhead or personnel costs; (iii) opportunity costs (including lost profits) of non-clinical activities approved by the Management Committee but which have been limited or eliminated as a result of an Exempt Status Matter Action; and (iv) opportunity costs (other than as provided in clause (i) or (iii) above) and consequential and other special damages shall not be included. Each Member shall have ten (10) days after receipt of the auditors' report, to object in writing to such report. Such objection shall state in reasonable detail the basis for the Member's objection to the auditors' report. A failure to object within such ten (10) days will render the auditors' conclusions final and non-appealable for purposes of the special allocation set forth in this Section 9.06. If a Member objects to such report within said ten-day period, the Company's independent auditors shall have one week to rule on such objection and issue their final report, which report shall be conclusive and binding on the parties.

(c) Notwithstanding the provisions of Sections 9.01 and 9.02, for each taxable year of the Company in which the Members determine, or it is otherwise determined pursuant the provisions of Section 9.06(b), that an Exempt Status Matter Action has had a negative impact on the Profit of the Company, the Class A and C Members shall each receive, after giving effect to the special allocations set forth in Section 9.03, a special allocation of Profit as described in Section 9.06(d) equal to the Exempt Status Matter Special Allocation Amount (as defined below), and a corresponding amount of cash as described in Section 9.06(e) equal to the Exempt Status Matter Distribution (as defined below).

(d) The Exempt Status Matter Special Allocation Amount for the Class A and C Members shall be, for each taxable year, the product of (i) Class A or C Member's respective Percentage Interest for such taxable year, multiplied by (ii) the difference, if positive, of (A) the allocable Profit of the Company for such taxable year determined by the Company's independent auditors as though the Exempt Status Matter Action(s) were never taken (the "Estimated Allocable Net Profit") minus (B) the actual allocable Profit of the Company for such

taxable year. If Class A or C Member's Exempt Status Matter Special Allocation Amount that has accrued for any taxable year of the Company exceeds the Company's total Profit for such taxable year, the difference between such Exempt Status Matter Special Allocation Amount and the Company's total Profit for such taxable year (the "Profit Shortfall") shall be carried forward to successive taxable years and shall be allocated to Class A and C Members pursuant to the formula set forth in the first sentence of this Section 9.06(d) until such time that the Profit Shortfall is reduced to zero (*i.e.,* until the Class A and C Members have received a special allocation of Profit that cumulatively totals the aggregate of the Exempt Matter Special Allocation Amounts accrued to Class A and C Members for all taxable years of the Company).

(e) The Company shall make a distribution to the Class A and C Members (each an "Exempt Status Matter Distribution") equal to each Member's Exempt Status Matter Special Allocation Amount, as further set forth in Section 9.06(d). The Company shall make the Exempt Status Matter Distribution to the Class A and C Members, if applicable, within ninety (90) days of the issuance of the final auditors' report described in Section 9.06(b), except to the extent that the Company has insufficient cash to make such Exempt Status Matter Distributions (each a "Cash Shortfall"). If the Company experiences a Cash Shortfall and a Class A or C Member's Exempt Status Matter Special Allocation Amount exceeds the Exempt Status Matter Distribution attributable to such Exempt Status Matter Special Allocation for any taxable year (a "Member Distribution Shortfall"), the Company shall carry-forward the Member Distribution Shortfall to the successive taxable year (or taxable years, if necessary) and make a distribution to Class A and C Members of its Member Distribution Shortfall at such time or times that the Company no longer has a Cash Shortfall.

ARTICLE X
BOOKS, RECORDS, ACCOUNTING AND TAX ELECTIONS

10.01 Bank Accounts.

All funds of the Company shall be deposited in a bank account or accounts maintained in the Company's name. The Management Committee shall determine the institution or institutions at which the accounts will be opened and maintained, the types of accounts, and the Persons who will have authority with respect to the accounts and the funds therein.

10.02 Books and Records.

(a) The Management Committee shall keep or cause to be kept complete and accurate books and records of the Company and supporting documentation of the transactions with respect to the conduct of the Company's business. At a minimum, the Company shall keep the following records:

(i) A current list of

(1) the full name and last known address of each Member and Economic Interest Owner, Member Representative and Manager;

(2) the amount of cash each Member and Economic Interest Owner has contributed;

(3) a description and statement of the Agreed Value of the other property each Member and Economic Interest Owner has contributed or has agreed to contribute in the future; and

(4) the date on which each became a Member and Economic Interest Owner.

(ii) A copy of the Articles of Organization of the Company and all amendments thereto, together with executed copies of any powers of attorney pursuant to which any amendment has been executed;

(iii) Copies of the Company's federal, state, and local income tax returns and reports (including information returns), if any, for the three most recent years;

(iv) Copies of the Company's currently effective Operating Agreement;

(v) Copies of the Company's financial statements for the three most recent years;

(vi) Minutes of every meeting of the Members;

(vii) Any written consents obtained from the Members for actions taken by the Members without a meeting;

(viii) A copy of the Company's Charity Care Policy; and

(ix) Copies of the quarterly reports of charity care provided by the Company and the charitable initiatives implemented or to be implemented by the Company (subject to any reasonable record retention policy adopted by the Management Committee).

(b) The books and records shall be maintained in accordance with sound accounting practices and shall be available at the Company's principal office for examination by any Member, or any former Member (but only those books and records pertaining to the period in which he or she was a Member), or the Member's duly authorized representative at any and all reasonable times during normal business hours.

(c) Each Member shall reimburse the Company for all costs and expenses incurred by the Company in connection with the Member's inspection or copying of the Company's books and records.

(d) At the request of any Member, and at the requesting Member's expense, the Management Committee shall cause an audit of the Company's books and records to be prepared by independent accountants for the period requested by that Member.

10.03 Annual Accounting Period.

The annual accounting period and the fiscal year of the Company shall be its taxable year. The Company's taxable year shall be the annual period ending on December 31.

10.04 Accounting.

The Company shall be an accrual basis taxpayer.

10.05 Returns and Other Elections.

The Management Committee shall: (a) cause the preparation and timely filing of all tax returns required to be filed by the Company pursuant to the Code and all other tax returns deemed necessary and required in each jurisdiction in which the Company does business; (b) shall send a copy of Schedule K-1 or any successor or replacement form thereof to each Member and Economic Interest Owner as soon as the same is filed; and (c) shall cause the Company to file any other documents from time to time as may be required by any state or any subdivision thereof. All tax elections may be made by the Management Committee in its sole discretion, provided that the Management Committee shall make any tax election authorized by a vote of all the Members. However, the Management Committee may not make an election for the Company (i) to be excluded from the provisions of Subchapter K of the Code or (ii) to be treated as a corporation for federal income tax purposes, without the written consent of the Members. The determination by the Management Committee with respect to the treatment of any item or its allocation for Federal, state or local tax purposes shall be binding so long as such determination will not be inconsistent with any provision of this Agreement.

10.06 Tax Matters Partner

THOCC shall be and are designated the Tax Matters Partner (as defined in Code Section 6231) and is authorized and required (a) to represent the Company (at the Company's expense) in connection with all examinations of the Company's affairs by tax authorities, including, without limitation, administrative and judicial proceedings; (b) to expend Company funds for professional services and costs associated therewith; and (c) to keep all Members informed of all notices from government taxing authorities that may come to the attention of the Tax Matters Partner; provided, however, that: (i) upon written request by a Class A Member, a Class A Member and/or its representative may attend any particular examination or administrative or judicial proceeding; and (ii) Class B Members shall not settle any tax examination or administrative or judicial proceeding without the prior written consent of Class A Member if such settlement will be likely to have an adverse economic impact on Class A Member. The Members agree to cooperate with each other and to do or refrain from doing any and all things reasonably required to conduct such proceedings. The Company shall indemnify and save harmless the Tax Matters Partner from and against any loss, damage, liability or expense

incurred or sustained by it by reason of any act performed by it, or any failure by it to act, as the Tax Matters Partner, provided that any such act or failure to act shall not result from its willful misconduct, gross negligence or fraud.

10.07 Title to Company Property.

Except as provided in this Section, all real and personal property acquired by the Company shall be acquired and held by the Company in its name. The Management Committee may direct that legal title to all or any portion of the Company's property be acquired or held in a name other than the Company's name. Without limiting the foregoing, the Management Committee may cause title to be acquired and held in the names of trustees, nominees, or straw parties for the Company. It is expressly understood and agreed that the manner of holding title to the Company's property (or any part thereof) is solely for the convenience of the Company and all property shall be treated as Company property.

ARTICLE XI
ASSIGNMENTS

11.01 Transfers.

Except as otherwise provided in this Agreement, no Member may Transfer all, or any portion of, or any interest or rights in, its Membership Interest or Economic Interest, and no Economic Interest Owner may Transfer all, or any portion of, or any interest or rights in, its Economic Interest, including the assignment of the right to receive distributions. An Involuntary Withdrawal shall be governed by Article XIV of this Agreement.

11.02 Transfers to Affiliates.

Notwithstanding Section 11.01, a Member may transfer, without recourse, all of its Membership Interest to an Affiliate of the transferor provided such Affiliate otherwise can comply with the terms of this Agreement. If the Member transfers its Membership Interest hereunder, the transferee shall be admitted as an additional or substitute Member upon such Affiliate's written acceptance and adoption of all of the terms and provisions of this Agreement.

11.03 Transfers to Third Parties.

(a) Notwithstanding Section 11.01, after the expiration of three (3) years from the date that medical procedures are first performed at the Center, a Member or Economic Interest Owner (the "Transferor") may Transfer to a transferee (the "Transferee") all (but not less than all) of its Membership Interest or Economic Interest (the "Transferred Interest") in the Company upon receiving from the Transferor a bona fide, written, all-cash offer, if the following conditions are, or have been, satisfied:

(i) The Transferee delivers to the Company a written instrument, in a form reasonably satisfactory to Company's counsel, agreeing to be bound by the terms of this Agreement;

(ii) The Transfer will not result in the termination of the Company pursuant to Code Section 708;

(iii) The Transfer will not require registration of the Transferred Interest under any federal or state securities laws;

(iv) The Transferor or the Transferee delivers the following information to the Company: (A) the Transferee's taxpayer identification number and (B) the Transferee's initial tax basis in the Transferred Interest; and

(v) The Transferor complies with the provisions set forth in Section 11.04 (relating to the Right of First Offer) and in Section 11.05 (relating to Tag- Along Rights).

(b) If a Member transfers only its Economic Interest hereunder, the Transferee shall succeed to the Transferor's rights in the Transferred Interest, including the right to receive distributions,. except that the Transferee shall not become a Member, and shall not be entitled to vote on any matter coming before the Members, unless the Members unanimously approve the admission of the Transferee as a substitute Member.

11.04 Right of First Offer.

Except with respect to any Transfer completed in accordance with Section 11.02, if Transferor desires to Transfer all (and not less than all) of the Transferor's Membership Interest or economic Interest (the "Interest to be Transferred"), the Transferor shall notify the Company and each Member of that desire (the "Transfer Notice"). The Transfer Notice shall describe the Interest to be Transferred, the proposed Transferee, the cash to be paid for the Interest to be Transferred, and all other material terms of the Transfer. The Company and the non-transferring Members shall have the option (the "Purchase Option") to purchase the Interest to be Transferred for the Purchase Price and on the Payment Terms as set forth herein. Upon the delivery of the first Transfer Notice, the Transferor shall be and remain obligated to sell the Interest to be Transferred under this Section 11.04 until the end of the Member Transfer Period as described herein.

(a) **Purchaser.** The Interest to be Transferred shall be purchased by the Company, if the Members, other than the Transferor, unanimously consent to the purchase of the Interest to be Transferred by the Company. Otherwise, the Members, other than the Transferor, shall have the right to purchase the Interest to be Transferred. In the event that more than one Member elects to purchase the Interest to be Transferred, each Member shall have the right to purchase the Interest to be Transferred in the same proportion as that Member's Percentage Interest bears to the total Percentage Interest of all Members who have elected to purchase the Interest to be Transferred; provided, however. that if any Member declines to purchase a portion of the Interest to be Transferred, the remaining Members may purchase such portion.

(b) **Manner of Election.** The Company may elect to exercise the Purchase Option at any time prior to the thirtieth (30th) calendar day following its receipt of the Transfer

Notice (the "Company Transfer Period"), by giving written notice of its election to the Transferor. If the Company does not elect to exercise the Purchase Option within the Company Transfer Period, the Transferor shall provide written notice to each non-transferring Member of such failure. The non-transferring Members shall then have the right to elect to exercise the Purchase Option by giving written notice of such election to the Transferor, at any time prior to the thirtieth (30th) calendar day following the day the last notice of the Company's failure to exercise the Purchase Option was given to a non-transferring Member hereunder (the "Member Transfer Period"). The Company or the Members may elect to purchase all but not less than all of the Interest to be Transferred.

(c) **Transfer Closing Date.** If the Company or a Member elects to exercise the Purchase Option, the Company's or the Member's notice of its election shall fix a closing date (the "Transfer Closing Date") for the purchase, which shall not be earlier than five (5) calendar days, nor more than thirty (30) calendar days, after the expiration of the Company Transfer Period or the Member Transfer Period, as the case may be. The Transferor shall be obligated to transfer on the Transfer Closing Date the Interest to be Transferred by the Company or the Member.

(d) **Purchase Price.** The Company and the Members shall have the right to purchase the Interest to be Transferred at the price set forth in the Transfer Notice.

(e) **Payment Terms.** In the event that the Company or a Member (the "Purchaser") exercises its right to purchase the Interest to be Transferred, the Purchaser may elect to pay the purchase price on the Transfer Closing Date (i) in cash; (ii) in five equal annual installments, with the first to be paid on the Transfer Closing Date, together with interest calculated at a minimum rate per annum at which no interest will be imputed for federal income tax purposes; or (iii) on any other terms mutually agreed to by the Transferor and the Purchaser.

(f) **Closing.** On the Transfer Closing Date, the Transferor shall convey and assign to the Purchaser, by assignment with warranty of title, free and clear of all liens, claims, and encumbrances arising through the assignor, the Interest to be Transferred (or if there is more than one Purchaser, the portion purchased by that Purchaser) and shall execute and deliver to the Purchaser all documents that are reasonably required by the Purchaser to give effect to the sale and acquisition of the Interest to be Transferred, provided that the Transferor may retain a security interest in the Interest to be Transferred if the Purchaser elects to pay the Purchase Price as set forth in Section 11.04(e)(ii) above. The Transferor and the Purchaser shall take such other actions and execute such other documents as may be necessary or appropriate to give effect to any transaction contemplated by this Section.

(g) **No Election.** If the Company or the Members fail to exercise the Purchase Option, the Transferor shall be permitted to transfer the Interest to be Transferred to the proposed Transferee at the price and on the other terms set forth in the Transfer Notice for a period of ninety (90) days (the "Free Transfer Period") after the expiration of the Member Transfer Period. If the Transferor does not Transfer the Interest to be Transferred within the Free Transfer Period, the Transferor's right to Transfer the Interest to be Transferred pursuant to this Section shall cease and terminate. Any Transfer of the Interest to be Transferred made after the last day of the

Free Transfer Period without strict compliance with the terms, provisions, and conditions of this Section 11.04 and the other terms, provisions, and conditions of this Agreement, shall be null, void, and of no force or effect.

11.05 Tag-Along Rights.

(a) Except with respect to any Transfer completed in accordance with Section 11.02 or Section 11.04, each Member agrees that it shall not Transfer its Membership Interest or Economic Interest (the "Interest to be Transferred") unless the terms and conditions of such Transfer shall include an offer by the proposed transferee (the "Third Party") to purchase the Membership Interest or Economic Interest, as applicable, of the other Member ("Tag-Along Member"), at such Tag-Along Member's option and at the same price and on the same terms and conditions as apply to the selling Member (for purposes of this Section 11.05, the "Selling Member").

(b) The Selling Member shall notify the Company and the Tag-Along Member of any proposed Transfer to which the provisions of this Section 11.05 apply. Each such notice shall set forth: (i) the name of the Third Party; (ii) the address of the Third Party; (iii) the proposed amount and form of consideration and terms and conditions of payment offered by the Third Party, and any other material terms pertaining to the Transfer (the "Third Party Terms"); and (iv) that the Third Party has been informed of the "Tag-Along Rights" provided for in this Section 11.05 and has agreed to purchase the Tag-Along Member's Membership Interest or Economic Interest in accordance with the terms hereof.

(c) The Tag-Along Rights set forth above in this Section 11.05 may be exercised by the Tag-Along Member by delivery of a written notice to the Company and the Selling Member (the "Tag-Along Notice") within ten (10) business days following receipt of the notice specified in the preceding paragraph. The Tag-Along Notice shall state that the Tag-Along Member wishes to be included in the Transfer to the Third Party.

(d) Upon the giving of a Tag-Along Notice, the Tag-Along Member shall be entitled and obligated to sell its Membership Interest or Economic Interest, as applicable, to the Third Party on the Third Party Terms. After expiration of the ten (10) business day period referred to in Section 11.05(c) above, if the provisions of this Section have been complied with in all material respects, the Selling Member shall have the right for a one hundred twenty (120) day period (the "Tag-Along Free Period") to Transfer its Interest to be Transferred to the Third Party on the Third Party Terms (or on other terms no more favorable to the Selling Member) without further notice to the Tag-Along Member who have not given a Tag-Along Notice, but after such Tag-Along Free Period no such Transfer may be made without again giving notice to all Tag-Along Members of the proposed Transfer and complying with the requirements of this Section 11.05. Any Transfer of the Interest to be Transferred made after the last day of the Tag-Along Free Period without strict compliance with the terms, provisions, and conditions of this Section 11.05 and the other terms, provisions, and conditions of this Agreement, shall be null, void, and of no force or effect.

(e) At the closing of the Transfer to any Third Party (of which the Selling Member shall give the Tag-Along Member who has elected to exercise the Tag-Along Right provided by this Section 11.05 at least ten (10) Business Days' prior written notice), the Third Party shall remit to each Member the consideration for the total sales price of the Membership Interest or Economic Interest of such Member sold pursuant thereto, upon compliance by such Member with any conditions to closing generally applicable to the Selling Member and the Tag-Along Member selling its Membership Interest or Economic Interest in the transaction.

11.06 Reasonableness of Restrictions.

Each Member hereby acknowledges the reasonableness of the restrictions contained in this Article in view of the purposes of the Company, the tax-exempt status of the Class B Members and the relationship of the Members. The Transfer of any Membership Interest or Economic Interest in violation of the restrictions contained in this Article shall be deemed invalid, null and void, and of no force or effect. Any Person to whom a Membership Interest or Economic Interest, or any portion thereof, is attempted to be transferred in violation of this Article shall not be entitled to vote on matters coming before the Members, participate in the management of the Company, act as an agent of the Company, receive distributions from the Company or have any other rights in or with respect to the Membership Interest or Economic Interest, or portion thereof.

ARTICLE XII
PUT/CALL OPTIONS

12.01 General.

Within ninety (90) days of the occurrence of a Put Event or a Call Event, the Class A Members (for a Put Event) or the Class B Members (for a Call Event) may trigger their respective rights for the Class B Members to acquire all, but not less than all, of the Class A Members' Membership Interest by giving the Put/Call Notice (as defined below). Upon receipt of the Put/Call Notice, the Class A Members shall be obligated to sell their Membership Interest to the Class B Members for the Put/Call Value (as determined pursuant to Section 12.04 below). Notwithstanding the foregoing, other than with respect to a Change in Control, the Class B Members' right to buy the Class A Members' Membership Interest as set forth in this Article XII shall not be exercisable until (i) one year after the commencement of medical procedures at the Center and (ii) ninety (90) days after the either the Class A or B Members have provided their Put/Call Notice to the other Members, during which time the Class A and B Members shall make a reasonable best effort to come to an amicable settlement of their differences or the amicable sale of either or both parties' Membership Interest.

12.02 Put/Call Notice.

The Put/Call Notice shall (a) be in writing signed by either the Class A or B Members, as applicable; (b) include the closing date (the "Closing Date") for such purchase, which Closing Date shall be no fewer than ninety (90) calendar days after the date of the other Members' receipt of the Put/Call Notice; (c) include the Deposit required pursuant to Section 12.05 below if a Call

Event; (d) include the terms and conditions of the offer in accordance with this Article (other than the purchase price, which shall be the Put/Call Value determined pursuant to Section 12.04 below); and (e) include adjustments to be made to the purchase price on the Closing Date, if any.

12.03 Payment Terms.

The Class B Members may elect to pay the Put/Call Value on the Closing Date (i) in cash; (ii) in twenty equal quarterly installments, with the first to be paid on the Closing Date, together with interest at a fixed annual rate equal to the Prime Rate in effect as of the Put/Call Notice plus one percent (1%); or (iii) on any other terms mutually agreed to by the Class A and B Members.

12.04 Put/Call Value.

The term Put/Call Value means the appraised fair market value of the Class A Members' Membership Interest in the Company as hereinafter provided. The Class A and B Members shall each appoint, by written notice to the other within thirty (30) days after the Put/Call Notice, an appraiser to determine the fair market value of the Class A Members' Membership Interest (without any discount for lack of voting rights, marketability or control) being sold as of the last day of the month immediately preceding the month in which the Put/Call Notice was delivered. If the two appraisers agree upon the value of the Class A Members' Membership Interest, they shall jointly render a single written report stating that value. If the two appraisers cannot agree upon the value of the Class A Members' Membership Interest, they shall each render a separate written report and shall appoint a third appraiser within thirty (30) days of their appointment. The third appraiser shall determine the value of the Class A Members' Membership Interest being sold and shall render a written report of his or her opinion thereon. The value contained in the aforesaid joint written report or written report of the third appraiser, as the case may be, shall be the Put/Call Value. However, if the value of the Class A Members' Membership Interest contained in the appraisal report of the third appraiser is more than the higher of the first two appraisals, the higher of the first two appraisals shall be the Put/Call Value and if the value of the Class Members' Membership Interest contained in the appraisal report of the third appraiser is less than the lower of the first two appraisals, the lower of the first two appraisals shall be the Put/Call Value. If either party fails to timely appoint an appraiser or either appraiser fails to timely render a report, the value contained in the timely-rendered report of the timely-appointed appraiser shall be the Put/Call Value and there shall be no need to appoint a third appraiser. Each party shall pay the fees and costs of the appraiser appointed by that party, and the fees and other costs of the third appraiser shall be shared equally by both parties.

Notwithstanding any provision in this Article XII to the contrary, in the event of a Call Event, the Class B Members may, within ten (10) days of the final determination of the Put/Call Value pursuant to this Section 12.04, elect to rescind its offer to purchase the Membership Interest of the Class A Members without liability to the other (except the payment of its portion of the costs of a third appraiser, if any, as provided in Section 12.04) and any deposit paid by the Class B Members pursuant to Section 12.05 shall be returned to the Class B Members.

12.05 Deposit.

In the event a Call Event, the Put/Call Notice shall be accompanied by a deposit in the amount of one hundred thousand dollars ($100,000) (the "Deposit"), in the form of a certified or cashier's check made payable to a nationally recognized title insurance company, as escrow agent (the "Escrow Agent"). Concurrently with depositing a check or making the wire transfer, the Class B Members shall provide to the Escrow Agent a duly-completed IRS Form W-9 with the Class B Members' respective employer identification number for the Escrow Agent's use in depositing the check or federal funds in an interest-bearing account. The costs for the services of the Escrow Agent shall be paid at Closing, one-half by each of the Class A and B Members.

12.06 Escrow Agreement.

By execution of this Agreement, the Class A and B Members agree that the Escrow Agent shall hold the Deposit and any and all interest accrued thereon (collectively, also the "Deposit") in escrow and shall dispose of the Deposit only in accordance with the following provisions:

(a) The Escrow Agent shall deliver the Deposit, or such portion thereof as is required to be delivered hereunder, to the Class A Members or to the Class B Members, as the case may be, as follows:

(i) to the Class A Members, or otherwise at the direction of the Class A Members in accordance with their respective Percentage Interests, upon completion of the Closing Date, in which case the Deposit shall be applied toward the Put/Call Value; or

(ii) to the Class A Members, in accordance with their relative Percentage Interests, after receipt of the Class A Members' demand in which the Class A Members certify that the Class B Members have defaulted under this Article, and the Class A Members are thereby entitled to receive the Deposit; but the Escrow Agent shall not honor the Class A Members' demand until more than ten (10) days after the Escrow Agent has transmitted a copy of the Class A Members' demand to the Class B Members, nor thereafter if the Escrow Agent receives a Notice of Objection (hereinafter defined) from the Class B Members within such ten (10) day period; or

(iii) to the Class B Members, after receipt of the Class B Members' demand in which the Class B Members certify that the Class A Members have defaulted under this Article, and the Class B Members are thereby entitled to receive the Deposit; but the Escrow Agent shall not honor the Class B Members' demand until more than ten (10) days after the Escrow Agent has transmitted a copy of the Class B Members' demand to the Class A Members, nor thereafter if Escrow Agent receives a Notice of Objection (hereinafter defined) from the Class A Members within such ten (10) day period; or

(iv) to any party, at the direction of both the Class A and B Members.

Upon delivery of the Deposit in accordance with the terms and conditions herein, the Escrow Agent shall be relieved of all liability hereunder and with respect to the Deposit. The Escrow Agent shall deliver the Deposit, at the election of the party or parties entitled to receive the same, by (i) a good, unendorsed certified check or checks of the Escrow Agent payable to the order of such party or parties, (ii) an endorsed official bank or cashier's check or checks payable to the order of such party or parties, or (iii) a bank wire transfer or transfers of immediately available funds to an account designated by such party or parties.

(b) Upon receipt of a written demand under Subsection 12.06(a)(ii) or under Section 12.06(a)(iii) above, the Escrow Agent shall promptly transmit a copy of such demand to the other Members. Within ten (10) days after the date of transmitting the same, but not thereafter, the other Members may object to the delivery of the Deposit to the Members requesting the Deposit by transmitting a notice of objection (a "Notice of Objection"') to the Escrow Agent. After receiving a Notice of Objection, the Escrow Agent shall promptly transmit a copy of such Notice of Objection to the Members requesting the Deposit; and thereafter, the Escrow Agent shall continue to hold the Deposit until the Escrow Agent receives a written agreement of the Class A and B Members directing the disbursement of the Deposit, in which event the Escrow Agent shall disburse the applicable Deposit in accordance with such agreement. In the event of any litigation between the Class A and B Members relating to the Deposit, the Escrow Agent will deposit the Deposit with the clerk of the court in which such litigation is pending. In the event the Deposit is deposited in court by the Escrow Agent pursuant to the foregoing sentence, the Escrow Agent shall be entitled to rely upon the judgment of such court.

(c) The Escrow Agent may rely on the foregoing provisions in lieu of an escrow agreement with the Members. Notwithstanding the foregoing, in the event that the Escrow Agent requests a commercially reasonable written agreement embodying the foregoing provisions, the Class A and B Members shall promptly execute such an agreement. If either the Class A or Class B Members shall fail to execute such agreement within five (5) days after transmittal thereof, or if the agreement materially differs from the terms hereof, upon such determination of either the Class A or B Members, then either the Class A or B Members may direct the Escrow Agent to transfer the check to another Escrow Agent who will not require a separate written escrow agreement.

(d) When the Deposit check is deposited with the Escrow Agent, the Escrow Agent shall be instructed in writing that the Escrow Agent's acceptance of the check as a Deposit will constitute acceptance by the Escrow Agent of the terms and conditions set forth herein, and the Escrow Agent shall be provided with a copy of this Article with such Deposit.

12.07 Closing Date.

(a) The sale and acquisition of the Class A Members' Membership Interest (the "Closing") shall occur on the Closing Date through the offices of the Escrow Agent, in escrow. At such Closing, the Class A Members shall convey and assign to the Class B Members by assignment with warranty of title, free and clear of all liens, claims, and encumbrances arising through the assignor, the Class A Members' Membership Interest and shall execute and deliver to

the Class B Members all documents that are reasonably required to give effect to the sale and acquisition of the Class A Members' Membership Interest. The Class A Members' obligation to transfer its Membership Interest shall be conditioned upon the Class B Members' payment of the Put/Call Value. The Class A and B Members shall take such other actions and execute such other documents as may be necessary or appropriate to give effect to any transaction contemplated by this Article.

(b) All loans made or deemed made by or to the Class A Members shall be repaid in full (including all accrued but unpaid interest thereon) at the Closing. No transaction pursuant to this Section shall relieve the Class A Members from any duty or obligation owed to the Company or to the other Members to the extent such obligation accrued and is properly attributable to the period prior to the Closing Date, nor shall it constitute a waiver or release of claims with respect thereto. The Class B Members shall defend, indemnify and hold harmless the Class A Members from all obligations and liabilities arising from the Class A Members' Membership Interest accruing and properly attributable to the period beginning on the Closing Date, and the Class A Members shall defend, indemnify and hold harmless the Class B Members from all obligations and liabilities arising from the Class A Members' Membership Interest accruing and properly attributable to the period prior to the Closing Date. The foregoing sentence shall survive the Closing and shall not require further documentation to take effect, but, if requested by either the Class A or B Members, both the Class A and B Members will execute a reasonable confirming document that is consistent with the foregoing provisions.

(c) If at the Closing Date, the Class A Members or their respective Affiliates or related entities, shall have any guarantees, collateral or covenants lodged with third parties to secure any indebtedness, liability or obligation of the Company, including any liability under nonrecourse caveats, or shall have outstanding any commitment to give such guarantees, collateral or covenants ("Personal Liability"), the Class B Members shall deliver or cause to be delivered to the Class A Members, no later than the Closing Date, a cancellation of such Personal Liability. As an alternative to the foregoing, the Class A Members, at their election, may accept the Class B Members' indemnity for all manner of loss, claims and damages that could arise as a result of any Personal Liability, so long as (i) such indemnity is supported by an irrevocable clean letter of credit in an amount equal to the maximum potential Personal Liability (as reasonably determined by the Class A Members) and (ii) such letter of credit is payable at sight, renewable annually, issued by a nationally recognized United States banking institution and is otherwise reasonably acceptable to the Class A Members. The foregoing letter of credit shall remain in full force and effect until the Personal Liability is released.

(d) In the event that the Class A Members shall be prohibited under the terms of any debt or other obligation of the Company from selling its Membership Interest to the Class B Members without the consent of or payment to a third party, or otherwise is prohibited from consummating this transaction without the consent of or payment to a third party to whom a debt or other obligation of the Company is owed, then in such event, such debt or other obligation of the Company giving rise to such prohibition, as the case may be, shall be fully discharged by the Class B Members on the Closing Date and any prepayment fee, premium or cost shall be paid by the Class B Members, unless the appropriate mortgagee or other creditor or obligee shall permit

such transfer to be made, in which case the Class B Members shall pay all costs and fees related to obtaining such consent to the transfer.

12.08 Default.

(a) In the event of a default by the Class A or B Members under this Article (the "Defaulting Member"), the Class A or B Members that are ready, willing and able to close the transaction (the "Non-defaulting Member") shall have the right to purchase the Defaulting Member's Interest at a price equal to 75% of the purchase price that would have been payable on the Closing Date.

(b) Because a Membership Interest in the Company is a unique asset, the Non-defaulting Member shall have all remedies available at law and equity with respect to any failure by a Defaulting Member to perform, including, without limitation the right to specific performance and to recover attorneys' fees and litigation costs. In lieu of the foregoing and all other remedies, at the election of the Non-defaulting Member, if the Defaulting Member fails to close on the purchase of the membership Interest in accordance with the terms of this Article, the non-defaulting Member shall retain the Deposit, as complete and liquidated damages and not as a penalty.

12.09 Tag-Along Rights.

(a) In the event of a Put Event or a Call Event, the Class C Members shall each have the right to request that its Membership Interest be purchased by the Class B Members under the same terms and conditions as the Class A Members' Membership Interest is purchased under this Article ("Class C Member Tag-Along Rights").

(b) The Class B Members shall notify the Class C Members of any proposed purchase of the Class A Members' Membership Interest pursuant to this Article.

(c) The Tag-Along Rights set forth above in this Section 12.09 may be exercised by each Class C Member by delivery of a written notice to the Class B Members (the "Tag-Along Notice") within ten (10) business days following receipt of the notice specified in the preceding paragraph. The Tag-Along Notice shall state that the Class C Member wishes to have its Membership Interest purchased by the Class B Members in accordance with the terms of this Article.

(d) Upon the giving of a Tag-Along Notice, the Class C Members shall be entitled and obligated to sell its Membership Interest or Economic Interest, as applicable, to the Class B Members as of the Closing (as defined in Section 12.07) at the Put/Call Value (as determined pursuant to Section 12.04 – the Class C Members shall have no right to appoint an appraiser to establish the Put/Call Value which Put/Call Value shall be determined solely by the Class A and B Members in accordance with Section 12.04). In addition, the Class B Members and the Class C Members selling their Membership Interests pursuant to this Section 12.09 shall both comply Sections 12.07(b), (c) and (d) as to those Class C Members selling their Membership Interests.

(e) At the Closing, the Class B Members shall remit to each Class C Member who exercised Class Member Tag-Along Rights the consideration for the total sales price of the Membership Interest or Economic Interest of such Class C Member

ARTICLE XIII
ADDITIONAL MEMBERS

13.01 Additional Members.

The Class A and B Members, acting unanimously, shall have the right to admit additional Members upon such terms and conditions, at such time or times, and for such contributions as shall be determined by such Members, and in connection with any such admission, the Management Committee shall have the right to amend Exhibit A to reflect the name, address, contribution, taxpayer identification number and Percentage Interest of the admitted Member. The admission of any Person as a substitute or additional Member shall be conditioned upon such Person's written acceptance and adoption of all the terms and provisions of this Agreement.

Provided, however, the HHC Managers after consultation with the Class A Managers at a regularly scheduled Management Committee meeting may unilaterally approve a new Class C Member who is either (a) both (i) board certified or board eligible in either orthopedics or neurosurgery and (ii) is an Eligible Physician Investor as defined in Section 2.02(b) ("New Class C Investors"); or (b) an entity owned entirely by New Class C Investors that complies with Section 2.02(c) of this Agreement.

Within a reasonable time period following the addition of a new Member(s) (including a New Class C Investor), the Class B Members shall make such capital contributions as necessary, to maintain its Percentage Interest at fifty one (51%) percent. The Members otherwise specifically waive any preemptive rights.

13.02 Additional Owners of the Class A and C Members.

Prior to adding a new owner to a Class A or C Member, directly or indirectly, the Class A or C Member (as applicable) shall provide at least thirty (30) days' prior written notice to the Class B Members with a description of the of proposed new owner in the Class A or C Member and the Class B Members must approve the addition of such new owner to the Class A or C Member; provided, however, such approval will not be unreasonably withheld, conditioned or delayed. Provided, further, that the approval requirements of this Section 13.02 shall not apply to any new owner (direct or indirect) of the Class A or C Member who is also providing substantially all of his/her/its professional services through a practice entity with current owners in the Class A or C Member (e.g., an associate of a PC with owners who are owners in the Class A or C Member would not require approval by the Class B Members to become an owner in the Class A or C Member, or, if a PC is merged into a PLLC that currently has owners in the Class A or C Member, the members of PC could become owners in the Class A or C Member without approval by the Class B Members); however, the Class A or C Member will still provide notice to the Class B Members of the addition of all new owners in the Class A or C Member even if such new owner does not require Class B Members approval.

ARTICLE XIV
WITHDRAWALS OF MEMBERS

14.01 Voluntary Withdrawal.

No Member or Economic Interest Owner shall have the right or power to Voluntarily Withdraw from the Company, except as otherwise provided by this Agreement. Except in connection with an Involuntary Withdrawal, a Class C Member may not withdraw or resign from the Company at any time prior to either the fifth (5th) anniversary of such Class C Member becoming a Class C Member of the Company or the fifth (5th) anniversary of the date on which the Center begins operation, whichever is later. If a Class C Member withdraws or resigns as a Member in violation of this Section 14.01, such Class C Member hereby agrees that such withdrawal or resignation will constitute a breach of this Agreement and an Involuntary Withdrawal. The Company may offset any damages due to such a breach against any amounts otherwise distributable to such Class C Member in addition to any remedies otherwise available to the Company. No assessment of damages shall account for or be based on the volume or value of business generated by such Class C Member.

14.02 Involuntary Withdrawal.

Immediately upon the occurrence of an Involuntary Withdrawal, the successor of the withdrawn Member or Economic Interest Owner shall thereupon become an Economic Interest Owner but shall not become a Member without the unanimous vote of the remaining Members. The successor Economic Interest Owner shall have all the rights of an Economic Interest Owner, subject to the provisions of this Agreement, including the obligation to sell its Economic Interest under Section 14.03. However, neither the withdrawn Member or Economic Interest Owner nor the successor Economic Interest Owner shall be entitled to receive, in liquidation of the withdrawn Member's Membership Interest or Economic Interest Owner's Economic Interest, the fair market value of the withdrawn Member's Membership Interest or Economic Interest Owner's Economic Interest as of the date the Member or Economic Interest Owner Involuntarily Withdrew from the Company, except as otherwise provided by this Agreement.

14.03 Right to Buy Interest.

Upon the Involuntary Withdrawal of a Member or an Economic Interest Owner, the Company and the Members (the "Purchasing Members"), other than the Withdrawn Member (as defined below), shall have the right to purchase all, but not less than all, of a Withdrawn Member's Economic Interest, who shall be obligated to sell, upon the receipt of an Election Notice and for the Purchase Price and on the Payment Terms as set forth herein.

(a) **Withdrawn Member** means a Member or an Economic Interest Owner who has suffered an Involuntary Withdrawal and its successors or assigns.

(b) **Transfer Period**. Upon the occurrence of the Involuntary Withdrawal, the Withdrawn Member shall be and remain obligated to sell its Economic Interest for a period (the "Transfer Period") ending at 11:59 p.m. local time at the Company's principal office on the sixtieth (60th) day following the day the Members, other than the Withdrawn Member, receive actual written notice of the Involuntary Withdrawal.

(c) **Purchaser.** If the Withdrawn Member is a Class B Member, the other Class B Member shall have the right to purchase the Withdrawn Member's Economic Interest in accordance with this Section 14.03. If the Withdrawn Member is a Class A Member or a Class C Member, the Withdrawn Member's Economic Interest shall be purchased by the Company if the Management Committee consents to the purchase of the Economic Interest by the Company. Otherwise, the Purchasing Members shall have the right to purchase the Withdrawn Member's Economic Interest. In the event that more than one Member elects to purchase the Withdrawn Member's Economic Interest, each Member shall have the right to purchase the Withdrawn Member's Economic Interest in the same proportion as that Member's Percentage Interest bears to the total Percentage Interest of all Members who have elected to purchase the Withdrawn Member's Economic Interest.

(d) **Manner of Election**. At any time during the Transfer Period, the Company or a Member may elect to purchase the Withdrawn Member's Economic Interest by giving written notice of its election to the Withdrawn Member (the "Election Notice"). If such

election is not made within the Transfer Period, any right to purchase the Withdrawn Member's Economic Interest shall be waived except as otherwise provided in this Agreement.

(e) **Transfer Closing Date.** If the Company or a Member elects to purchase the Withdrawn Member's Economic Interest, the Company's or the Member's notice shall fix a closing date (the "Transfer Closing Date") for the purchase, which shall not be earlier than five (5) days after the expiration of the Transfer Period, nor more than sixty (60) days after the expiration of the Transfer Period.

(f) **Purchase Price.** The Purchase Price for the Withdrawn Member's Economic Interest shall be the Appraised Value of the Withdrawn Member's Economic Interest, as determined under Section 14.04.

(g) **Payments Terms.** In the event that a Member or the Company (the "'Purchaser") exercises its right to purchase the Withdrawn Member's Economic Interest, the Purchaser may elect to pay the purchase price on the Transfer Closing Date (i) in cash, (ii) in five equal annual installments, with the first installment to be paid on the Transfer Closing Date, together with interest calculated at a minimum rate per annum at which no interest will be imputed for federal income tax purposes, or (iii) on any other terms mutually agreed to by the Withdrawn Member and the Purchaser.

(h) **Closing.** The sale and acquisition of the Withdrawn Member's Economic Interest (the "Closing") shall occur on the Transfer Closing Date. At such Closing, the Withdrawn Member shall convey and assign to the Purchaser by assignment with warranty of title, free and clear of all liens, claims, and encumbrances arising through the assignor, the Economic Interest of the Withdrawn Member and shall execute and deliver to the Purchaser all documents that are reasonably required to give effect to the sale and acquisition of such Economic Interest, provided that the Withdrawn Member may retain a security interest in the Economic Interest if the Purchaser elects to pay the Purchase Price in five equal annual installments as set forth in Section 14.03(g)(ii). The Withdrawn Member and the Purchaser shall take such other actions and execute such other documents as may be necessary or appropriate to give effect to any transaction contemplated by this Section.

14.04 Appraised Value.

The term "Appraised Value" means the appraised fair market value of an Economic Interest in the Company as hereinafter provided. The Company and the Withdrawn Member, under Section 14.03, shall each appoint, by written notice to the other within ten days of the date of the Election Notice, an appraiser to determine the fair market value of the Economic Interest (without any discount for lack of voting rights, marketability or control) being sold as of the date of the Involuntary Withdrawal. If the two appraisers agree upon the value of the Economic Interest, they shall jointly render a single written report stating that value. If the two appraisers cannot agree upon the value of the Economic Interest, they shall each render a separate written report and shall appoint a third appraiser within thirty (30) days of their appointment. The third appraiser shall determine the value of the Economic Interest being sold and shall render a written report of his or her opinion thereon. The value contained in the aforesaid joint written report or

written report of the third appraiser, as the case may be, shall be the Appraised Value. However, if the value of the Economic Interest contained in the appraisal report of the third appraiser is more than the higher of the first two appraisals, the higher of the first two appraisals shall be the Appraised Value and if the value of the Economic Interest contained in the appraisal report of the third appraiser is less than the lower of the first two appraisals, the lower of the first two appraisals shall be the Appraised Value. If either party fails to timely appoint an appraiser, or either appraiser fails to timely render a report, the value contained in the timely-rendered report of the timely-appointed appraiser shall be the Appraised Value and there shall be no need to appoint a third appraiser. Each party shall pay the fees and costs of the appraiser appointed by that party, and the fees and other costs of the third appraiser shall be shared equally by both parties.

ARTICLE XV
DISSOLUTION AND TERMINATION

15.01 Dissolution.

The Company shall be dissolved and subsequently terminated upon:

(a) the unanimous vote or written consent of the Class A and B Members to dissolve the Company, or as set forth in Section 14.04; or

(b) the Company has been sanctioned or excluded from participation in any federal health care program.

15.02 Winding Up and Liquidation.

When the Company is dissolved, the business and property of the Company shall be wound up and liquidated by the Management Committee or a liquidator designated by the Members (the "Liquidating Trustee"). The Management Committee or the Liquidating Trustee shall use his or her or its best efforts to reduce to cash and cash equivalent items, such assets of the Company as the Management Committee or the Liquidating Trustee shall deem it advisable to sell, with consideration to obtaining fair value for such assets, and any tax or other legal considerations.

15.03 Distributions.

On winding up of the Company, the assets of the Company shall be distributed, first to creditors of the Company, including Members and Economic Interest Owners who are creditors, in satisfaction of the liabilities of the Company, and then to the Members and Economic Interest Owners in accordance with the balances in their respective Capital Accounts, after taking into account all contributions, distributions, and allocations for all periods.

15.04 Negative Capital Accounts.

Except as otherwise provided in this Agreement, no Member or Economic Interest Owner shall be obligated to restore a Negative Capital Account to the Company, and such deficit shall not be considered a debt owed to the Company or any other person for any purpose whatsoever.

ARTICLE XVI
DEFINITIONS

The following capitalized terms shall have the meanings specified in this Article XVI. Other terms are defined in the text of this Agreement, and throughout this Agreement, those terms shall have the meanings respectively ascribed to them.

Act.

"Act" shall mean the Connecticut Limited Liability Company Act, as amended from time to time.

Adjusted Capital Account Deficit.

"Adjusted Capital Account Deficit" means, with respect to any Member or Economic Interest Owner, the deficit balance, if any, in the Member's or Economic Interest Owner's Capital Account as of the end of the relevant taxable year, after giving effect to the following adjustments:

(i) the Member's or Economic Interest Owner's Capital Account shall be increased by the amount that the Member or the Economic Interest Owner is obligated to restore, or is deemed obligated to restore pursuant to Regulation Section 1.704-1(b)(2)(ii)(c) and the penultimate sentences of Regulation Sections 1.704-2(g)(1) and 1.704-2(i)(5); and

(ii) the Member's or Economic Interest Owner's Capital Account shall be decreased by the items described in Regulation Sections 1.704-1(b)(2)(ii)(d)(4), (5), and (6). The foregoing definition of Adjusted Capital Account Deficit is intended to comply with the provisions of Section 1.704-1(b)(2)(ii)(d) of the Regulations and shall be interpreted consistently therewith.

Affiliate.

'"Affiliate" shall mean, with respect to a Member, any other Person that directly, or indirectly through one or more intermediaries, controls, is controlled by, or is under common control with, the Member. For purposes of Article XI only, "Affiliate", in the case of Class A or C Member, shall additionally mean any other Person that directly, or indirectly through one or more intermediaries, is controlled by fully licensed orthopedic surgeons on the active member staffs of either of the Class B Members. ("Control," for purposes of this definition, shall mean having the ability to elect a minimum of 75% of the governing body of such Person). Finally, "Affiliate", in the case of the Class A Members, shall additionally include Constitution Surgery Center, LLC and any other Person that directly, or indirectly through one or more intermediaries, controls, is controlled by, or is under common control with, Constitution Surgery Centers, LLC.

Agreed Value.

"Agreed Value" shall mean the fair market value of an asset as of the date of valuation, which shall be determined by the unanimous agreement of the Class A and B Members or, if they cannot so agree, by an independent appraiser selected by the Management Committee.

Applicable Law.

"Applicable Law" shall mean each and every applicable federal, state or local law, statute, charter, ordinance, rule, regulation, order, license certification and accreditation standard of any governmental, regulatory or administrative agency or authority or court or other tribunal, including but not limited to the Connecticut Public Health Code and any decision issued by the Connecticut Office of Health Care Access with regard to the application for a certificate of need to be filed with respect to the Center.

Arbitrable Issue.

"Arbitrable Issue" shall mean any one or more of the following: (i) an alleged breach of this Agreement; (ii) a dispute regarding the interpretation or implementation of this Agreement, including without limitation the Company's Charity Care Policy; or (iii) whether an Exempt Status Matter Action has a Material Adverse Effect.

Articles of Organization.

"Articles of Organization" shall mean the Articles of Organization of the Company as filed with the Connecticut Secretary of the State, as amended from time to time.

Call Event.

"Call Event" shall mean any of the following: (a) the Class B Members have determined that that the continued existence and/or operation of the Company could jeopardize the status of either Class B Member as a tax-exempt organization under Code Section 501(a) as an organization described in Code section 501(c)(3); (b) the Class B Members learn or receive

written notification that the Class A Member has experienced a Change in Control; or (c) there exists a bona fide dispute between the Members regarding one or more of the matters below, that has not been resolved after a good faith attempt by the Members to resolve such dispute pursuant to the dispute resolution procedures described in Section 17.15(a) of this Agreement:

(i) a proposed capital expenditure, or series of capital expenditures over a continuous three-year period in the aggregate, of $1,000,000 or more (not including the capital expenditures to be financed pursuant to the plan of capitalization outlined in Section 3.01 hereof);

(ii) the proposed merger or consolidation of the Company with or into another Person;

(iii) the proposed sale of all or substantially all of the assets of the Company;

(iv) the proposed borrowing of money, or incurring a debt, for or on behalf of the Company in excess of $750,000 (not including the debt commitment described in the plan of capitalization outlined in Section 3.01 hereof); or

(v) the proposed dissolution of the Company.

Capital Account.

"Capital Account" shall mean the account maintained by the Company for each Member and Economic Interest Owner in accordance with the following provisions:

(i) a Member's or Economic Interest Owner's Capital Account shall be credited with the Member's or Economic Interest Owner's Capital Contributions, the amount of any Company liabilities assumed by the Member or the Economic Interest Owner (or that are secured by Company property distributed to the Member or the Economic Interest Owner), the Member's or Economic Interest Owner's distributive share of Profit, and any item in the nature of income or gain specially allocated to such Member or Economic Interest Owner pursuant to the provisions of Article IX (other than Section 9.04); and

(ii) a Member's or Economic Interest Owner's Capital Account shall be debited with the amount of money and the fair market value of any Company property distributed to the Member or the Economic Interest Owner, the amount of any liabilities of the Member or the Economic Interest Owner assumed by the Company (or that are secured by property contributed by the Member or the Economic Interest Owner to the Company), the Member's or Economic Interest Owner's distributive share of Loss, and any item in the nature of expenses or loss specially allocated to the Member or the Economic Interest Owner pursuant to the provisions of Article IX (other than Section 9.04).

If any Economic Interest is transferred pursuant to the terms of this Agreement, the transferee shall succeed to the Capital Account of the transferor to the extent the Capital Account

is attributable to the transferred Economic Interest. If the book value of Company property is adjusted pursuant to Section 9.03(d), the Capital Account of each Member and Economic Interest Owner shall be adjusted to reflect the aggregate adjustment in the same manner as if the Company had recognized gain or loss equal to the amount of such aggregate adjustment.

In connection with a Capital Contribution of money or other property (other than a *de minimis* amount) by a new or existing Member or Economic Interest Owner as consideration for an Economic Interest or Membership Interest, or in connection with the liquidation of the Company or a distribution of money or other property (other than a *de minimis* amount) by the Company to a retiring Member or Economic Interest Owner (as consideration for an Economic Interest or Membership Interest), the Capital Accounts of the Members shall be adjusted to reflect a revaluation of Company property (including intangible assets) to its Agreed Value in accordance with Regulation Section 1.704-l(b)(2)(iv)(f). Any differences in the adjusted tax basis of Company property and the Agreed Value hereunder shall be accounted for under the principles set forth in Section 9.04.

It is intended that the Capital Accounts of all Members and Economic Interest Owners shall be maintained in compliance with the provisions of Regulation Section 1.704-1(b), and all provisions of this Agreement relating to the maintenance of Capital Accounts shall be interpreted and applied in a manner consistent with that Regulation.

Capital Contribution.

"Capital Contribution" shall mean any contribution to the capital of the Company in cash or property by a Member or Economic Interest Owner whenever made.

Center.

"Center" shall mean the outpatient orthopedic surgical center to be operated by the Company in Southington, Connecticut.

Change in Control.

"Change in Control" means:

(a) With respect to a Class A or C Member, less than fifty-one percent (51%) of the ownership interests in Class A or C Member are owned by fully-licensed surgeons specializing in either orthopedics or neurosurgery who are then on the active medical staffs of the Class B Members; and

(b) With respect to Class B Members within one year after a merger or other reorganization involving Persons other than Affiliates of Class B Members, more than fifty percent (50%) of the Persons electing the Board of Directors of Class B Members are different than the Persons electing the Board of Directors of Class B Members immediately prior to such reorganization.

Charity Care Policy.

"Charity Care Policy" shall mean the charity care policy attached as Exhibit D to this Agreement, as amended from time to time by the Management Committee or as provided in this Agreement.

Claim.

"Claim" shall mean any action, suit, audit, proceeding, hearing, investigation, litigation, charge, complaint, claim, assessment or demand.

Class A Managers.

"Class A Managers" shall mean the individual Managers designated by the Class A Members pursuant to Section 6.01(a) hereof.

Class A Member.

"Class A Member" shall mean _____ and _____ or any Affiliate of _____ or _____to which _____ or _____ has assigned its Membership Interest pursuant to Section 11.02 hereof.

Class B Members.

"Class B Member" shall mean Midstate and THOCC or any Affiliate of Hartford HealthCare to which the Class B Member has assigned the Class B Member's Membership Interest pursuant to Section 11.02 hereof.

Class C Member.

"Class C Member" shall mean either (a) physicians who meet the requirements set forth in Section 2.02(b) hereof or (b) an entity owned entirely by physicians who meet the requirements set forth in Section 2.02(c) hereof.

Code.

"Code" shall mean the Internal Revenue Code of 1986, as amended, or the corresponding provisions of subsequent and superseding federal revenue laws.

Company.

"Company" shall mean _____ Surgery Center, LLC.

Competition Affiliate.

"Competition Affiliate" shall mean, with respect to a Member or Economic Interest Owner, any other Person that directly, or indirectly through one or more intermediaries, controls, is controlled by, or is under common control with such Member or Economic Interest Owner. "Competition Affiliate" shall additionally mean, with respect to the Class A Members, THC and any Person who is the direct or indirect owner of a beneficial interest in, or a direct or indirect stockholder of, a Class A Member or THC.

Costs.

"Costs" shall mean any and all liabilities, losses, damages, Claims, sanctions, exclusions, taxes, interest, penalties, fines, costs and expenses (including without limitation, reasonable expenses of investigation and court costs, reasonable attorneys' fees and disbursements and the reasonable fees and disbursements of other professionals).

Economic Interest.

"Economic Interest" shall mean a Member's or Economic Interest Owner's share of the Profit and Loss of and the right to receive distributions from the Company pursuant to this Agreement and the Act, but shall not include any right to participate in the management or affairs of the Company, including the right to vote on, consent to, or otherwise participate in any decision of the Members.

Economic Interest Owner.

"Economic Interest Owner" shall mean the owner of an Economic Interest who is not a Member.

Exempt Status Matter.

"Exempt Status Matter" is any matter that the Class B Members, acting through its Member Representatives, or the HHC Managers, in its sole, but reasonable, discretion believes involves one or more of the following areas:

(i) the amendment of the Charity Care Policy, which policy has been adopted by the Company in furtherance of the Class B Members' charitable purposes including, but not limited to, promoting health for a broad section of the community;

(ii) the initiation and implementation of charitable initiatives in furtherance of the Class B Members' charitable purposes (in addition to that provided for in the Charity Care Policy) including, but not limited to, promoting health for a broad section of the community;

(iii) ensuring that the Company's policies and/or operations neither jeopardize the tax-exempt status of the Class B Members nor generate any "unrelated business taxable income" for the Class B Members as such term is used in Code section 512(a);

(iv) ensuring that the Company satisfies its obligation to further the charitable purpose of promoting health for a broad section of the community;

(v) ensuring that any Person contracted with, employed or retained to manage any part of the activities or operations of the Company is legally obligated, in performing its duties to the Company, to further the Class B Members' charitable purposes, including but not limited to, requiring the preparation and submission to the Management Committee of quarterly reports on the charity care provided, and charitable care initiatives implemented or to be implemented, by the Company;

(vi) the termination of any management agreement or other arrangement entered into with any Person to manage any part of the activities or operations of the Company if the HHC Managers determine, in their sole, but reasonable, discretion, that such Person is not acting to further (or is acting contrary to) the Class B Members' charitable purposes; and

(vii) the removal of any officer of the Company if the HHC Managers determine, in their sole, but reasonable, discretion that such officer is not acting to further (or is acting contrary to) the Class B Members' charitable purposes, but such removal be without prejudice to the contract rights, if any, of the person so removed.

Exempt Status Matter Action.

"Exempt Status Matter Action" shall mean that the Class B Members, or its Member Representatives or the HHC Managers, have exercised its or their rights under Section 4.06(b), Section 6.09(b) or Section 17.05(b) unilaterally to cause the Company to take action, without the consent of the Class A Members or the Class A Managers; provided however, that an Exempt Status Matter Action shall not include any action to enforce Applicable Law, this Agreement or the Company's Charity Care Policy.

Exempt Status Matter Allocation.

'"Exempt Status Matter Allocation" shall mean a special allocation of Profit as required and calculated pursuant to Section 9.06 hereof.

Free Cash Flow.

"Free Cash Flow" shall mean:

(a) the Profit or Loss for each year;

(b) plus non-cash charges and expenses deducted in determining Profit or Loss;

(c) plus the excess proceeds of any refinancing of Company debt and any other cash receipts which were not included in the computation of Profit or Loss;

(d) plus the portion of any proceeds from the sale or other disposition of Company property not included in Profit or Loss;

(e) minus the sum of

(i) principal payments against Company debt;

(ii) non-cash items of income included in the computation of Profit or Loss; and

(iii) any other cash expenditures of Company's earnings which were not deducted in the computation of Profit or Loss, including, but not limited to the replacement or restoration of Company assets and provisions for adequate reserves for reasonably anticipated cash expenses and contingencies as determined by the Management Committee.

HHC Managers.

"HHC Managers" shall mean the individual Managers designated by the Class B Members pursuant to Section 6.01(a) hereof.

Involuntary Withdrawal. "Involuntary Withdrawal" means:

(a) With respect to any Member or Economic Interest Owner, the bankruptcy or dissolution of the Member or Economic Interest Owner or any other event of disassociation as provided in Section 34-180(4)-(10) of the Act;

(b) The conviction of any felony by a Member;

(c) Any material breach of this Agreement by a Member which is not cured within thirty (30) days of notice of such breach from a non-breaching Member;

(d) The exclusion, suspension or debarment from participation in any governmental program, including, but not limited to, the Medicare or Medicaid programs, of a Member or any Affiliate of a Member;

(e) With respect to a Class A Member, (i) such Class A Member has fewer than ____ (__) physician/members licensed to render, and actively rendering, professional orthopedic surgical services in Connecticut, or (ii) such Class A Member and/or any one of its Competition Affiliates breaches any of the representations, warranties or covenants contained in Section 5.06(b) hereof and the Class B Members give notice of such breach to such Class A Member; or

(f) With respect to a Class C Member: (i) the failure of a Class C Member to meet or continue to meet any of the requirements set forth in Section 2.02 hereof; (ii) revocation or suspension of a license to practice medicine or any other license required by any health care

licensing authority in the State of Connecticut; (iii) retirement; (iv) the failure to maintain active, unrestricted staff privileges at the Center; (v) death or disability at any time; (vi) adjudication of incompetence at any time; or (vii) completely and fully terminating the practice of medicine within a fifty (50) mile radius of the Center.

Majority in Interest.

"Majority in Interest" means the Members holding a majority of the Percentage Interests then held by the Members.

Manager.

"Manager" shall mean the Person or Persons designated to manage the business and affairs of the Company pursuant to Article VI hereof.

Management Committee.

"Management Committee" shall mean the Managers designated to manage the business and affairs of the Company pursuant to Article VI hereof.

Material Adverse Effect.

"Material Adverse Effect" shall mean, when referring to the impact of an Exempt Status Matter Action, an Exempt Status Matter Action that materially and adversely affects the business or prospects of the Company, or the Class A and C Members' investment in the Company, and that would not be substantially redressed if the Class A or C Member timely and properly exercises, and/or the Class A or C Member had timely and properly exercised, its right to an Exempt Status Matter Special Allocation pursuant to Section 9.06 hereof.

Medical Staff.

"Medical Staff" shall have the meaning set forth in Section 8.01 hereof.

Member.

"Member" shall mean each of the parties who executes a counterpart of this Agreement as a Member and each of the parties who may hereafter become a Member in accordance with the terms hereof If a Person is a Member immediately prior to the purchase or other acquisition by such Person of a Membership Interest or an Economic Interest, such Person shall have all the rights of a Member with respect to such purchased or otherwise acquired Membership Interest or Economic Interest, as the case may be. A Member shall cease to be a Member upon the sale or other transfer of his or her entire Economic Interest in the Company and shall not be deemed a Member with respect to any Percentage Interest in which he or she has sold or otherwise transferred his or her entire Economic Interest.

Member Nonrecourse Debt Minimum Gain.

"Member Nonrecourse Debt Minimum Gain" has the meaning set forth in Regulation Section 1.704-2(i)(3). Member Nonrecourse Debt Minimum Gain shall be computed separately for each Member and Economic Interest Owner in a manner consistent with the Regulations under Code Section 704(b).

Member Nonrecourse Deductions.

"Member Nonrecourse Deductions" means any Company deductions that would be Nonrecourse Deductions, if they were not attributable to a loan made or guaranteed by a Member or Economic Interest Owner within the meaning of Regulation Section 1.704-2(b)(4).

Member Representatives.

"Member Representatives" shall mean those individuals designated by the Members pursuant to Article II hereof.

Membership Interest.

"Membership Interest" shall mean a Member's entire interest in the Company including such Member's Economic Interest and the right to participate in the management of the business and affairs of the Company, including the right to vote on, consent to, or otherwise participate in any decision or action of or by the Members granted pursuant to this Agreement and the Act.

Midstate

"Midstate" shall mean Midstate Medical Center, a Connecticut nonstock corporation.

Minimum Gain.

"Minimum Gain" has the meaning set forth in Regulation Sections 1.704-2(b)(2) and 1.704-2(d). Minimum Gain shall be computed separately for each Member and Economic Interest Owner in a manner consistent with the Regulations under Code Section 704(b).

Negative Capital Account.

"Negative Capital Account" means a Capital Account with a balance of less than zero.

Nonrecourse Deductions.

"Nonrecourse Deductions" has the meaning set forth in Regulation Section 1.704-2(b)(l).

The amount of Nonrecourse Deductions for a taxable year of the Company equals the net increase, if any, in the amount of Minimum Gain during that taxable year, determined according to the provisions of Regulation Section 1.704-2(c).

Nonrecourse Liability.

"Nonrecourse Liability" means any liability of the Company with respect to which no Member or Economic Interest Owner has personal liability determined in accordance with Section 1.752-1(a)(2) of the Regulations.

Percentage Interest.

"Percentage Interest" shall mean, as to a Member, the percentage set forth after the Member's name on Exhibit A, as amended from time to time, and as to an Economic Interest Owner who is not a Member, the Percentage Interest of the Member whose Economic Interest has been acquired by such Economic Interest Owner, to the extent the Economic Interest Owner has succeeded to that Member's Economic Interest.

Person.

"Person" shall mean any individual, general partnership, limited partnership, limited liability company, corporation, joint venture, trust, business trust, cooperative, association, foreign trust or foreign business organization and the heirs, executors, administrators, legal representatives, successors, and assigns of such "Person" where the context so permits.

Profit and Loss.

"Profit" and "Loss" shall mean, for each taxable year of the Company (or other period for which Profit or Loss must be computed) the Company's taxable income or loss determined in accordance with Code Section 703(a), with the following adjustments:

(i) all items of income, gain, loss, deduction, or credit required to be stated separately pursuant to Code Section 703(a)(1) shall be included in computing taxable income or loss;

(ii) any tax-exempt income of the Company, not otherwise taken into account in computing taxable income or loss, shall be included in computing Profit or Loss;

(iii) any expenditures of the Company described in Code Section 705(a)(2)(B) (or treated as such pursuant to Regulation Section 1.704-1(b)(2)(iv)(i)) and not otherwise taken into account in computing taxable income or loss, shall be subtracted from Profit or Loss;

(iv) gain or loss resulting from any taxable disposition of Company property shall be computed by reference to the adjusted book value of the property disposed of, notwithstanding the fact that the adjusted book value differs from the adjusted basis of the property for federal income tax purposes; and

(v) in lieu of the depreciation, amortization, or cost recovery deductions allowable in computing taxable income or Loss, there shall be taken into account the depreciation computed based upon the adjusted book value of the asset.

Regulations.

"Regulations" shall mean the income tax regulations promulgated under the Code by the United States Department of the Treasury, including proposed, temporary and final regulations.

Put Event.

"Put Event" shall mean any of the following: (a) (i) it has been determined that an Exempt Status Matter Action has had and/or shall have a Material Adverse Effect either by mutual written agreement of the Members, or by a written finding made reasonably and in good faith by the Class A Members, based upon the written advice of the Class A Members' professional advisors (and after having sought the advice and input of the Class B Members Member Representatives); and (ii) within forty-five (45) days of such mutual written agreement, or receipt of such written finding from the Class A Members, the Class B Members have not either (A) revoked such Exempt Status Matter Action or (B) assigned their Membership Interests to one or more for-profit Affiliates of a Class B Member, revoked such Exempt Status Matter Action, and agreed in writing to amend this Agreement to delete Sections 4.06(b), 6.09(b) and 17.05(b) hereof; (b) the Class A Members learn or receive written notification that the Class B Members have, collectively, experienced a Change in Control; or (c) there exists a bona fide dispute between the Members regarding one or more of the matters below, that has not been resolved after a good faith attempt by the Members to resolve such dispute pursuant to the dispute resolution procedures described in Section 17.15(a) of this Agreement:

(i) a proposed capital expenditure, or series of capital expenditures over a continuous three-year period in the aggregate, of $1,000,000 or more (not including the capital expenditures to be financed pursuant to the plan of capitalization outlined in Section 3.01 hereof);

(ii) the proposed merger or consolidation of the Company with or into another Person;

(iii) the proposed sale of all or substantially all of the assets of the Company;

(iv) the proposed borrowing of money, or incurring a debt, for or on behalf of the Company in excess of $750,000 (not including the debt commitment described in the plan of capitalization outlined in Section 3.01 hereof); or

(v) the proposed dissolution of the Company.

THC.

"THC" shall mean Hartford Orthopedic, Plastic & Hand Surgeons, Inc., a Connecticut professional corporation, with an address at 85 Seymour Street, Suite 816, Hartford, Connecticut 06106.

THOCC.

"THOCC" shall mean The Hospital of Central Connecticut, a Connecticut nonstock corporation.

Transfer.

"Transfer" means, when used as a noun, any sale, hypothecation, pledge, assignment, attachment, gift, bequest, exchange, conveyance, encumbrance or any other form of disposition, whether voluntary or involuntary, by direct or indirect means, or by merger, consolidation or otherwise, and, when used as a verb, means, to sell, hypothecate, pledge, assign, gift, bequeath, exchange, convey, encumber or otherwise dispose of, whether voluntary or involuntary, by direct or indirect means, or by merger, consolidation or otherwise; provided, however, that "Transfer" shall not include a Transfer by the Class B Members or the Class A Members to an Affiliate of the transferor.

Voluntary Withdrawal.

"Voluntary Withdrawal" means the disassociation of a Member or an Economic Interest Owner from the Company by means other than by a Transfer or an Involuntary Withdrawal.

ARTICLE XVII
MISCELLANEOUS PROVISIONS

17.01 Power of Attorney.

(a) Each Member constitutes and appoints each Manager as the Member's true and lawful attorney-in-fact ("Attorney-In-Fact"), and in the Member's name, place and stead, to make, execute, sign, acknowledge, and file or cause to be made, executed, signed, acknowledged and filed:

(i) all documents (including amendments to the Articles of Organization) that the Attorney-In-Fact deems appropriate to reflect any amendment, change, or modification of this Agreement;

(ii) any and all other certificates or other instruments required to be filed by the Company under the laws of the State of Connecticut or of any other state or jurisdiction, including, without limitation, any certificate or other instruments necessary in order for the Company to continue to qualify as a limited liability company under the laws of the State of Connecticut;

(iii) one or more applications to use an assumed name; and

(iv) all documents that may be required to dissolve and terminate the Company and to cancel its Articles of Organization.

(b) The foregoing power of attorney is irrevocable and is coupled with an interest, and to the extent permitted by Applicable Law, shall survive the death, disability or dissolution of a Member. It also shall survive the transfer of a Membership Interest or an Economic Interest, except that if the transferee is approved for admission as a Member, this power of attorney shall survive the delivery of the assignment for the sole purpose of enabling the Attorney-in-Fact to execute, acknowledge, and file any documents needed to effectuate the substitution. Each Member shall be bound by any representations made by the Attorney-in-Fact acting in good faith pursuant to this power of attorney, and each Member hereby waives any and all defenses that may be available to contest, negate, or disaffirm the action of the Attorney-in-Fact taken in good faith under this power of attorney.

17.02 Notices.

Any notice, demand, consent, approval, communication or other document required or permitted to be given hereunder shall be in writing and delivered personally or sent by registered or certified mail, postage prepaid, or a nationally recognized overnight delivery service (receipt requested), to the Member's or the Company's address, as appropriate, which is set forth in this Agreement, or to such other address for the party as shall be specified by notice. Any notice that is delivered personally in the manner provided herein shall be deemed to have been duly given to the party to whom it is directed upon actual receipt by such party. Any notice that is addressed and mailed or delivered overnight in the manner herein provided shall be duly given when received by the addressee.

17.03 Application of Connecticut Law.

This Agreement and its interpretation shall be governed exclusively by its terms and by the laws of the State of Connecticut (without regard to principles of conflicts of law), and specifically the Act.

17.04 Jurisdiction and Venue.

Any suit involving any dispute or matter arising under this Agreement may only be brought in the United States District Court for the District of Connecticut or any Connecticut State Court having jurisdiction over the subject matter of the dispute or matter. All Members and Economic Interest Owners hereby consent to the exercise of personal jurisdiction by any such court with respect to any such proceeding.

17.05 Amendments.

(a) This Agreement and the Articles of Organization may be amended upon a unanimous vote of the Class A and B Members or by a written consent signed by all of the Class A and B Members.

(b) This Agreement and the Articles of Organization may be amended upon unanimous vote of the HHC Managers, provided that the HHC Managers have reasonably determined, based on the written advice of counsel, that such amendment or amendments are necessary to prevent either Class B Member from losing its status as a tax-exempt organization under Code Section 501(a) as an organization described in Code Section 501(c)(3).

17.06 Execution of Additional Instruments.

Each Member hereby agrees to execute such other and further statements of interest and holdings, designations and other instruments necessary to comply with any Applicable Laws, rules or regulations.

17.07 Construction.

When required by the context, the singular number whenever used in this Agreement shall include the plural and vice-versa, and the masculine gender whenever used in this Agreement shall include the feminine and neuter genders and vice-versa.

17.08 Headings.

The headings in this Agreement are inserted for convenience only and are in no way intended to describe, interpret, define, or limit the scope, extent or intent of this Agreement or any provision hereof.

17.09 Waivers.

The failure of any party to seek redress for default of or to insist upon the strict performance of any covenant or condition of this Agreement shall not prevent a subsequent act, that would have originally constituted a default, from having the effect of an original default.

17.10 Rights and Remedies Cumulative.

The rights and remedies provided by this Agreement are cumulative and the use of any one right or remedy by any party shall not preclude or waive the right to use any other remedy. The rights and remedies provided by this Agreement are given in addition to any other legal rights the parties may have.

17.11 Severability.

If any provision of this Agreement or the application thereof to any person or circumstance shall be invalid, illegal or unenforceable to any extent, the remainder of this Agreement and the application thereof shall not be affected and shall be enforceable to the fullest extent permitted by law.

17.12 Specific Performance.

The parties recognize that irreparable injury will result from a breach of any provision of this Agreement and that money damages will be inadequate to fully remedy the injury. Accordingly, in the event of a breach or threatened breach of one or more of the provisions of this Agreement, any party who may be injured (in addition to any other remedies that may be available to that party) shall be entitled to one or more preliminary or permanent orders (i) restraining and enjoining any act that would constitute a breach or (ii) compelling the performance of any obligation that, if not performed, would constitute a breach.

17.13 Successors and Assigns.

The covenants, terms, provisions and agreements herein contained shall be binding upon and inure to the benefit of the parties hereto and to the extent permitted by this Agreement, their respective successors and assigns.

17.14 Creditors.

None of the provisions of this Agreement shall be for the benefit of or enforceable by any creditors of the Company.

17.15 Dispute Resolution.

(a) Except for actions taken pursuant to Section 4.06(b) or 6.09(a), all disputes, claims, controversies and differences arising out of or relating to this Agreement, or the termination, invalidity or breach hereof, including without limitation any deadlock in a vote of the Members or in a vote of the Managers on the Management Committee, any party may refer the matter by written notice to, and for resolution by, the chief executive officers of each of the Class A Members and the Class B Members and, only in the event of a dispute unrelated to any deadlock in a vote of the Members or in a vote of the Managers on the Management Committee, one representative designated collectively by the Class C Members. Such individuals shall meet at the principal office of the Company, or at such other location as they may agree, within fourteen (14) days of the notice from the party to negotiate in good faith a resolution of the matter. If within twenty-one (21) days of the written notice from the party the matter still has not been resolved, and such matter involves an Arbitrable Issue, the party may submit the dispute to arbitration pursuant to Section 17.15(b) of this Agreement.

(b)

(i) If an Arbitrable Issue has not been resolved pursuant to the procedures provided for in Section 17.15(a), a party may, by written notice to the other Members, submit the Arbitrable Issue to be determined by arbitration in the City of Hartford, Connecticut, in accordance with the Commercial Arbitration Rules of the American Arbitration Association (except as otherwise specified in this Section 17.15). The dispute shall be determined by one (1) arbitrator acceptable to both parties who shall be selected within fourteen (14) days of receipt of notice of intention to arbitrate by the party receiving that notice. If the receiving party fails to respond to said notice in writing within said fourteen (14) days, then the party providing said notice shall select the arbitrator and the arbitrator selected by the party providing said notice shall be deemed to have been selected by the receiving party. If, by the end of said fourteen (14) day period the parties have not agreed upon one (1) arbitrator as acceptable, then the dispute shall be determined by a panel of three (3) arbitrators selected as follows: Within an additional seven (7) days, each party will appoint one (1) arbitrator. These two (2) arbitrators will then, within an additional seven (7) days, name a third arbitrator. If the two (2) arbitrators are unable to agree upon the choice of a third arbitrator within seven (7) days, either party may request the person or entity administering the arbitration, or, if none, the American Arbitration Association or any other arbitration administering person or entity, to appoint the necessary arbitrator pursuant to the Commercial Arbitration Rules.

(ii) As soon as the arbitrator has been chosen or if three are utilized, the panel has been convened, a hearing date shall be set within thirty (30) days thereafter. Such hearing date shall be subject to the mutual agreement of the parties and the arbitrator(s), but if such agreement cannot be reached, the arbitrator(s) shall have authority to establish such times for hearings as he, she or they deem appropriate. Written submissions shall be presented and exchanged by both parties fifteen (15) days before the hearing date, including reports prepared by any expert upon whom either party intends to rely. At such time the parties shall also exchange copies of all documentary evidence upon which they will rely at the arbitration hearing and a list of the witnesses whom they intend to call to testify at the hearing. Each party shall also make its respective experts available for deposition by the other party prior to the hearing date. The arbitrator(s) shall make his or her award as promptly as practicable after conclusion of the hearing. Arbitrators shall be compensated for their services at the standard hourly rate charged in their private professional activities.

(iii) The parties acknowledge that the United States District Court for the District of Connecticut has jurisdiction over the parties for the purpose of enforcing this Section 17.15. Connecticut rules of civil procedure and evidence shall apply with respect to any arbitration hereunder, including all rules pertaining to discovery and inspection. The award may be made solely on the default of a party. The arbitrator(s) shall follow substantive rules of law. The arbitrator(s) shall make the award in strict conformity with this Agreement and shall have no power to depart from or change any of the provisions hereof. If three arbitrators are used, a decision of any two of them shall be binding. At the request of either party at the start of the arbitration, the award of the arbitrator(s) shall be accompanied by findings of fact and a written statement of reasons for the decision. The arbitrator(s) shall have the discretion to award the costs of arbitration, arbitrators' fees and the respective attorneys' fees of each party between the

parties as they see fit. All parties agree to be bound by the results of this arbitration; judgment upon the award so rendered may be entered and enforced in any court of competent jurisdiction, including the power to require specific performance. To the extent reasonably practicable, both parties agree to continue performing their respective obligations under this Agreement while the dispute is being resolved. All matters relating to any arbitration hereunder shall be maintained in confidence.

(iv) Nothing contained in this Section 17.15 shall prohibit either party from seeking equitable relief without first resorting to arbitration under such circumstances as that party's interests hereunder and in its property will be otherwise compromised.

17.16 Indemnification.

(a) Each Member and Economic Interest Owner (each, an "Indemnitor") shall indemnify, hold harmless and defend the Company and each other Member, Economic Interest Owner and their respective directors, officers, employees, representatives and agents (each an "Indemnitee" and collectively, the "lndemnitees"") from and against any Costs incurred by the lndemnitees that arise from or are related to: (i) a violation of the anti-kickback provisions of Applicable Law by the Indemnitor or any of its directors, officers. owners, employees, representatives or agents relating to the Company and/or the Center, and such violation of Applicable Law is not cured by the Indemnitor at its sole cost and expense within sixty (60) days of the notice provided for in the first sentence of Section 17. 16(b); and/or (ii) the enforcement of this indemnity.

(b) To the greatest extent not inconsistent with the laws of Connecticut, the Company shall indemnify any Member made a party to any proceeding because such individual is a Member, against all liability incurred by the Member provided that: (a) the Member acted in good faith; (b) the Member reasonably believed its conduct was not contrary to the Company's best interest; and (c) the Member's conduct was not willful misconduct or knowingly unlawful. A determination of indemnification shall be made by the Board of Managers and indemnification shall include the payment of all damages and reasonable attorney fees incurred in the action. Any Member entitled to indemnification under this Section 17.16(a) shall be referred to as an "Indemnitee" and the Company shall be an "Indemnitor".

(c) If there occurs an event which a party asserts is an indemnifiable event pursuant to this Section 17.16, the parties seeking indemnification shall promptly notify the other parties obligated to provide indemnification (collectively, the "Indemnifying Party"). If such event involves (i) any Claim or (ii) the commencement of any action, suit or proceeding by a third person, the party seeking indemnification will give such Indemnifying Party prompt written notice of such Claim or the commencement of such action, suit or proceeding, provided, however, that the failure to provide prompt notice as provided herein will relieve the Indemnifying Party of its obligations hereunder only to the extent that such failure prejudices the Indemnifying Party hereunder. In case any such action, suit or proceeding shall be brought against any party seeking indemnification and it shall notify the Indemnifying Party of the commencement thereof, the Indemnifying Party shall be entitled to participate therein and, to the extent that it desires to do so, to assume the defense thereof, with counsel reasonably satisfactory

to such party seeking indemnification and, after notice from the Indemnifying Party to such party seeking indemnification of such election so to assume the defense thereof, the Indemnifying Party shall not be liable to the party seeking indemnification hereunder for any attorneys' fees or any other expenses, in each case subsequently incurred by such party, in connection with the defense of such action, suit or proceeding. The party seeking indemnification agrees to cooperate fully with the Indemnifying Party and its counsel in the defense against any such action, suit or proceeding. In any event, the party seeking indemnification shall have the right to participate at its own expense in the defense of such action, suit or proceeding. In no event shall an Indemnifying Party be liable for any settlement or compromise effected without its prior consent. If, however, the party seeking indemnification refuses its consent to a bona fide offer of settlement which the Indemnifying Party wishes to accept (which must include the unconditional release of the parties seeking indemnification from all liability with respect to the Claim at issue), the party seeking indemnification may continue to pursue such matter, free of any participation by the Indemnifying Party, at the sole expense of the party seeking indemnification. In such event, the obligation of the Indemnifying Party to the party seeking indemnification shall be equal to the lesser of (i) the amount of the offer or settlement which the party seeking indemnification refused to accept plus the costs and expenses of such party prior to the date the Indemnifying Party notifies the party seeking indemnification of the offer of settlement and (ii) the actual out-of-pocket amount the party seeking indemnification is obligated to pay as a result of such party's continuing to pursue such matter.

(d) The amount which an Indemnifying Party is required to pay to, for or on behalf of any other party (hereinafter referred to as an "Indemnitee") pursuant to this Section 17.16 shall be adjusted (including, without limitation, retroactively) by any insurance proceeds actually recovered by or on behalf of such Indemnities in reduction of the related indemnifiable loss (the "Indemnifiable Loss"). Amounts required to be paid, as so reduced, are hereafter sometimes called an "Indemnity Payment." If an Indemnitee shall have received or shall have had paid on its behalf an Indemnity Payment in respect of an Indemnifiable Loss and shall subsequently receive insurance proceeds in respect of such Indemnifiable Loss, then the Indemnitee shall pay to the Indemnifying Party the amount of such insurance proceeds or, if less, the amount of the Indemnity Payment.

17.17 Counterparts.

This Agreement may be executed in counterparts, each of which shall be deemed an original but all of which shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused their signatures, or the signatures of their duly authorized representatives, to be set forth below on the day and year first above written.

[INSERT SIGNATURE BLOCK BY MEMBERS AND COMPANY]

EXHIBIT A
MEMBERS AND PERCENTAGE INTEREST

EXHIBIT B

MEMBER REPRESENTATIVES AND MANAGEMENT COMMITTEE MEMBERS

MEMBER REPRESENTATIVES

MANAGEMENT COMMITTEE MEMBERS

EXHIBIT C
INITIAL CAPITAL CONTRIBUTION

EXHIBIT D
CHARITY CARE POLICY

This policy, as amended from time to time, shall apply to the Company's _____ Surgery Center, LLC (the "Center") and shall be enforced by the Management Committee.

1. **Promotion of Health in the Community.** The Center shall be responsible for the holding annually of free health educational programs and seminars as determined by the Management Committee, and will otherwise promote the health of the community served by the Center.

2. **Medicare and Medicaid Patients.** The Center shall accept patients covered by Medicare and Medicaid.

3. **Charity Care.** In accordance with a policy adopted by both the HHC Managers (by majority vote) and the Class A Managers on the Company's Management Committee, the Center shall provide free or reduced charge health care services to the poor or indigent, based on ability to pay. Charity care for this purpose shall not include contractual allowances. Ability to pay shall be determined on the basis of the patient's income relative to the federal poverty level, his or her net assets, and any other hardship factors.

4. **Debt Collection.** While the Center may institute collection proceedings against those who appear able to pay, it shall not be the primary moving party to foreclose a security interest in a patient's primary residence in collection of the debt.

5. **Administration.** The Center shall assure that there are adequate notices on premises about the availability of charity care. Billing and admissions staff shall be trained in the application process and in the overall Charity Care Policy.

6. **Reports.** The Medical Director shall cause a report detailing compliance with this Charity Care Policy to be prepared and submitted for the review of the Management Committee of the Company each calendar quarter during the term of this Operating Agreement. The Management Committee shall cause the Medical Director to take prompt action to require compliance with this Charity Care Policy should the aforementioned reports evidence noncompliance, in whole or in part, with this policy.

SECRETARY OF THE STATE
30 TRINITY STREET
P.O. BOX 150470
HARTFORD, CT 06115-0470

APRIL 4,2013

PATRICIA B. CHOUINARD
SHIPMAN & GOODWIN
ONE CONSTITUTION PLAZA
HARTFORD, CT 06103-1919

RE: Acceptance of Business Filing

This letter is to confirm the acceptance of the following business filing:

Business Name:
HHC SOUTHINGTON SURGERY CENTER, LLC

Work Order Number: 2013096457-001
Business Filing Number: 0004833385
Type of Request: ARTICLES OF ORGANIZATION
File Date/Time: APR 03 2013 01:00 PM
Effective Date/Time:
Work Order Payment Received: 340.00
Payment Received: 170.00
Credit on Account: 652.39
Customer Id: 000000419
Business Id: 1101639

FRANK GOULD
Commercial Recording Division
860-509-6003
WWW.CONCORD.SOTS.CT.GOV

BUSINESS FILING REPORT

WORK ORDER NUMBER:2013096457-001
BUSINESS FILING NUMBER: 0004833385

BUSINESS NAME:

HHC SOUTHINGTON SURGERY CENTER, LLC

BUSINESS LOCATION:

81 MERIDEN AVENUE
SOUTHINGTON,CT 06489

MEMBER INFORMATION FOR ONE MEMBER:

NAME:THE HOSPITAL OF CENTRAL CT AT NEW BRIT-
TITLE:AIN GENERAL & BRADLEY MEMORIAL/MEMBER

** END OF REPORT **

ARTICLES OF ORGANIZATION
of
HHC SOUTHINGTON SURGERY CENTER, LLC

The undersigned hereby forms a limited liability company under the Connecticut Limited Liability Company Act, and states as follows.

FIRST: The name of the limited liability company is **HHC Southington Surgery Center, LLC** (the "Company").

SECOND: The purposes to be promoted or carried out by the Company shall be to engage in any lawful act or activity for which limited liability companies may be formed under the Connecticut Limited Liability Company Act, as amended from time to time.

THIRD: The principal office of the Company shall be at 81 Meriden Avenue, Southington, Connecticut 06489.

FOURTH: The Statutory Agent for Service for the Company shall be Winship Service Corporation, with an address in c/o Shipman & Goodwin LLP, One Constitution Plaza, Hartford, Connecticut 06103-1919.

FIFTH: The Company shall be managed by a Manager or Managers.

SIXTH: The name and business address of the Members of the Company are:

Name	Business Address
The Hospital of Central Connecticut at New Britain General and Bradley Memorial	100 Grand Street New Britain, CT 06050
MidState Medical Center	435 Lewis Avenue Meriden, CT 06451

I declare, under penalties of false statement, that the statements made in these Articles of Organization are true.

Dated: April 3, 2013

Organizer of the Limited Liability Company:

Vincenzo Carannante, Organizer

Acceptance of Designation as Statutory Agent for Service

The foregoing designation as Statutory Agent for Service is hereby accepted:

WINSHIP SERVICE CORPORATION

By: _____
Patricia B. Chouinard, Its Secretary

2744978v1

State of Connecticut
HOUSE OF REPRESENTATIVES
STATE CAPITOL
HARTFORD, CONNECTICUT 06106-1591

ASSISTANT DEPUTY SPEAKER EMIL ALTOBELLO
EIGHTY SECOND ASSEMBLY DISTRICT

LEGISLATIVE OFFICE BUILDING
ROOM 4015
HARTFORD, CT 06106-1591

HOME: 203-634-1692
CAPITOL: 860-240-8585
TOLL FREE: 800-842-1902
FAX: 860-240-0206
E-MAIL: Emil.Altobello@cga.ct.gov

MEMBER
ENERGY AND TECHNOLOGY COMMITTEE
FINANCE, REVENUE AND BONDING COMMITTEE
INSURANCE AND REAL ESTATE COMMITTEE

July 9, 2013

Commissioner Jewel Mullen, MD, MPH, MPA
State of Connecticut
Department of Public Health
410 Capitol Avenue
Hartford, CT 06134

Dear Dr. Mullen:

In a healthcare climate where integration, coordination and increased access are all of the utmost importance, I am writing today in support of the proposed plans for MidState Medical Center and The Hospital of Central Connecticut to create a jointly owned ambulatory surgery center dedicated to orthopedics.

Both hospitals have struggled with heightened orthopedic competition over the past year, with several surgeons turning to other facilities. The creation of a dedicated surgery center will help retain and attract top talent within a service line that is projected to have the highest inpatient and outpatient growth of all services over the next 10 years.

This project is simply another example of how the Hartford HealthCare system and its members are leveraging their resources and enhancing their ability to truly coordinate care. Creating a dedicated center is an innovative approach that exemplifies the benefits of working collaboratively as a system and exhibits flexibility and commitment to providing quality services in an ever-changing environment.

Leaders at MidState Medical Center have always done a superb job of identifying and meeting the healthcare needs of the community. Their proven track record of financial success, high patient satisfaction and excellent outcomes are a testament to the great work they do – and the creation of this center is another step in the right direction for this community.

Sincerely,

Buddy

Emil "Buddy" Altobello
Assistant Deputy Speaker, 82nd

GENERAL MEDICAL PRACTICE ASSOCIATES P.C.

Ralph Prezioso, Jr., M.D. Letterio Asciuto, M.D.

70 MERIDEN AVENUE
SOUTHINGTON, CONNECTICUT 06489
TELEPHONE (860) 628-6696

Thursday, July 11, 2013

Commissioner Jewel Mullen, MD, MPH, MPA
State of Connecticut
Department of Public Health
410 Capitol Avenue
Hartford, CT 06134

Dear Dr. Mullen:

In a healthcare climate where integration, coordination and increased access are all of the utmost importance, I am writing today in support of the proposed plans for MidState Medical Center and The Hospital of Central Connecticut to create a jointly owned ambulatory surgery center dedicated to orthopedics.

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Sincerely,

Letterio Asciuto, M.D.
President of the Medical Staff
The Hospital of Central Connecticut
Bradley Memorial Campus

Grove Hill
MEDICAL CENTERS

Michael G. Genovesi, M.D., M.B.A.
President & CEO

Grove Hill Medical Center
300 Kensington Avenue
New Britain, Connecticut 06051-3999
860-224-6230

Thursday, July 11, 2013

Commissioner Jewel Mullen, MD, MPH, MPA
State of Connecticut
Department of Public Health
410 Capitol Avenue
Hartford, CT 06134

Dear Dr. Mullen:

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Sincerely,

Michael G. Genovesi

Greater
Meriden
Chamber

President
Séan W. Moore

OFFICERS

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Atty. Thomas J. Welsh
- Brown & Welsh, PC

Vice Chairman
Richard Pendred
- A & A Office Systems, Inc.

Secretary
Ron Dagan
- Luchs Consulting Engineers, LLC

Treasurer
Francis Barillaro
- Cornerstone Business Advisors, LLC

Immediate Past Chairwoman
Yvonne de Angeli-Fontanez
- Four Points by Sheraton Meriden

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Sheldon Larsen
- Thompson Chocolate

Zaida R. Molina
- St. Joseph School

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- F. W. R. Consulting Services

Hilde Sager
- Masonicare

Ken Sterba
- Westfield Property Group

Dave Symonds
- PROSHRED Security

Jason Teal
- Meriden-Wallingford NAACP

Anna Wasescha, Ph.D.
- Middlesex Community College

John Wooley
- Radio Frequency Systems

Edward J. Zavaski
- Edward Zavaski Agency, LLC

04-10-13

May 17, 2013

Commissioner Jewel Mullen, MD, MPH, MPA
State of Connecticut
Department of Public Health
410 Capitol Avenue
Hartford, CT06134

Dear Dr. Mullen:

In a healthcare climate where integration, coordination and increased access are all of the utmost importance, I am writing today in support of the proposed plans for MidState Medical Center and The Hospital of Central Connecticut to create a jointly owned ambulatory surgery center dedicated to orthopedics.

Both hospitals have struggled with heightened orthopedic competition over the past year, with several surgeons turning to other facilities. The creation of a dedicated surgery center will help retain and attract top talent within a service line that is projected to have the highest inpatient and outpatient growth of all services over the next 10 years.

This project is simply another example of how the Hartford HealthCare system and its members are leveraging their resources and enhancing their ability to truly coordinate care. Creating a dedicated center is an innovative approach that exemplifies the benefits of working collaboratively as a system and exhibits flexibility and commitment to providing quality services in an ever-changing environment.

Leaders at MidState Medical Center have always done a superb job of identifying and meeting the healthcare needs of the community. Their proven track record of financial success, high patient satisfaction and excellent outcomes are a testament to the great work they do – and the creation of this center is another step in the right direction for this community.

Respectfully submitted,

Séan W. Moore, President

The Greater Meriden Chamber of Commerce serves our member businesses in Meriden, Wallingford, Southington, Berlin, Cheshire and Middletown, CT
Our offices are located at 3 Colony Street, Suite 301, Meriden, CT 06451
Ph: 203.235.7901 Fx: 203.686.0172
info@meridenchamber.com www.meridenchamber.com

GIVE. ADVOCATE. VOLUNTEER.

LIVE UNITED®

United Way

United Way
of Meriden and Wallingford

May 16, 2013

Commissioner Jewel Mullen, MD, MPH, MPA
State of Connecticut
Department of Public Health
410 Capitol Avenue
Hartford, CT 06134

Dear Dr. Mullen:

With an economy that demands all of us that look to regionalize services in order to preserve opportunity, healthcare is a major part of that process. Because integration, coordination and increased access are all important, I am writing today in support of the proposal for MidState Medical Center and The Hospital of Central Connecticut to create a jointly owned ambulatory surgery center dedicated to orthopedics.

Our own United Way organization is more effective because we have given up the duplication of programs that ultimately risked those programs because of multiple venues. We find it more strategic to be ahead of that process by collaborating with similar agencies in order to achieve the economy of scale that the ability to serve a larger population brings. Both hospitals have struggled with heightened orthopedic competition over the past year, with several surgeons turning to other facilities. If those other facilities are too far afield of our prime service area, we will have not served our population as well as we could have. The creation of a dedicated surgery center will help retain and attract top talent within a service line that is projected to have the highest inpatient and outpatient growth of all services over the next 10 years.

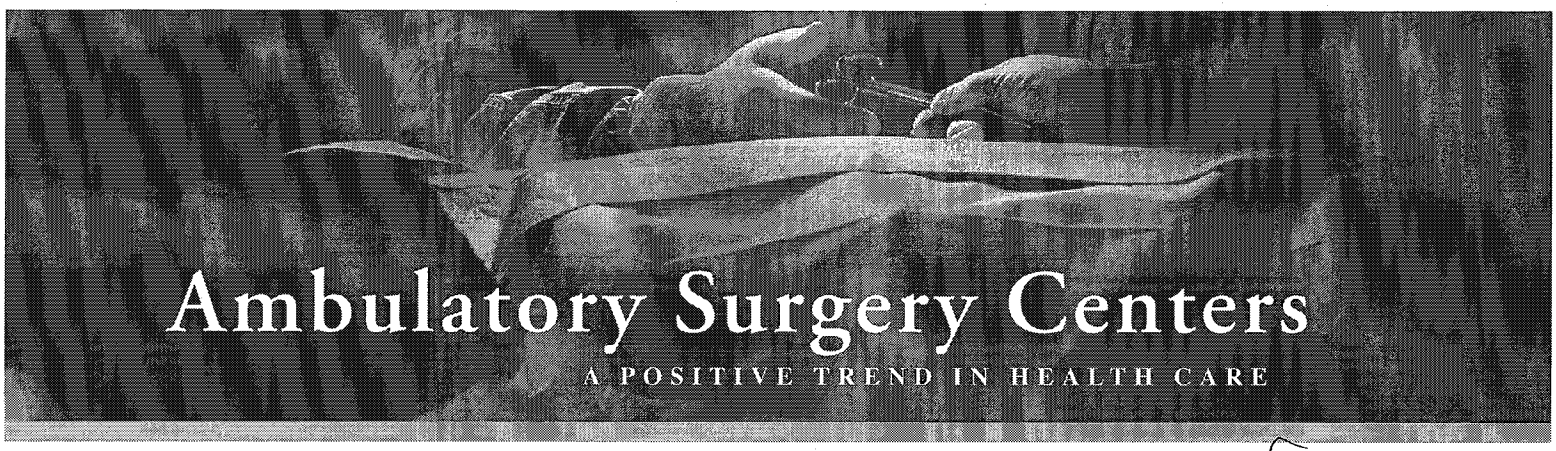
With coordinated care as a goal, this project is simply another example of how the Hartford HealthCare system and its members are leveraging their resources and enhancing their ability to truly accomplish this. Creating a dedicated center is an innovative approach that exemplifies the benefits of working collaboratively as a system and exhibits flexibility and commitment to providing quality services in an ever-changing environment.

Leaders at MidState Medical Center have always done a superb job of identifying and meeting the healthcare needs of the community. Their proven track record of financial success, high patient satisfaction and excellent outcomes are a testament to the great work they do – and the creation of this center is another step in the right direction for this community.

Sincerely,

James J. Ieronimo
Chief Professional Officer

35 Pleasant Street • Suite 1E • Meriden, CT 06450-5786 • tel 203.235.4403 • fax 203.235.4404
www.unitedwaymw.org



Ambulatory Surgery Centers

A POSITIVE TREND IN HEALTH CARE

Ambulatory surgery centers (ASCs) are health care facilities which offer patients the opportunity to have selected surgical and procedural services performed outside the hospital setting. Since their inception more than three decades ago, ASCs have demonstrated an exceptional ability to improve quality and customer service while simultaneously reducing costs. At a time when most developments in health care services and technology typically come with a higher price tag, ASCs stand out as an exception to the rule.

A PROGRESSIVE MODEL FOR SURGICAL SERVICES

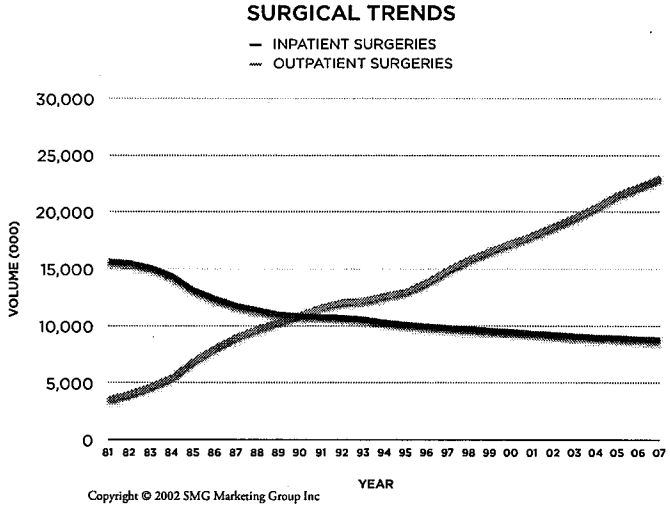
As our nation struggles with how to improve a troubled health care system, the experience of ASCs is a rare example of a successful transformation in health care delivery.

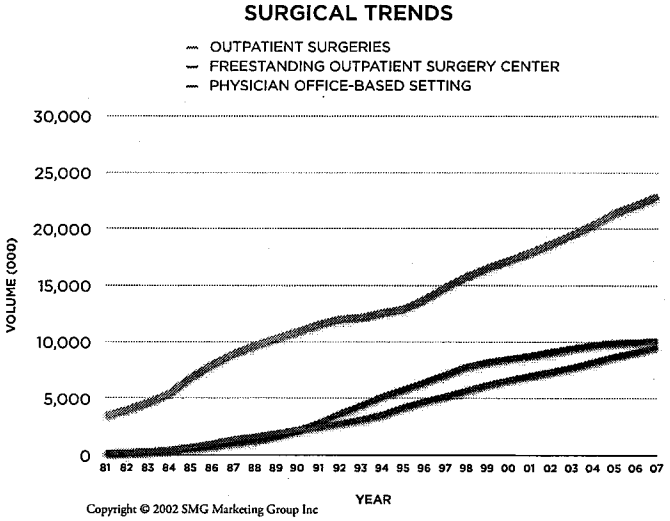
Thirty years ago, virtually all surgery was performed in hospitals. Waits of weeks or months for an appointment were not uncommon, and patients typically spent several days in the hospital and several weeks out of work in recovery. In many countries, surgery is still like this today, but not in the United States.

Physicians have led the development of ASCs. The first facility was opened in 1970 by two physicians who saw an opportunity to establish a high-quality, cost-effective alternative to inpatient hospital care for surgical services. Faced with frustrations like scheduling delays, limited operating room availability, and challenges in obtaining new equipment due to hospital budgets and policies, physicians were looking for a better way - and developed it in ASCs.

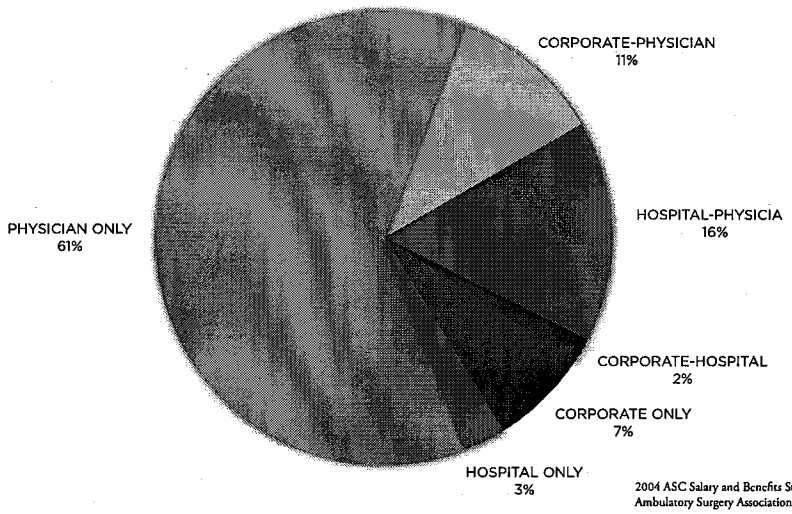
Physicians continue to provide the impetus for the development of new ASCs. By operating in ASCs instead of hospitals, physicians gain the opportunity to have more direct control over their surgical practices.[1] In the ASC setting, physicians are able to schedule procedures more conveniently, assemble teams of specially-trained and highly skilled staff, ensure the equipment and supplies being used are best suited to their technique, and design facilities tailored to their specialties. Simply stated, physicians are striving for, and have found in ASCs, the professional autonomy over their work environment and over the quality of care that has not been available to them in hospitals. These benefits explain why physicians who do not have ownership interest in ASCs (and therefore do not benefit financially from performing procedures in an ASC) choose to work in ASCs in such high numbers.

Given the history of their involvement with making ASCs a reality, it is not surprising physicians continue to have ownership in virtually all (90%) ASCs. But what is more interesting to note is how many ASCs are jointly owned by local hospitals that now increasingly recognize and embrace the value of the ASC model. According to the most recent data available, hospitals have ownership interest in 21% of all ASCs; 3% are owned entirely by hospitals.[2]





ASC OWNERSHIP STRUCTURE



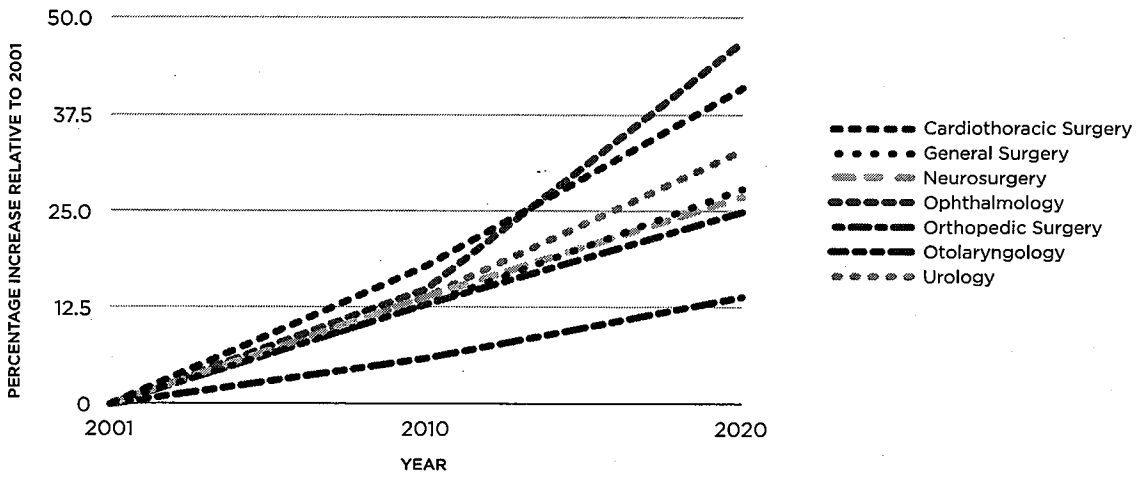
2004 ASC Salary and Benefits Survey, Federated Ambulatory Surgery Association, 2004.

ASCs ALLOW PHYSICIANS TO WORK EFFICIENTLY

A recent analysis examined the impact of the aging population on the demand for surgical procedures and attendant need for surgical subspecialists. This study concluded that the aging population would be a major force in driving significant growth in the demand for surgical services. The forecasted growth in work by the year 2020 varied from 14 percent to 47 percent, depending on specialty.[3] Meeting these surgical needs will be a challenge. Solutions include increasing the number of surgical residency positions, increasing the workloads of surgeons in the workforce, and improving the efficiency of surgeons.

Utilizing settings that allow physicians to practice efficiently will help mitigate the impact of the aging population on the anticipated shortage in the surgery workforce. ASCs offer physicians the ability to work more efficiently and are therefore uniquely positioned to play an important role in managing the increased need for surgical services as it arises in the years ahead.

FORECASTED DEMAND GROWTH IN THE NUMBER OF PROCEDURES BY SPECIALTY



Etzioni DA, Liu JH, Maggard MA, Ko CY. The aging population and its impact on the surgery workforce. Ann Surg. 2003 Aug;238(2):170-7.

ASCs ARE HIGHLY REGULATED TO ENSURE QUALITY AND SAFETY

Health care facilities in the United States are highly regulated by federal and state entities. ASCs are not excluded from this oversight.

The safety and quality of care offered in ASCs is evaluated by independent observers through three processes: state licensure, Medicare certification and voluntary accreditation.

Most states require ASCs to be licensed in order to operate. Each state determines the specific requirements ASCs must meet for licensure. Most state licensure programs require rigorous initial and ongoing inspection and reporting.

All ASCs serving Medicare beneficiaries must be certified by the Medicare program. In order to be certified, an ASC must comply with standards developed by the federal government for the specific purpose of ensuring the safety of the patient and the quality of the facility, physicians, staff, services and management of the ASC. The ASC must demonstrate compliance with these Medicare standards initially and on an ongoing basis.

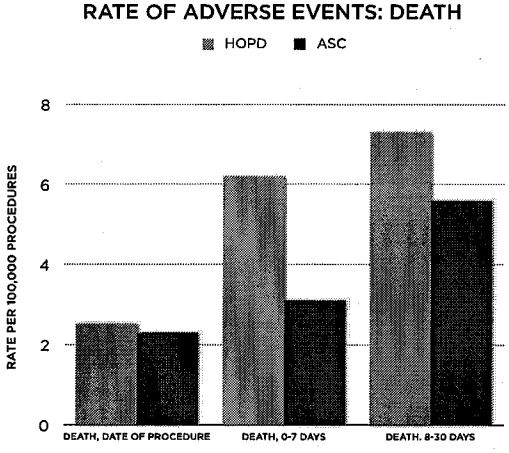
In addition to state and federal inspections, many ASCs choose to go through voluntary accreditation by an independent accrediting organization. Accrediting organizations for ASCs include the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the Accreditation Association for Ambulatory Health Care (AAAHC), the American Association for the Accreditation of Ambulatory Surgery Facilities (AAAASF) and the American Osteopathic Association (AOA). ASCs must meet specific standards during on-site inspections by these organizations in order to be accredited. All accrediting organizations require an ASC to engage in external benchmarking, which allows the facility to compare its performance to the performance of other ASCs.

In addition to requiring certification in order to participate in the Medicare program, federal regulations also limit the scope of surgical procedures reimbursed in ASCs.[5] Generally, services are limited to elective procedures with short anesthesia and operating times not requiring an overnight stay. These limitations do not apply to hospital outpatient departments (HOPDs).[6]

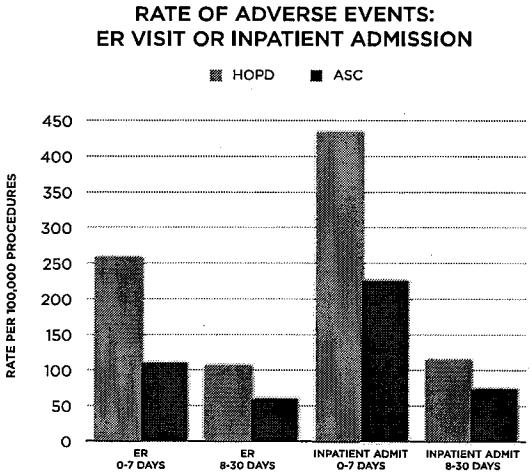
The federal government views ASCs and HOPDs as distinct types of providers. As a result, the federal regulations governing HOPDs and ASCs differ. Another reason for differing regulations is that, in a hospital, the same operating room may be used interchangeably to provide services to both inpatients and outpatients. For example, a procedure room in the HOPD may be used to perform a service for an inpatient and then used to perform the same procedure for an ambulatory patient who is discharged home immediately thereafter. In other words, ambulatory patients seen on an outpatient basis in an HOPD may utilize exactly the same facilities used to provide services to patients who have been admitted to the hospital. Consequently, the inpatient standards for hospitals are applied to HOPDs.[7]

On the other hand, ASCs provide services in facilities specifically designed to perform selected outpatient surgical services. The different requirements developed by the federal government appropriately reflect the fundamental differences in the hospital setting versus the ASC.[8]

ASCs consistently perform as well as, if not better than, HOPDs when quality and safety is examined. A recent study[9] included an examination of the rates of inpatient hospital admission and death in elderly patients following common outpatient surgical procedures in HOPDs and ASCs. Rates of inpatient hospital admission and death were lower in freestanding ASCs as compared to HOPDs. Even after controlling for factors associated with higher-risk patients, ASCs had low adverse outcome rates.



Fleisher LA, Pasternak LR, Herbert R, Anderson GF. Inpatient hospital admission and death after outpatient surgery in elderly patients: importance of patient and system characteristics and location of care. Arch Surg. 2004 Jan;139(1):67-72.



Fleisher LA, Pasternak LR, Herbert R, Anderson GF. Inpatient hospital admission and death after outpatient surgery in elderly patients: importance of patient and system characteristics and location of care. Arch Surg. 2004 Jan;139(1):67-72.

SPECIFIC FEDERAL REQUIREMENTS GOVERNING ASCs

In order to participate in the Medicare program, ASCs are required to meet certain conditions set by the federal government designed to ensure the facility is operated in a manner that ensures the safety of patients and the quality of services. Some of these requirements are highlighted in more detail below.

ASCs are required to maintain complete, comprehensive and accurate medical records. The content of these records must include a medical history and physical examination relevant to the reason for the surgery and the type of anesthesia planned. In addition, a physician must examine the patient immediately before surgery to evaluate the risk of anesthesia and the procedure to be performed. Prior to discharge each patient must be evaluated by a physician for proper anesthesia recovery.

CMS requires ASCs to ensure patients do not acquire infections during their care at these facilities. ASCs must establish a program for identifying and preventing infections, maintaining a sanitary environment, and reporting outcomes to appropriate authorities. The program must be one of active surveillance and include specific procedures for prevention, early detection, control, and investigation of infectious and communicable diseases in accordance with the recommendations of the Centers for Disease Control. In fact, ASCs have historically had very low infection rates.[10]

A registered nurse trained in the use of emergency equipment and in cardiopulmonary resuscitation must be available whenever a patient is in the ASC. To further protect patient safety, ASCs are also required to have an effective means of transferring patients to a hospital for additional care in the event an emergency occurs. Written guidelines outlining arrangements for ambulance services and transfer of medical information are mandatory. An ASC must have a written transfer agreement with a local hospital, or all physicians performing surgery in the ASC must have admitting privileges at the designated hospital. Although these safeguards are in place, hospital admissions as a result of complications following ambulatory surgery are rare.[9,11]

Continuous quality improvement is an important means of assuring patients are receiving the best care possible. ASCs are required to implement and monitor policies that ensure the facility provides quality health care in a safe environment. An ASC, with the active participation of the medical staff, is required to conduct an ongoing, comprehensive assessment of the quality of care provided.

The excellent outcomes associated with ambulatory surgery reflect the commitment that the ASC industry has made to quality and safety. One of the many reasons that ASCs continue to be so successful with patients, physicians and insurers is their keen focus on ensuring the quality of the services provided.

Medicare Requirements for ASCs and Hospitals Are The Same Where Services are Comparable

Required Standards	ASC	Hospital
Compliance with state licensure law	☑	☑
Governing body	☑	☑
Surgical services	☑	☑
Evaluation of quality	☑	☑
Environment	☑	☑
Medical staff	☑	☑
Nursing services	☑	☑
Medical records	☑	☑
Pharmaceutical services	☑	☑
Laboratory services	☑	☑
Radiologic services	☑	☑

Source: 42 CFR 416, 42 CFR 482

THE ASC INDUSTRY IS COMMITTED TO REPORTING QUALITY MEASURES

A fundamental change in the way the government assures the quality of health care services is well underway. The Department of Health and Human Services has launched its Quality Initiative to assure quality health care through accountability and public disclosure.

The ASC industry is excited to have the opportunity to make its excellent outcomes more widely known to the public through this initiative. Leaders from the ASC industry, along with associations and related organizations with a focus on health care quality and safety, have come together in a collaborative effort to identify specific measures for quality appropriate to ASCs. This group, the ASC Quality Collaboration, strongly endorses the vision that measures of quality which are appropriate to ASCs should be congruent with measures utilized for other outpatient surgery settings. The continued development of these measures will involve a number of different stakeholders including ASC clinical and administrative leaders, health policy researchers, CMS and other key federal and state governmental agencies. The group will also work with the National Quality Forum to achieve consensus on the proposed quality measures.

PATIENT SATISFACTION

Patient satisfaction is a hallmark of the ASC industry. This year, more than eight million Americans will undergo surgery in an ASC. Virtually all of those patients will return home the same day and will resume most normal activities within a matter of days. Talk to these patients and you will hear how overwhelmingly satisfied they are with their ASC experience. Recent surveys show average patient satisfaction levels in ASCs exceeding 90 percent.[4] Safe and high quality services, ease of scheduling, greater personal attention and lower costs are among the main reasons cited for the growing popularity of ASCs as a place for having surgery.

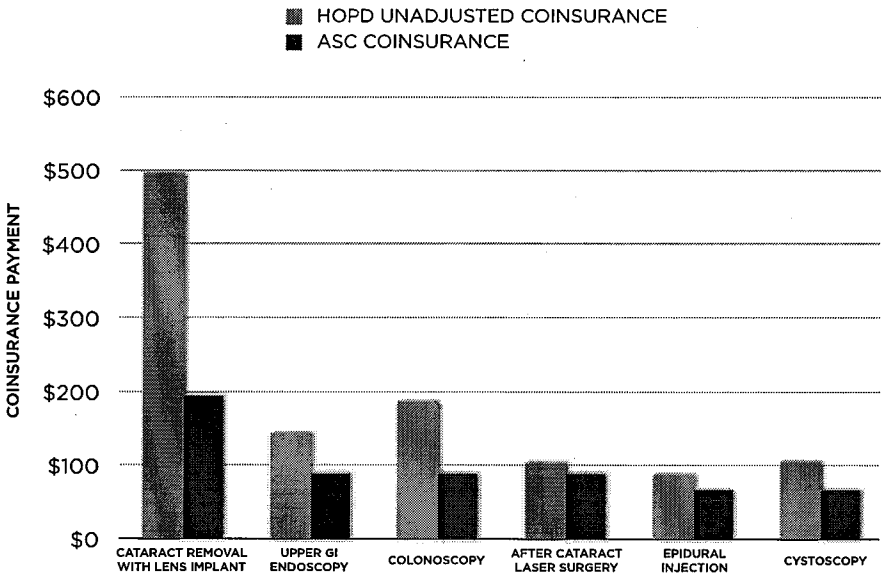
ASCs PROVIDE CARE AT SIGNIFICANT COST SAVINGS

Not only are ASCs focused on ensuring patients have the best surgical experience possible, the care they provide is also more affordable. One of the reasons ASCs have been so successful is they offer valuable surgical and procedural services at a lower cost when compared to hospital charges for the same services. Beginning in 2007, Medicare payments to ASCs will be lower than or equal to Medicare payments to HOPDs for comparable services for 100 percent of procedures.[12]

In addition, patients typically pay less coinsurance for procedures performed in the ASC than for comparable procedures in the hospital setting. For example, a Medicare beneficiary could pay as much as $496 in coinsurance for a cataract extraction procedure performed in a HOPD, whereas that same beneficiary's copayment in the ASC would be only $195; a Medicare beneficiary could pay as much as $186 in coinsurance for a colonoscopy performed in a HOPD, whereas that same beneficiary's copayment for the same procedure performed in an ASC would be only $89. By having surgery in the ASC the patient may save as much as 61%, or more than $300, compared to their out-of-pocket coinsurance for the same procedure in the hospital.

Without the emergence of ASCs as an option for care, health care expenditures would have been billions of dollars higher over the past three decades. Studies have shown the Medicare program would pay approximately $464 million more per year if all procedures performed in an ASC were instead furnished at a hospital.[13] Private insurance companies tend to save similarly, which means employers also incur lower health care costs by utilizing ASC services. Employers and insurers, particularly managed care entities, are driving ASC growth in many areas, because they recognize ASCs are able to deliver consistent, high quality outcomes at a significant savings. As the number of surgical procedures performed in ASCs grows, the Medicare program may realize even greater savings - and of course Medicare beneficiaries will realize additional out-of-pocket savings as well.[13]

MEDICARE COINSURANCE RATES ARE LOWER IN ASCs



MedPAC, Report to the Congress: Medicare Payment Policy, March 2004.

THE ASC INDUSTRY SUPPORTS DISCLOSURE OF PRICING INFORMATION

It is the general practice of ASCs to make pricing information available to the patient in advance of surgery. The industry is eager to make price transparency a reality, not only for Medicare beneficiaries, but for all patients. To offer maximum benefit to the consumer, these disclosures should outline the total price of the planned surgical procedure and the specific portion for which the patient would be responsible. This will empower health care consumers as they evaluate and compare costs for the same service amongst various health care providers.

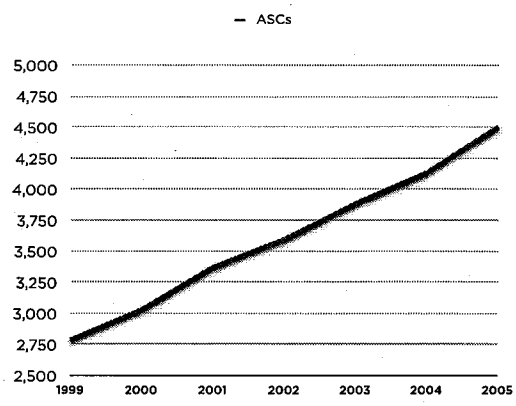
ASCs IMPROVE PATIENT CHOICE, DEMAND FOR ASCS GROWS

Technological advancement has allowed a growing range of procedures to be performed safely on an outpatient basis. Faster acting and more effective anesthetics and less invasive techniques, such as arthroscopy, have driven this outpatient migration. Procedures that only a few years ago required major incisions, long-acting anesthetics and extended convalescence can now be performed through closed techniques utilizing short-acting anesthetics, and with minimal recovery time. As medical innovation continues to advance, more and more procedures will be able to be performed safely in the outpatient setting.

The number of ASCs continues to grow in response to demand from the key participants in surgical care – patients, physicians and insurers. This demand has been made possible by technology, but has been driven by high levels of patient satisfaction, efficient physician practice, high levels of quality and the cost savings that have benefited all. The number of Medicare certified ASCs has grown from 2786 in 1999 to 4506 in 2005, with an average annual growth rate of 8.3%.[14]

Further impetus to future ASC growth has been given by MedPAC, which has recommended that the CMS list of approved ASC procedures be expanded. This would allow a broader range of choice for patients and surgeons. Specifically, MedPAC has recommended the procedures approved for the ASC setting be revised so that ASCs can receive payment for any surgical procedure, with the exception of those surgeries requiring an overnight stay or which pose a significant safety risk when furnished in an ASC.8 Adoption of these recommendations would allow Medicare beneficiaries to access an extended range of surgical services – a range of surgical services which is already available to patients with private insurance.[15]

NUMBER OF MEDICARE-CERTIFIED ASCs



MedPAC, Data Book, June 2006.

ASCs WILL CONTINUE TO LEAD INNOVATION IN OUTPATIENT SURGICAL CARE

As leaders of the revolution in surgical care who led to the establishment of affordable and safe outpatient surgery, the ASC industry has shown itself to be ahead of the curve in identifying promising avenues for improving the delivery of health care.

With a solid track record of performance in stakeholder satisfaction, safety, quality and cost management, the ASC industry is already embracing the changes that will allow it to continue to play a leading role in raising the standards of performance in the delivery of outpatient surgical services.

As always, the ASC industry welcomes any opportunity to clarify the services it offers, the regulations and standards governing its operations, and the ways in which it ensures safe, high-quality care for patients.

POLICY CONSIDERATIONS

Given the continued fiscal challenges posed by administering health care programs, policy makers and regulators should continue to focus on fostering innovative methods of health care delivery that offer safe, high-quality care so progressive changes in the nation's health care system can be implemented.

Support should be reserved for those policies that promote the utilization of sites of service providing more affordable care while maintaining high quality and safety standards. In light of the many benefits ASCs have brought to the nation's health care system, it will be important for future payment and coverage policies to continue to strengthen access to and utilization of ASCs.

ENDNOTES

1 "Ambulatory Surgery Centers." Encyclopedia of Surgery. Ed. Anthony J. Senagore. Thomson Gale, 2004.

2 2004 ASC Salary and Benefits Survey, Federated Ambulatory Surgery Association, 2004.

3 Etzioni DA, Liu JH, Maggard MA, Ko CY. The aging population and its impact on the surgery workforce. Ann Surg. 2003 Aug;238(2):170-7.

4 Press Ganey Associates, 2004.

5 Centers for Medicare and Medicaid Services ASC Website, http://www.cms.hhs.gov/center/asc.asp

6 70 Fed. Reg. pp.68916-68964, November 10, 2005.

7 42 C.F.R. §482

8 42 C.F.R. §416

9 Fleisher LA, Pasternak LR, Herbert R, Anderson GF. Inpatient hospital admission and death after outpatient surgery in elderly patients: importance of patient and system characteristics and location of care. Arch Surg. 2004 Jan;139(1):67-72.

10 FASA, FASA Outcomes Monitoring Project, 4th Quarter 2005

11 Natof HE. Complications associated with ambulatory surgery. JAMA. 1980 Sep 5;244(10):1116-8.

12 Deficit Reduction Act of 2005.

13 MedPAC, Report to the Congress: Medicare Payment Policy, March 2004.

14 MedPAC, Data Book, June 2006.

15 Thomson Medstat, MarketScan® Outpatient Claims Data, 2005.

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Alabama Ambulatory Surgery Association
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California Ambulatory Surgery Association
Colorado Ambulatory Surgery Center Association
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Foundation for Ambulatory Surgery in America
Freestanding Ambulatory Surgery Center Association of Tennessee
Georgia Society of Ambulatory Surgery Centers
Healthmark Industries Co
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Idaho Ambulatory Surgery Center Association
Illinois Freestanding Surgery Center Association
Indiana Federation of Ambulatory Surgical Centers
Kansas Association of Ambulatory Surgery Centers

Kentucky Ambulatory Surgery Center Association
Maine Ambulatory Surgery Center Coalition
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Growth of Ambulatory Surgical Centers, Surgery Volume, and Savings to Medicare

Lane Koenig, PhD[1] and Qian Gu, PhD[1]

We studied the impact of the growth of ambulatory surgical centers (ASCs) on total Medicare procedure volume and ASC market share from 2000 to 2009 for four common outpatient procedures: cataract surgery, upper gastrointestinal procedures, colonoscopy, and arthroscopy. ASC growth was not significantly associated with Medicare volume, except for colonoscopy. An additional ASC operating room per 100,000 population results in a 1.8% increase in colonoscopies performed in all outpatient settings. Increases in the number of ASCs were associated with greater ASC market share with effects ranging from 4- to 6-percentage-point gains for each additional ASC operating room per 100,000. The study demonstrates that continued growth of ASCs could reduce Medicare spending, because ASCs are paid a fraction of the amount paid to hospital outpatient departments for the same services.

SUPPLEMENTARY MATERIAL is linked to the online version of the paper at http://www.nature.com/ajg

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Introduction

The past decade has seen a rapid increase in the number of ambulatory surgical centers (ASCs), facilities where surgeries that do not require a hospital stay can be performed. Between 2004 and 2009, the number of Medicare-certified ASCs increased by 28%, growing from 4,106 to 5,260 (1). These facilities often offer specialized care by focusing on a single condition or a small number of conditions, such as cataract surgery, colonoscopy, or orthopedic surgery.

Policy makers' reaction to the rapid growth of ASCs has been mixed, as a result of perceived offsetting benefits and costs to patients and payers. On the benefits side, ASCs and other specialized surgical facilities may offer convenient locations, short wait times, high quality, and high patient satisfaction (2–8). For Medicare, ASCs also offer significant savings, with ASC payment rates approximately 56% of those paid to hospital outpatient departments for the same services in 2011.

On the negative side, physician ownership of ASCs raises concerns of self-referral, whereby a physician increases his or her procedure volume for financial gain. Although incentives for physician self-referral are inherent in any fee-for-service system, the issue is whether profits derived from an ASC facility fee paid to physician owners result in more surgical services.

A few studies have examined the relationship between the presence of an ASC, physician ownership, and procedure volume, providing limited evidence on the "induced demand" hypothesis. Using data from Florida, Hollingsworth *et al.* found a greater increase in annual caseloads of presumed ASC owners from the pre- to the post-ownership period as compared with nonowners for five common types of procedures performed in ASCs (9). Hollingsworth *et al.* inferred ownership status from surgical volume at an ASC, based on the safe-harbor rules in the anti-kickback statute that require physicians to perform at least a third of their surgeries at the outpatient facility in which they have a financial interest (10). In similar work, Hollingsworth and others reported a higher level and growth of annual caseloads of urological surgery for physician owners than for nonowners (11,12). Using data from one private insurer and 42 ASCs and specialty hospitals in Idaho, Mitchell compared the frequency of use of three procedures between physician owners and nonowners of ASCs (13). Mitchell observed a substantially higher frequency of procedure use among patients treated by physician owners than among those treated by nonowners.

Although the findings noted above are supportive of the induced demand hypothesis, these studies have important limitations, often noted by the researchers. First, prior studies are unable to determine whether factors other than financial considerations explain the connection between the volume of surgeries performed by owners and their decision to invest in an ASC. For example, it may be that physician owners, on the basis of their patient populations, were constrained by capacity and unable to satisfy patient demand prior to ASC ownership. This hypothesis is consistent with the findings of Hollingsworth *et al.* (9) and others who observed higher

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annual caseloads of eventual owners in the pre-ownership period than those of nonowners. Second, the studies are unable to capture market phenomena that affect the underlying (and potentially unmet) demand for surgical care in a community. Finally, these studies are limited by the use of data from a specific geographic area (e.g., Idaho, Florida) and/or a specific population (e.g., workers' compensation patients) for selected surgery types.

Along with the question of whether the growth of ASCs induces demand, the question of whether this hypothesized induced demand drives up Medicare spending remains to be answered. Prior papers have not studied the financial impact of increased ASC utilization on the Medicare program. Growth in the number of ASCs may raise total procedure volume, but its effect on aggregate Medicare spending also depends on the migration of procedures from hospital outpatient departments to ASCs. Since ASCs are paid a fraction of what hospitals are paid, the migration could potentially result in net savings to Medicare.

In this paper, we address two questions. First, we studied the issue of induced demand by examining the effect of ASCs on the total volume of selected outpatient procedures covered by Medicare. Second, we projected the net financial effect of ASCs on Medicare spending between 2011 and 2015 under illustrative scenarios of ASC growth.

In addition to examining the potential financial effects of ASC use on Medicare, this study has other important advantages over prior work. We separately examined the ASC effects on total procedure volume and ASC market share. Thus, our study provides a more complete picture of the market dynamics associated with ASC growth and allows us to estimate the net financial effect of ASC growth on Medicare spending. We use national Medicare data rather than rely on single-state data. Finally, we use a fixed-effects model to control for underlying population demand.

Methods

Data source. The study's primary data source was the Medicare Physician/Supplier Procedures Summary (PSPS) files from 2000 to 2009. The PSPS files contain information on the number of Medicare-covered procedures by place of services. Medicare Provider of Services files were used to measure the number of health-care facilities, including ASCs and hospitals. We used the Census State Population Estimates to measure total state population and demographic distribution (age, sex, race, and ethnicity) among the elderly population. Medicare enrollment data were used to measure the number of Medicare Part B Fee-For-Service (FFS) enrollees and the percentage of disabled enrollees.

Several sources of data were used to obtain state-level demographic characteristics and health-care resources: the Area Resource File to measure the number of health-care professionals; the Behavior Risk Factor Surveillance System to compute the percentage of overweight people and people with poor health among the elderly population; and the Census State Median Income data.

Procedure selection. For our analyses, we selected four common groups of procedures that are performed in outpatient settings using Current Procedural Terminology (CPT) codes: (i) cataract removal/lens insertion (CPT 66830–66986); (ii) arthroscopy (CPT 29800–29899); (iii) upper gastrointestinal (GI) procedures (CPT 43200–43273); and (iv) colonoscopy (CPT 45355–45392, G0105, G0121). Cataract removal, upper GI procedures, and colonoscopy are all common procedures performed on the elderly population. Orthopedic surgery is a growing service area of ASCs. We chose arthroscopy as a specific set of procedures to represent orthopedic procedures. Together, these four procedure categories accounted for 51% of all Medicare-allowed services or 62% of all Medicare-allowed charges for ASCs in 2009.

Unit of observation and modeling approach. The unit of observation in the analytical file is the state-year. The sample covers 50 states in the United States and stretches over 10 years from 2000 to 2009. We used multivariate regression analysis to assess the effect of ASCs on total procedure volume and market share in Medicare. For each procedure group, we fitted one regression model for total procedure volume and the other for the ASC market share. Total procedure volume includes Medicare-billed procedures performed in ASCs, hospital outpatient departments, and physicians' offices per 1,000 Medicare Part B FFS beneficiaries. Only procedures that are covered under both the Medicare outpatient payment schedule and the ASC payment schedule are included in the computation of total procedure volume. ASC market share is defined as the number of procedures performed at ASCs divided by the total volume for each procedure group.

The procedure volume regression model assesses the impact of ASC growth on service utilization of the entire market. If ASCs (and associated physician ownership) induce demand, we would observe a positive effect of the number of ASCs on total procedure volume. The ASC market share regression examines the extent to which the growth of ASCs leads to the migration of procedures from other outpatient settings to ASCs. The key independent variable in the regressions is the number of ASC operating rooms per 100,000 people.

We used three types of measures to control for health-care demand: (i) demographic composition of the elderly population (age, sex, race, and ethnicity distribution in people aged 65 or older and median household income); (ii) health status of the elderly population (percentage overweight and percentage in poor health among people aged 65 or older and percentage of disabled in Medicare FFS population); and (iii) health-care resources (number of practicing MDs and number of hospitals providing outpatient surgery services per 100,000 people and percentage of surgeons among practicing MDs). The models included state fixed effect and time fixed effect to control for unobserved demand factors.

We simulated the impact of ASC growth on Medicare spending in 2011–2015 under a variety of scenarios based on the regression results. Statistically insignificant coefficients for the number of ASC operating rooms were treated as zero in the simulation. We first determined the projected values of the independent variables for 2011–2015. We used the Census state population projection files for population estimates and

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Table 1. Summary statistics of procedure volume, ASC market share, and ASC operation rooms

	2000	2003	2006	2009
Procedure volume per 1,000 Medicare beneficiaries				
Cataract removal/lens insertion	55.8 (9.1)	57.9 (9.5)	61 (12.2)	60.5 (8.7)
Arthroscopy	6.3 (1.8)	7.5 (1.9)	10.5 (3)	11.71 (3)
Upper gastrointestinal procedures	38.2 (6.4)	45.8 (7.1)	52.1 (8.3)	54.4 (9.1)
Colonoscopy	58.6 (10)	84.5 (12.3)	90.9 (11.4)	83.7 (10.8)
ASC market share (%)				
Cataract removal/lens insertion	43.4 (15.3)	50.6 (16)	54.2 (16.5)	60.5 (16)
Arthroscopy	18.1 (9.6)	24.2 (12.1)	30.1 (12.9)	31.8 (13.4)
Upper gastrointestinal procedures	20 (12.5)	26.4 (15.2)	33.1 (17.4)	35.7 (16.7)
Colonoscopy	22.2 (13.5)	29.5 (16.4)	37 (18.7)	40.9 (18)
ASC operation rooms per 100,000 population	2.9 (1.6)	3.5 (1.8)	4.2 (2.1)	4.5 (2.0)

Mean and s.d. (in parentheses) across states in selected years are reported. Medicare beneficiaries are Medicare Part B Fee-For-Service plan enrollees. Procedure volume includes procedures from all outpatient care settings, including ASCs, hospital outpatient departments, and offices.
ASC, ambulatory surgical center.
Source: Authors' analysis of the analytical sample.

Table 2. Summary statistics of demographic distribution, health status, and health-care resources

	2000	2003	2006	2009
Aged 75–84 in elderly population (%)	35.1 (1.4)	35.7 (1.4)	35.2 (1.3)	33.0 (1.1)
Aged 85+ in elderly population (%)	12.2 (1.5)	12.7 (1.6)	13.5 (1.7)	14.0 (1.7)
Male in elderly population (%)	41.6 (1.8)	42.0 (1.7)	42.4 (1.7)	42.9 (1.6)
Hispanic origin in elderly population (%)	3.1 (5.1)	3.5 (5.4)	3.9 (5.7)	4.3 (5.9)
Black in elderly population (%)	8.0 (11.1)	8.0 (10.9)	8.1 (10.6)	8.1 (10.3)
People with poor health in elderly population (%)	29.3 (5.6)	29.2 (5.4)	28.2 (5.3)	25.7 (4.7)
Overweight people in elderly population (%)	58 (4.1)	59.7 (4.1)	61.8 (3.6)	63.4 (3.6)
Disabled in Medicare Part B Fee-For-Service population (%)	13.9 (3)	15.2 (3.2)	16.6 (3.4)	17.1 (3.4)
Median household income ($000)	52.2 (8)	50.7 (7.6)	51.6 (8.3)	49.9 (7.6)
Practicing MDs per 100,000 population	167.9 (30.1)	179 (31.9)	182.8 (34.5)	174.6 (32.1)
Surgeons in practicing MDs (%)	24.9 (1.8)	24.2 (1.8)	23.3 (1.8)	22.9 (1.9)
Hospitals with outpatient surgery services per 100,000 population	1.8 (0.9)	1.8 (1.0)	1.8 (1.0)	1.9 (1.1)

Mean and s.d. (in parentheses) across states in selected years are reported. Elderly population includes people aged 65 or older.
Source: Authors' analysis of the analytical sample.

demographic distribution. For other variables, we used a 4-year moving average of the annual growth rate of the most recent years to project the growth rate from 2010 to 2015. For example, we used actual data from 2008 and 2009 and projected data from 2010, 2011, and 2012 to project values in 2013. The state and time fixed effects were included in the projection estimates. For the time fixed effects, we used a 4-year moving average. For ASC rooms per capita, we designed four scenarios assuming different ASC growth rates (described further below).

Using the projected values for the independent variables and the coefficients from the regression models, we projected total Medicare procedure volume and ASC market share. For Medicare payments, we used the 2011 Medicare outpatient prospective payment system (OPPS) fee schedule, the Medicare ASC fee schedule, and the Medicare physician fee schedule (MPFS) for payments for physician practice expenses. These payment rates were multiplied by the projected volume at ASCs, hospital outpatient departments, and physician offices to estimate Medicare spending. We projected an increase at an annual rate of 1% in the rates of future Medicare payments for services under the OPPS and the MPFS, and growth of 0.5% for ASC services for 2012–2015. These assumptions are based on Medicare Payment Advisory Commission recommendations for updating the Medicare OPPS, ASC Fee Schedule, and Medicare physician fee schedules.

Results

Descriptive analysis. **Table 1** presents trends and cross-sectional variation of key variables. Volume per capita increased in the past decade across all four procedures at different rates. Colonoscopy experienced a rapid growth in the first half of the decade and then slowed considerably. Upper GI procedures and arthroscopy have been increasing at a relatively steady pace. The growth of cataract procedures was mild compared with growth in other procedures.

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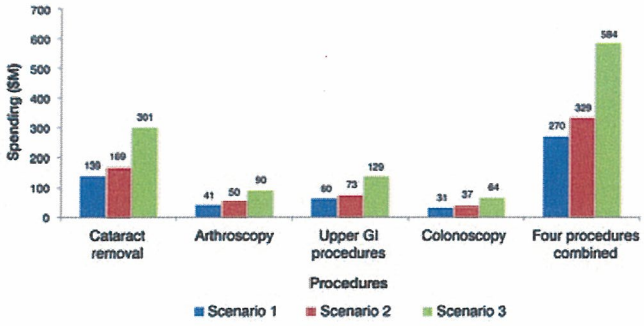

Figure 1. Total additional Medicare spending from 2011 to 2015 under alternative scenarios that restrict the growth of ambulatory surgical centers (ASCs). Additional cost compared with base scenario. The base scenario assumes that ASCs grow at historical rates in 2011–2015. Scenario 1 assumes that per capita ASC rooms stay at 2009 levels in 2011–2015. Scenario 2 assumes that the number of ASC rooms stays at 2009 levels in 2011–2015. Scenario 3 assumes that ASC rooms decrease in 2011–2015 at a rate so that the number of ASC rooms in 2015 is the same as that in 2007. Cost shown is the total cost from 2011 to 2015 and is expressed in million dollars. (Source: Authors' analysis of the analytical sample.)

ASCs have been gaining market share across all years. Procedures performed at ASCs now account for more than 60% of cataract procedures and 30–40% of other procedures performed on FFS Medicare beneficiaries. The number of ASC operating rooms has been growing across all years, although the growth in recent years has slowed down. Summary statistics of the control variables in the regression model are listed in **Table 2**.

Regression analysis. **Table 3** shows the estimated impact of ASC growth on the total procedure volume and ASC market share from the regression analysis. After controlling the variables and fixed effects specified above, we found statistically significant association between ASCs and service utilization for one procedure group, colonoscopy. The analysis revealed no statistically significant association between number of ASC operating rooms and Medicare utilization of cataract procedures, arthroscopy, or upper GI procedures.

With respect to colonoscopy, one additional ASC operating room per 100,000 population is associated with 1.47 more procedures per 1,000 Medicare Part B FFS beneficiaries. The effect of an additional ASC operating room per 100,000 represents a 5.3% increase from the average ASC volume of colonoscopies in the analytical sample (or an increase of 1.8% in colonoscopies performed in all outpatient settings). It is important to note that one additional ASC operating room per 100,000 is a substantial increase, considering that the mean number of ASC operating rooms per 100,000 in the analytical sample is 3.8.

The findings show a significant impact of the number of ASC operating rooms on ASC market share for each procedure category. One additional ASC operating room per 100,000 population leads to a 4-percentage-point gain in ASC market share for the procedure categories of cataract removal/lens insertion and arthroscopy. The ASC market share effect of an additional ASC operating room is 6% for the categories of upper GI procedures and colonoscopy.

Cost simulation. In light of concerns regarding physician ownership of ASCs, the focus has been on the potential cost of ASCs in increasing volume and spending. As a result, we designed scenarios to better understand the potential implications of different ASC growth rates for Medicare spending over the period from 2011 to 2015.

Four scenarios of ASC growth were modeled. The "base scenario" assumes projected growth of ASCs based on the 4-year moving average. Scenario 1 ("population growth rate") assumes that ASC operating rooms per capita remain at 2009 levels. Scenario 2 ("no growth") assumes that the number of ASC rooms remains at 2009 levels. Scenario 3 ("negative growth") assumes that the number of ASC rooms decreases at a rate such that the number of ASC rooms in 2015 is equal to the number in 2007. Modeling these scenarios provides insights into the potential impact of policies that would restrict growth of ASCs.

Figure 1 presents the change in Medicare spending under the three alternatives relative to the base scenario. Under all three alternatives, Medicare spending is higher than that under the base scenario. From 2011 to 2015, the most restrictive scenario (scenario 3) would result in Medicare spending $584 million more than in the base scenario across all selected procedure groups. The two less restrictive scenarios would increase Medicare spending by $329 million and $270 million relative to the base scenario, respectively.

The potential savings to Medicare if ASC growth continues at historical rates is easy to understand for cataract procedures,

Table 3. Impact of ASC operation rooms on procedure utilization and ASC market share

Impact of one additional ASC operation room per 100,000 population on:	Cataract procedures	Arthroscopy	Upper GI procedures	Colonoscopy
Procedures per 1,000 Medicare beneficiaries	0.56 (0.56)	0.10 (0.11)	−0.09 (0.28)	1.47* (0.46)
Market share of ASCs	0.04* (0.005)	0.04* (0.004)	0.06* (0.004)	0.06* (0.004)
Sample size	500	500	500	500

Standard deviations are listed in parentheses. Medicare beneficiaries include Medicare Part B Fee-For-Service plan enrollees. All regressions include control variables described in the Methods section and state and year fixed effects. Coefficients of market share are expressed in fractions, not percentage points: a coefficient of 0.06 means market share increases by 6 percentage points.
*$P \leq 0.01$.
ASC, ambulatory surgical center.
Source: Authors' analysis of the analytical sample.

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arthroscopy, and upper GI procedures, as ASC growth does not increase total procedure volume but does increase ASC market share. Colonoscopy is an interesting case in that continued growth of ASCs would still result in Medicare savings. The reason is that the savings to Medicare from migration of services from other outpatient settings to ASCs is greater than the additional Medicare spending from increases in the total volume of colonoscopies associated with ASC growth.

Discussion

The study findings show that the association between ASC growth and service utilization is not as strong as previous studies suggest. We found that ASC growth is associated with increased total utilization for colonoscopy only. For other common procedures, including cataract procedures, arthroscopy, and upper GI procedures, we did not observe increased Medicare utilization as a result of ASC growth.

There are a number of potential reasons that our findings differ from those of previous studies. One explanation is that our approach (using state-level time series data and fixed effects) better enabled us to disentangle the potentially spurious relationship between ASCs and increased utilization by controlling for underlying demand factors. Previous studies note that induced demand is only one of many plausible reasons for their observed associations between ASCs and procedure volume. In addition, our analysis evaluated the association between ASCs and utilization at the national level. Prior research generally focused on a single state or region, which may generate results that are not generalizable to the national level.

Although we cannot reject the hypothesis that ASCs created greater Medicare volume of colonoscopy, the growth of ASCs may have helped meet the growing demand for these services. In early 1999, the Centers for Disease Control and Prevention launched its Screen for Life: National Colorectal Cancer Action Campaign. Since the initiative began, the percentage of adults aged 50 or older who have ever had a sigmoidoscopy or colonoscopy increased from 44% in 1999 to 53% in 2004 to 64% in 2010 (14). Moreover, new rules in the Affordable Care Act of 2010 waive beneficiary cost-sharing for screening colonoscopies, which is expected to further increase the demand for these services.

A careful examination of the impact of ASC growth should include both changes in total volume and the migration of services from other outpatient settings to ASCs, which was largely overlooked by previous studies. Our analysis shows that ASCs gain significant market share across all procedures as they grow. Since ASCs are paid a fraction of what is paid to hospitals for the same procedures under Medicare, a migration from other outpatient settings to ASCs could reduce Medicare spending. Our results suggest that ASC growth at historical rates could save hundreds of millions of dollars to Medicare over the next 5 years, compared with slower growth rates.

There are two potentially important limitations of the study. First, as with previous studies, our test of induced demand is indirect. Specifically, we do not observe physician ownership of ASCs directly, but, instead, determine the association between the number of ASC operating rooms and overall surgical volume.

Second, we used fixed effects to control for differences in unobserved demand factors across states and time. A concern with this approach is whether there is sufficient variation in the growth of ASCs and procedure volume across states and years to detect a significant relationship. However, our analysis indicates significant variation in key variables. For example, the interquartile range (i.e., the difference between the 75th and 25th percentiles) of the state-level cumulative growth in per capita ASCs was 62% (96% – 34%) from 2000 to 2009, while the interquartile ranges of state-level growth of procedure volume were 14% (17% – 3%) for cataract removal, 41% (112% – 71%) for arthroscopy, 17% (49% – 32%) for upper GI procedures, and 18% (55% – 37%) for colonoscopy during the same period. Further, we found statistically significant effects on volume for some control variables with limited variation across years, such as the percentage of the elderly population aged 85 or older. This suggests ample variations in our sample to detect statistical significance (see **Supplementary Tables S1** and **S2** online).

Our study suggests that ASCs could play an important role in moving to a health-care system that offers greater value by producing high-quality care at lower cost. The policy debate should address the concern of physician ownership of ASCs in a broader context that includes recognition of the benefits of ASCs. Movement in Medicare toward value-based purchasing and delivery system reforms should work to increase the value of ASCs to Medicare and beneficiaries.

ACKNOWLEDGMENTS

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CONFLICT OF INTEREST

Guarantor of the article: Lane Koenig, PhD.
Specific author contributions: Lane Koenig: designing approach, interpreting results, drafting manuscript; Qian Gu: conducting analysis, interpreting results, drafting manuscript.
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Potential competing interests: None.

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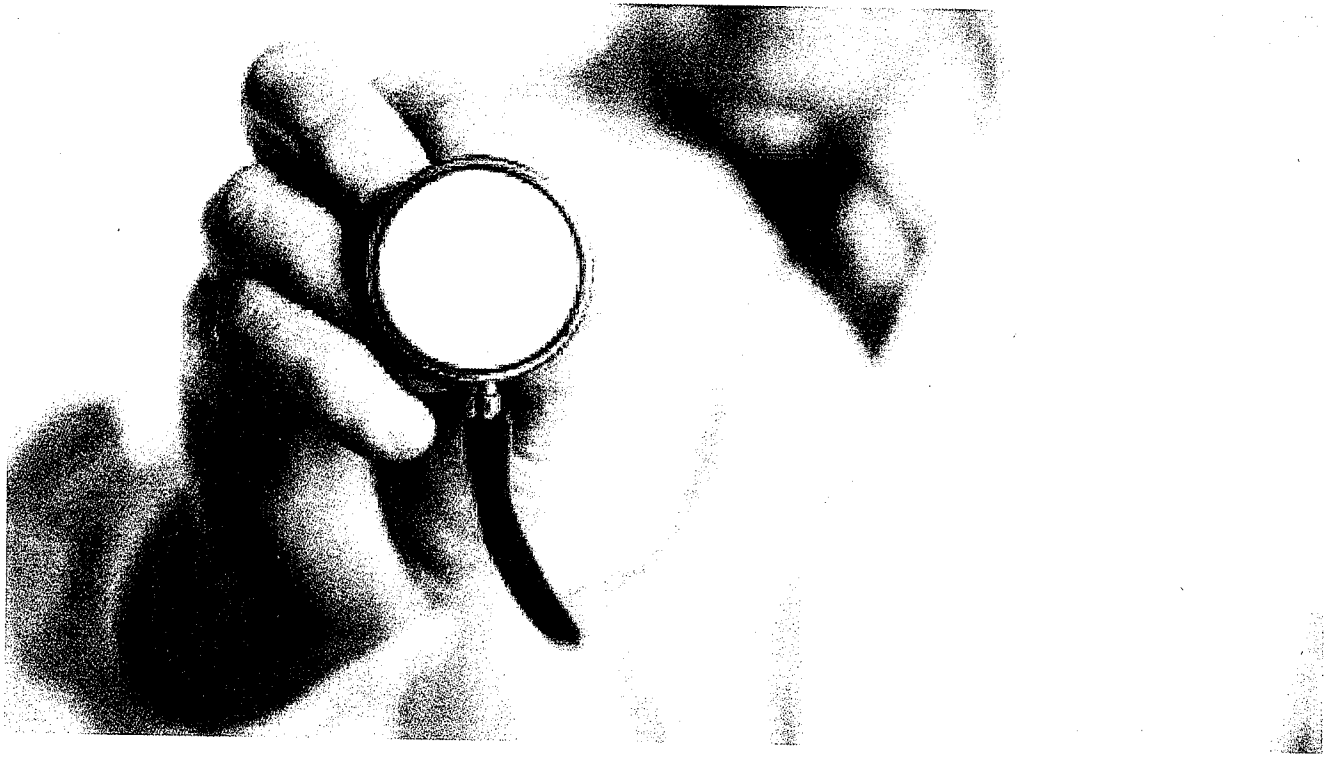
Can Ambulatory Care Fix Our Costly Healthy-Care System?

By Barbara Mannino / Published March 08, 2012 / FOXBusiness



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Ambulatory surgery centers have transformed the outpatient experience for millions of Americans by offering a less-costly and more-convenient alternative to hospitals for surgical care and diagnostic and preventive procedures, experts say.

"Ambulatory surgery centers (ASCs) represent what everyone

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—patient, provider and payer—seems to want [in health care]," says Dr. David Shapiro, an anesthesiologist and president of Ambulatory Surgery Center Association (ASCA).

A 2009 report from KNG Health Consulting, LLC cites an historic shift away from hospital inpatient surgeries toward outpatient settings. This shift, combined with technological advances like laparoscopic surgery and improved anesthesia with quicker onset and faster offset, contributed to the significant ASC growth over the last 40 years.

Today, more than 5,300 Medicare-certified U.S. centers provide same-day predominantly elective services like gastrointestinal, ophthalmologic, pain management, orthopedics, dermatology and others to patients with insurance funded by public and private payers.

The highly-specialized approach and small scale of these centers when compared to hospitals enable them to pass along direct savings to patients through lower copays and out-of-pocket expenses. Private insurers, Medicare and Medicaid, and employers also benefit from the lower costs.

For Medicare, the reduction in health-care spending is $2.6 billion a year, and an additional $2.4 billion in savings could be wrung out

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of the system annually if just half of eligible surgeries moved to the ASC setting, according to the most recent statistics from ASCA.

Good for Patients

Physicians claim the smaller settings at ASCs help them develop better relationships and trust with patients. According to ASCA, patient satisfaction rates consistently range in the 92nd percentile.

"Patients feel less anxious, are exposed to less infection, and experience better results following anesthesia when compared to undergoing surgery in the hospital setting," says Dawn Spencer, chief operating officer at The Center for Ambulatory Surgery.

She adds the service model enables patients to bring any concerns directly and in real-time to their physician who has direct case-knowledge.

ASCs also offer patients access to various convenient locations, ease in scheduling surgeries and short wait-times, especially because there is no opportunity for the unscheduled interruption of emergency surgeries.

ASCs are often termed "focused factories" because services are managed around the experience of a particular procedure.

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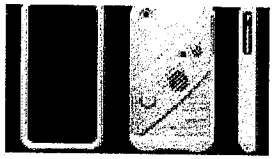
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"The entire system benefits from the repetition and specialization: preoperative nursing care, interoperative medical care of an anesthesiologist, radiologist or surgeon, and postoperative care," claims Shapiro, "and the patient benefits."

ASCs are subject to rigorous oversight and independent inspections to assess compliance with both state and national standards. These onsite surveys, like those conducted at hospitals and other facilities, evaluate ASCs on a wide range of demanding clinical, operational and quality standards.

In addition to state and Medicare standards, many ASCs seek additional accreditation from one of four accrediting bodies, which are recognized by CMS for their high standards of quality care. These include the Accreditation Association for Ambulatory Health Care (AAAHC), The Joint Commission, the American Association for Accreditation for Ambulatory Surgery Facilities and the American Osteopathic Association (AOA).

The AAAHC, for example, has 350 practicing healthcare professional surveyors—physicians, nurses and medical directors—who conduct scrupulous surveys and accredit thousands of ASC organizations, according to spokesperson Geoffrey Charleton-Perrin. These professionals also fulfil a consultative and educational function, providing guidance beyond

accreditation for continuous quality improvement.

Currently, ASCA says more than 90% of ASCs are at least partly physician-owned. ASC detractors take issue with this ownership status saying it induces self-referrals.

But Spencer calls this a "hollow argument," citing the Stark Law, which regulates and outlines physician investment guidelines in 11 designated health services but does **not** impose restrictions on a physician's ability to invest in ASCs.

Investments in ASCs, however, must comply with state laws and the federal Anti-Kickback statute which provides certain safe harbor protections that require the full compliance of each physician investor who must: be in a position to refer patients directly to the ASC and perform surgery on such referred patients; derive at least one-third of medical practice income from procedures performed at the ASC; and perform at least one-third of procedures that may be performed in an ASC at the investment entity ASC if the investment is in a multispecialty center.

Lane Koenig, KNG founder and president says "our research has found the literature overstates the importance of self-referrals."

Spencer also claims a high standard of care and outcomes result when physicians assume the financial risk of ownership.

Competition

Currently hospitals are trending toward opening free-standing centers, sometimes collaborating with physicians. Still, hospitals are facing competition from ASCs, says Caroline Steinberg, vice president of trends analysis at the American Hospital Association.

Steinberg claims consumers are not aware that nonhospital surgery centers have a lower regulatory threshold, less stringent quality standards and no emergency backup.

Shapiro disagrees. "ASCs have all the necessary safeguards in place to manage an emergency and ensure patient safety," he says, "including patient transfer agreements with nearby hospitals. In fact, because of its confidence in the quality of care it provides, the ASC industry has long advocated for a national quality reporting program for ASCs, which Medicare introduced this year."

When it comes to infection prevention, adds Shapiro, ASCs are also the only surgical providers complying, as mandated by Medicare, with an extensive and comprehensive infection prevention checklist developed collaboratively by Medicare and the Centers for Disease Control and Prevention.

Also precautionary: Patients with comorbidities typically are treated at hospitals. ASC patient selection is based on the whole patient,

including evaluation of the home environment to which a patient will be discharged.

The Joint Commission alone accredits 500 ASCs, two-thirds with "deemed status" accreditation and CMS certification, says Mike Dye, senior associate of the ambulatory care program. The Joint Commission represents the gold seal of approval that assures patients ASCs meet the exact same expectations as hospitals. "Accredited surgical care is an indicator of quality," Dye says.

Dye emphasizes that all accrediting organizations perform unannounced onsite surveys which afford patients with added assurance; no one is prepping ahead of time.

Also, Koenig claims ASCs have helped to meet the increased demand for preventative services like colonoscopies and upper gastrointestinal endoscopic (GI) procedures and make consumers more aware of the early diagnosis, treatment, quality of life and cost benefits of these services.

CHAPTER 5

Ambulatory surgical center services

RECOMMENDATION

5 The Congress should eliminate the update to the payment rates for ambulatory surgical centers for calendar year 2014. The Congress should also require ambulatory surgical centers to submit cost data.

COMMISSIONER VOTES: YES 16 • NO 0 • NOT VOTING 0 • ABSENT 1

CHAPTER 5

Ambulatory surgical center services

Chapter summary

Ambulatory surgical centers (ASCs) provide outpatient surgical services to patients who do not require an overnight stay after surgery. In 2011,

- ASCs served 3.4 million fee-for-service (FFS) Medicare beneficiaries, an increase of 0.9 percent from 2010;
- there were 5,344 Medicare-certified ASCs, an increase of 1.8 percent (92 ASCs) from 2010; and
- Medicare combined program and beneficiary spending on ASC services was $3.4 billion, an increase of 2.2 percent per FFS beneficiary from 2010.

Assessment of payment adequacy

Our results indicate that beneficiaries' access to ASC services is at least adequate, as most of the available indicators of payment adequacy for ASC services, discussed below, are positive. However, our results also indicate slower growth in the number of ASCs and volume of services in 2011 than in previous years.

Beneficiaries' access to care—Our analysis of facility supply and volume of services indicates that beneficiaries' access to ASC care has generally been adequate.

In this chapter

- Are Medicare payments adequate in 2013?
- How should Medicare payments change in 2014?

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- ***Capacity and supply of providers***—From 2006 through 2010, the number of Medicare-certified ASCs grew by an average annual rate of 3.6 percent. However, the growth slowed to 1.8 percent in 2011. The relatively slow growth may reflect the substantial revision of the ASC payment system in 2008 (see online Appendix A from Chapter 2C of our March 2010 report at http://www.medpac.gov/chapters/Mar10_Ch02C_APPENDIX.pdf), and investors may have been responding to the large changes in payment rates that occurred under that revision. In addition, Medicare payment rates for most ambulatory surgical services have become much higher in hospital outpatient departments (HOPDs) than in ASCs—for 2013, the Medicare rates are 78 percent higher in HOPDs than in ASCs. This payment difference may have led some ASC owners to sell their facilities to hospitals. Finally, physicians have increasingly been selling their practices to hospitals and becoming hospital employees. Physicians who are hospital employees may be more inclined to provide surgical services at hospitals than at ASCs.
- ***Volume of services***—From 2006 through 2010, the volume of services per beneficiary grew by an average annual rate of 5.7 percent; in 2011, volume increased by 1.9 percent.

Quality of care—Although CMS has established a program for ASCs to submit quality data, ASCs did not begin doing so until October 2012. Consequently, we do not have sufficient data to assess ASCs' quality of care.

Providers' access to capital—Because the number of ASCs has continued to increase, they appear to have adequate access to capital.

Medicare payments and providers' costs—From 2006 through 2010, Medicare payments per FFS beneficiary increased at an average annual rate of 5.1 percent but slowed to 2.2 percent in 2011. ASCs do not submit data on the cost of services they provide to Medicare beneficiaries. Therefore, we cannot calculate a Medicare margin as we do for other provider types to assist in assessing payment adequacy. ■

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Background

An ambulatory surgical center (ASC) is a distinct entity that primarily provides outpatient surgical procedures to patients who do not require an overnight stay after the procedure. Most ASCs are freestanding facilities rather than part of a larger facility, such as a hospital. About one-quarter of ASCs in 2008 were jointly owned by physicians and hospitals (Medical Group Management Association 2009). In addition to ASCs, hospital outpatient departments (HOPDs) and, in some cases, physicians' offices perform outpatient surgical procedures.

Since 1982, Medicare has covered and paid for surgical procedures provided in ASCs. Medicare covers about 3,600 surgical procedures under the ASC payment system. Physicians who perform procedures in ASCs or other facilities receive separate payment for their professional services under the physician fee schedule (PFS). About 90 percent of ASCs have at least one physician owner (Medical Group Management Association 2009). Physicians who perform surgeries in ASCs they own receive a share of the ASC's facility fees in addition to their professional fees. To receive payments from Medicare, ASCs must meet Medicare's conditions of coverage, which specify standards for administration of anesthesia, quality evaluation, operating and recovery rooms, medical staff, nursing services, and other areas.

Medicare pays for a bundle of facility services provided by ASCs—such as nursing, recovery care, anesthetics, and supplies—through a system that is primarily linked to the outpatient prospective payment system (OPPS), which Medicare uses to set payments for most services provided in HOPDs (a more detailed description of the ASC payment system can be found online at http://www.medpac.gov/documents/MedPAC_Payment_Basics_12_ASC.pdf). The ASC payment system is also partially linked to the PFS. The ASC system underwent substantial revisions in 2008 (see online Appendix A from Chapter 2C of our March 2010 report at http://www.medpac.gov/chapters/Mar10_Ch02C_APPENDIX.pdf). The most significant changes included a substantial increase in the number of surgical procedures covered under the ASC payment system, allowing ASCs to bill separately for certain ancillary services, and large changes in payment rates for many procedures.

For most covered procedures, the ASC relative weight, which indicates the relative resource intensity of the procedure, is based on its relative weight under the OPPS (the standard ASC method). This link to the OPPS is consistent with a previous Commission recommendation to align the relative weights in the OPPS with the ASC payment system (Medicare Payment Advisory Commission 2004).

Although the ASC payment system is linked to the OPPS, payment rates for all services covered under both systems are lower in the ASC system for two reasons. First, the relative weights have been lower in the ASC system because CMS makes proportional adjustments to the relative weights from the OPPS to maintain budget neutrality in the ASC system. Thus, ASC spending does not change over time because of changes in the OPPS relative weights. In 2013, this adjustment reduced the ASC relative weights by 6.8 percent below the relative weights in the OPPS. Second, for most procedures covered under the ASC system, the payment rate is the product of its relative weight and a conversion factor, set at $42.92 in 2013. The ASC conversion factor is lower than the OPPS conversion factor ($71.31 in 2013).

The ASC conversion factor is less than the OPPS conversion factor for two reasons. First, CMS set the initial ASC conversion factor for 2008 so that total ASC payments under the revised payment system would equal what they would have been under the previous payment system. By comparison, the initial OPPS conversion factor was based on total payments for hospital outpatient services in 2000. Second, CMS updates the ASC conversion factor based on the consumer price index for all urban consumers (CPI–U), whereas it uses the hospital market basket as the basis for updating the OPPS conversion factor. We are concerned that the CPI–U may not reflect ASCs' cost structure, and the Commission has recommended that CMS collect ASC cost data. These data should be used to examine whether an alternative input price index would be an appropriate proxy for ASC costs or an ASC-specific market basket should be developed (Medicare Payment Advisory Commission 2010b).

CMS uses a method different from the standard ASC method to determine payment rates for procedures that are predominantly performed in physicians' offices and that were first covered under the ASC payment system in 2008 or later (under the standard ASC method, ASC rates are based on OPPS relative weights). Payment for these "office-based" procedures is the lesser of the amount derived from the standard ASC method or the practice

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expense portion of the PFS rate that applies when the service is provided in a physician's office (this amount covers the equipment, supplies, nonphysician staff, and overhead costs of a service). CMS set this limit on the rate for certain office-based procedures to prevent migration of these services from physicians' offices to ASCs for financial reasons.[1] The Commission has been investigating payment rate differences across multiple ambulatory settings, including ASCs, HOPDs, and physicians' offices (Medicare Payment Advisory Commission 2012).

The ASC payment system generally parallels the OPPS in terms of which ancillary services are paid separately and which are packaged into the payment of the associated surgical procedure. Starting in 2008, ASCs receive separate payment for the following ancillary services:

- radiology services that are integral to a covered surgical procedure if separate payment is made for the radiology service in the OPPS,
- brachytherapy sources implanted during a surgical procedure,
- all pass-through and non–pass-through drugs that are paid for separately under the OPPS when provided as part of a covered surgical procedure, and
- devices with pass-through status under the OPPS.[2]

Because Medicare pays ASCs less than HOPDs for procedures, movement of surgical services from HOPDs to ASCs can reduce aggregate program spending and beneficiary cost sharing. If, however, the growth of ASCs results in an increase in the overall number of surgical services, this increase could partially offset reduced spending and cost sharing.

Although we do not have recent ASC cost data that would allow us to quantify the cost difference between settings, some evidence suggests that ASCs are a lower cost setting than HOPDs. The Government Accountability Office (GAO) compared ASC cost data from 2004 with HOPD costs and found that ASC costs are, on average, lower than HOPD costs (Government Accountability Office 2006).[3] In addition, data from the National Survey of Ambulatory Surgery indicate that the average time for ambulatory surgical visits was 50 percent higher in HOPDs than ASCs (147 minutes vs. 98 minutes) (Cullen et al. 2009).[4] Average times were also higher in HOPDs than in ASCs for specific diagnoses, such as cataract, benign neoplasm of the colon, and intervertebral disc disorders.

Are Medicare payments adequate in 2013?

To address whether payments for the current year (2013) are adequate to cover the costs of efficient providers and how much payments should change in the coming year (2014), we examine several measures of payment adequacy. We assess beneficiaries' access to care by examining the supply of ASC facilities and changes over time in the volume of services provided, providers' access to capital, and changes in revenue from the Medicare program. Unlike our assessments of other provider types, we could not use quality data in our analysis because ASCs have only recently begun to submit information on quality measures. Moreover, we cannot examine Medicare payments relative to providers' costs because CMS does not require ASCs to submit cost data.[5] Finally, we caution that the effect of Medicare payments on the financial health of ASCs is limited because, on average, Medicare spending accounts for only about 17 percent of an ASC's overall revenue (Medical Group Management Association 2009).[6]

Our results show that beneficiaries have at least adequate access to care in ASCs, although there is some variation among subgroups of beneficiaries (see text box). In addition, ASCs have adequate access to capital, and Medicare payments to ASCs have continued to grow. Together, these measures suggest that payment rates are at least adequate.

Beneficiaries' access to care: Supply of ASCs and volume growth indicate adequate access

Increases in the number of Medicare-certified facilities and volume of services provided to Medicare beneficiaries suggest growing access to ASCs. This growth may be beneficial to patients and providers because ASCs can offer them convenience and efficiency relative to HOPDs—the provider type with the greatest overlap of services with ASCs. For patients, ASCs can offer more convenient locations, shorter waiting times, and easier scheduling relative to HOPDs; for physicians, ASCs may offer more control over their work environment, customized surgical environments, and specialized staff. In addition, Medicare has lower payment rates and beneficiaries generally have lower copayments in ASCs than in HOPDs. However, the growth in ASCs may lead to an increase in the overall volume of surgical procedures (see discussion on pp. 113–115).

Differences in types of patients treated in ambulatory surgical centers and hospital outpatient departments

There is evidence that ambulatory surgical centers (ASCs) treat different types of patients than hospital outpatient departments (HOPDs). Our analysis of Medicare claims from 2011 found that the following groups are less likely to receive care in ASCs than in HOPDs: Medicare beneficiaries who also have Medicaid coverage (dual eligibles), African Americans (who are more likely to be dual eligible), beneficiaries who are eligible because of disability (under age 65), and beneficiaries who are age 85 or older (Table 5-1).[7] The smaller share of disabled and older beneficiaries treated in ASCs may reflect the healthier average profile of ASC patients relative to HOPD patients. In addition, the smaller share of African American patients in ASCs relative to HOPDs may be linked to differences in the geographic locations of ASCs and hospitals, the lower rate of supplemental coverage among African Americans, and the relatively high percentage of African Americans who have HOPDs or emergency departments as their usual source of care (Centers for Medicare & Medicaid Services 2012a).

In addition, we found that patients treated in HOPDs were, on average, more medically complex than patients treated in ASCs, as measured by differences in average patient risk scores. We used risk scores from the CMS-hierarchical condition categories (CMS–HCC) risk-adjustment model used in Medicare Advantage to measure patient severity.[8] CMS–HCC risk scores predict beneficiaries' relative costliness based on their diagnoses from the prior year and their demographic information (e.g., age and sex). We used 100 percent of Medicare claims from 2010 to maximize the number of cases and combined services into ambulatory payment classification (APC) groups. The average risk score for HOPD patients across all procedures in 2010 was 1.64, compared with 1.23 for ASC patients. This difference is statistically significant ($p < 0.05$). Beneficiaries who have higher risk scores are likely to be sicker and may require more time and resources to treat. Sicker patients may be referred to HOPDs instead of ASCs because hospitals offer emergency services and access to onsite specialists if complications arise.

TABLE 5-1

Medicare patients treated in ASCs differ from patients treated in HOPDs, 2011

	Percent of beneficiaries	
Characteristic	**ASC**	**HOPD**
Medicaid status		
Not Medicaid	85.8%	76.6%
Medicaid	14.2	23.4
Race/ethnicity		
White	87.9	83.9
African American	6.9	10.4
Other	5.2	5.7
Age		
Under 65	14.5	22.0
65 to 84	78.4	67.3
85 or older	7.1	10.7
Sex		
Male	42.3	44.0
Female	57.7	56.0

Note: ASC (ambulatory surgical center), HOPD (hospital outpatient department). All of the differences between ASC and HOPD beneficiaries are statistically significant ($p < 0.05$). The analysis excludes beneficiaries who received services that are not covered in the ASC payment system.

Source: MedPAC analysis of 5 percent carrier and outpatient standard analytic files, 2011.

We also compared average patient risk scores within each APC.[9] For 46 percent of the APCs in our analysis (representing 30 percent of ASC volume), the average HOPD risk score was significantly higher than the average ASC risk score ($p < 0.05$). However, for the remaining 54 percent of APCs (representing 70 percent of ASC volume), the severity of patients in HOPDs was similar to or less than the severity of patients in ASCs. Table 5-2 (p. 110) shows the average risk scores in each setting for the 10 APCs with the highest ASC volume in

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Differences in types of patients treated in ambulatory surgical centers and hospital outpatient departments (cont.)

2011. Risk scores were significantly higher in HOPDs than in ASCs for 3 of the top 10 APCs (Table 5-2).

There is a limitation to using risk scores to predict the relative cost of providing a specific service: Risk scores predict patients' relative costliness across the full range of health care services, but they do not necessarily indicate that a patient who has a high risk score will be more costly for a specific service. Despite this limitation, we use CMS–HCC risk scores as a proxy for patient severity because we do not have comparable cost data for HOPDs and ASCs that would allow us to directly evaluate the impact of patient severity on the cost of individual services. In prior work, the Commission has used risk scores from the full HCC model to compare patient severity in HOPDs and ASCs (Medicare Payment Advisory Commission 2003).

Other data sources also suggest that ASCs treat patients who are different from those treated by HOPDs.

According to data from Pennsylvania on Medicare and non-Medicare patients, ASCs are less likely than HOPDs to serve Medicaid patients (Pennsylvania Health Care Cost Containment Council 2012). In Pennsylvania, Medicaid patients accounted for 4.7 percent of ASCs' diagnostic and surgical procedures in 2011, compared with 12.0 percent of HOPDs' procedures.[10] Commercially insured and Medicare patients represented a higher share of ASC procedures than HOPD procedures (87.3 percent vs. 78.2 percent). Although Pennsylvania data may not be nationally representative, national estimates from the National Survey of Ambulatory Surgery (NSAS), conducted by the Centers for Disease Control and Prevention, also show that ASCs treat a smaller share of Medicaid patients than hospitals. According to the NSAS data, ambulatory surgery visits by Medicaid patients accounted for 3.9 percent of total visits to freestanding ASCs in 2006, compared with 8.1 percent of total visits to hospital-based surgery centers.[11]

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TABLE 5-2

Comparison of average patient risk scores in HOPDs and ASCs for 10 most frequently provided ASC procedure groups, 2010

Procedure group (APC)	Average patient risk score		Percent of total ASC volume
	HOPD	ASC	
Cataract procedure with IOL insert	1.24	1.19	19.8%
Lower GI endoscopy	1.22*	1.08	15.7
Level III nerve injections	1.34	1.33	13.9
Level I upper GI procedures	1.54	1.36	11.0
Laser eye procedures	1.33	1.28	5.5
Level I nerve injections	1.37	1.35	4.8
Colorectal cancer screening: Colonoscopy	1.00*	0.90	2.7
Level II nerve injections	1.37	1.28	2.2
Level I arthroscopy	1.00*	0.89	1.5
Level III repair and plastic eye procedures	1.37	1.30	1.5
Total			78.7

Note: HOPD (hospital outpatient department), ASC (ambulatory surgical center), APC (ambulatory payment classification), IOL (intraocular lens), GI (gastrointestinal). Services are combined into APC groups.
*Difference between average HOPD risk score and average ASC risk score is statistically significant ($p < 0.05$). Risk scores were calculated using the CMS–hierarchical condition categories risk-adjustment model used in Medicare Advantage to measure patient severity. These risk scores predict beneficiaries' relative costliness based on diagnoses from the prior year and demographic information.

Source: MedPAC analysis of 100 percent carrier standard analytic file, 2010.

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Differences in types of patients treated in ambulatory surgical centers and hospital outpatient departments (cont.)

Several factors could explain why ASCs treat a smaller share of Medicaid patients (including dual eligibles) than HOPDs. A study by Gabel and colleagues suggests that insurance coverage influences a physician's decision to refer a patient to an ASC or to a hospital (Gabel et al. 2008). This study examined referral patterns for physicians in Pennsylvania who sent most of their patients to physician-owned ASCs rather than HOPDs. These physicians were much more likely to refer their commercially insured and Medicare patients than their Medicaid patients to a physician-owned ASC. They sent more than 90 percent of their commercial and Medicare patients—but only 55 percent of their Medicaid patients—to an ASC instead of a hospital.

The location of ASCs may also lead to a smaller share of Medicaid patients; for example, ASC owners may choose to locate in areas with a high proportion of commercially insured patients. In addition, many state Medicaid programs do not pay Medicare's cost sharing for dual eligibles if the Medicare rate for a service minus the cost sharing is higher than the Medicaid rate for the service (Medicare Payment Advisory Commission 2010a). In states that do not pay the cost sharing for ASC services used by dual eligibles, ASCs could be discouraged from treating these patients. Finally, dual-eligible beneficiaries are more likely to report that their usual source of care is an HOPD or hospital emergency department (ED) than are Medicare beneficiaries who have other types of supplemental coverage (Centers for Medicare & Medicaid Services 2012a). If a patient has an HOPD or ED as his usual source of care, physicians may be more likely to refer the patient to an HOPD for surgical care than they would patients who have a usual source of care in another setting. ■

Capacity and supply of providers: Number of ASCs has increased, but growth has slowed

The number of Medicare-certified ASCs increased substantially from 2006 through 2008 but has grown more slowly since then. From 2006 through 2008, the number of Medicare-certified ASCs increased by 5.1 percent per year on average. During this period, an average of 318 new facilities entered the program each year, while an average of 79 closed or merged with other facilities. However, the growth rate decelerated to 2.2 percent in 2009 and 1.8 percent in both 2010 and 2011 (Table 5-3). This slower growth continued into 2012, as the number of ASCs increased by 0.3 percent to 5,359 during the first three quarters of 2012 (an annual growth rate of 0.4 percent).

Several factors might explain the relatively slow growth from 2009 through the first three quarters of 2012:

- The economy is experiencing a sluggish recovery after the economic downturn that began in the fall of 2008, which has dampened demand for physicians' services

TABLE 5-3 **Number of Medicare-certified ASCs grew by 17 percent, 2006–2011**

	2006	2007	2008	2009	2010	2011
Number of centers	4,567	4,838	5,045	5,157	5,252	5,344
New centers	328	345	281	218	189	153
Exiting centers	89	74	74	106	94	61
Net percent growth in number of centers from previous year	5.5%	5.9%	4.3%	2.2%	1.8%	1.8%

Note: ASC (ambulatory surgical center).

Source: MedPAC analysis of Provider of Services file from CMS, 2011.

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TABLE 5-4 **Most Medicare-certified ASCs are urban and for profit**

ASC type	2006	2011
Urban	91%	91%
Rural	9	9
For profit	96	97
Nonprofit	4	3

Note: ASC (ambulatory surgical center).

Source: MedPAC analysis of Provider of Services file from CMS, 2011.

and elective surgeries (Deutsche Bank 2012b, Kaiser Family Foundation 2011, Keehan et al. 2012).

- The ASC payment system underwent a substantial revision in 2008, and investors may be responding to the large changes in payment rates that occurred under that revision.
- Payment rates for most ambulatory surgical services are 78 percent higher in the OPPS than in the ASC payment system, which has influenced some ASC owners to sell their facilities to hospitals and caused some health care systems to expand their HOPDs rather than establish new ASCs (North Carolina Department of Health and Human Services 2008, State of Connecticut 2011).
- There may be limited opportunities to develop new facilities because most physicians who perform procedures in ASCs are already affiliated with an ASC (Cain Brothers 2011).
- Physicians are increasingly choosing to be employed by hospitals rather than work in an independent practice (Berenson et al. 2012, Mathews 2012, Pettypiece 2012). Physicians employed by hospitals are more likely to provide ambulatory surgical services in their HOPDs than in a freestanding ASC.

To provide a more complete picture of capacity in ASCs, we also examined the change in the number of ASC operating rooms. From 2006 through 2011, the number of ASC operating rooms increased at almost the same rate as the number of ASCs (3.0 percent per year vs. 3.2 percent per year). The mean number of operating rooms per ASC decreased slightly from 2.8 to 2.7, although the median number of operating rooms per facility was 2 in both years.

ASCs are concentrated geographically. As of 2011, Maryland had the most ASCs per fee-for-service (FFS) beneficiary, followed by Idaho, Washington, and Georgia; each state had more than 30 ASCs per 100,000 FFS beneficiaries with Part B coverage. Vermont had the fewest ASCs per FFS beneficiary, followed by West Virginia, Kentucky, and New York; each state had fewer than 6 per 100,000 FFS beneficiaries.[12] In addition, in 2011, most Medicare-certified ASCs were for profit and located in urban areas, a pattern that has not changed over time (Table 5-4). Beneficiaries who do not live near an ASC can obtain ambulatory surgical services in HOPDs and, in some cases, physicians' offices. In addition, beneficiaries who live in rural areas may travel to urban areas to receive care in ASCs.

Continued growth in the number of Medicare-certified ASCs suggests that Medicare's payment rates have been at least adequate. However, Medicare payments are not a substantial source of revenue for ASCs, on average (Medical Group Management Association 2009). Other factors have also likely influenced the long-term growth in the number of Medicare-certified ASCs:

- Changes in clinical practice and health care technology have expanded the provision of surgical procedures in ambulatory settings.
- ASCs may offer patients greater convenience than HOPDs in terms of better locations, the ability to schedule surgery more quickly, and shorter waiting times.
- For most procedures covered under the ASC payment system, beneficiaries' copayments are lower in ASCs than in HOPDs.[13]
- Physicians have greater autonomy in ASCs than in HOPDs, which enables them to design customized surgical environments and hire specialized staff.
- Unlike physicians who perform surgery in HOPDs, physicians who invest in ASCs and perform surgery there can increase their revenue by receiving a share of ASC facility payments. The federal anti-self-referral law (also known as the Stark Law) does not apply to surgical services in ASCs.
- Because physicians can probably perform more procedures in ASCs than in HOPDs in the same amount of time, they can earn more professional fees.

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Number of services grew from 2006 to 2011

We examined growth in the number of ASC surgical services provided per FFS beneficiary. From 2006 through 2010, the volume of surgical services per FFS beneficiary increased by an average of 5.7 percent per year and by 1.9 percent in 2011 (Table 5-5).

The 2008 revision of the ASC payment system substantially increased the number of covered services. We evaluated the effect of the increase by breaking down the growth in service volume from 2010 through 2011 into two parts: the portion due to surgical services newly covered after 2007 and the portion due to surgical services covered in both 2007 and 2011. Our analysis indicates that services newly covered after 2007 grew by 3.9 percent in 2011, and services covered in both 2007 and 2011 grew by 1.7 percent in 2011 (Table 5-5).[14] The most commonly provided services that were newly covered after 2007—which also showed strong growth in other ambulatory settings—include trabeculoplasty by laser eye surgery, arthrocentesis by aspiration or injection of a major joint or bursa, and intravitreal injection of a pharmacological agent.

Although newly covered services had strong growth in 2011, the services that have historically contributed the most to overall volume continued to constitute a large share of the total in 2011. For example, cataract removal with intraocular lens insertion had the highest volume in both 2007 and 2011, accounting for 20 percent of volume in 2007 and 18 percent in 2011. Moreover, 19 of the 20 most frequently provided services in 2007 were among the 20 most frequently provided in 2011 (Table 5-6, p. 114). For these 20 services, volume per FFS beneficiary increased by an average of 1.7 percent per year from 2007 through 2011. However, these 20 services accounted for a smaller share of total ASC volume in 2011 than in 2007 (67.8 percent vs. 74.6 percent), which indicates that ASCs are providing an increasingly diverse set of procedures.

Surgical services migrated from HOPDs to ASCs between 2006 and 2010, but trend has stalled

Although the growth of services provided in ASCs from 2006 to 2010 may reflect the migration of procedures from HOPDs to ASCs, this trend appears to have stalled. We compared volume growth from 2006 through 2011 for services provided in ASCs with the growth of ASC-covered services provided in HOPDs. We limited this analysis to services that were covered in the ASC payment system in 2006, as the inclusion of services covered in the OPPS in 2006 that became covered in the ASC payment system after 2006 would have biased the results.

TABLE 5-5 **Volume of ASC services per FFS beneficiary has continued to grow**

Time period	Average annual volume growth per FFS beneficiary
2006 through 2010	5.7%
2010 through 2011	1.9
Services covered in both 2007 and 2011	1.7
Services newly covered after 2007	3.9

Note: ASC (ambulatory surgical center), FFS (fee-for-service).

Source: MedPAC analysis of 5 percent carrier standard analytic files, 2006, 2007, 2010, and 2011.

From 2006 through 2010, the number of ASC-covered surgical services per FFS beneficiary grew by 5.8 percent per year in ASCs and by 0.1 percent in HOPDs, which suggests that these surgical services may have migrated from HOPDs to ASCs during that period. In 2011, however, surgical services increased at a lower rate in ASCs than in HOPDs (1.8 percent vs. 3.8 percent).

Although surgical volume growth was higher in HOPDs than ASCs in 2011, there is no strong evidence of a shift of services from ASCs to HOPDs. For example, the 22 most frequently provided ASC services—represented by Healthcare Procedure Coding System codes—constitute about 70 percent of ASC volume. None of these services shows strong evidence of a shift from ASCs to HOPDs in 2011, such as a large decline in the volume provided in ASCs and a large increase in HOPDs. Outside of the 22 most frequently provided ASC services, some services have declined in ASCs but increased in HOPDs. For example, nerve procedures decreased by 3.7 percent in ASCs in 2011 and increased by 10.1 percent in HOPDs.[15] However, other types of procedures increased in ASCs and decreased in HOPDs. For example, the category of services that includes Level II through Level V repair and plastic eye surgeries increased by 5.1 percent in ASCs in 2011 and decreased by 7.0 percent in HOPDs.[16] A factor that may have contributed to the higher volume growth of procedures in HOPDs in 2011 is a shift of services from physicians' offices to HOPDs, as hospital employment of physicians has increased.

Other data also suggest that the migration of services from HOPDs to ASCs has stalled. In Pennsylvania, ASCs' share

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TABLE 5-6 **Most frequently provided ASC services in 2011 were similar in 2007**

Surgical service	2007 Percent of volume	2007 Rank	2011 Percent of volume	2011 Rank
Cataract surgery w/ IOL insert, 1 stage	19.9%	1	17.0%	1
Upper GI endoscopy, biopsy	7.9	2	8.0	2
Diagnostic colonoscopy	5.9	3	3.6	8
Colonoscopy and biopsy	5.5	4	5.7	3
After cataract laser surgery	5.4	5	3.9	6
Lesion removal colonoscopy, snare technique	4.8	6	4.4	4
Injection spine: lumbar, sacral (caudal)	4.3	7	3.6	7
Injection foramen epidural: lumbar, sacral	3.1	8	4.1	5
Injection paravertebral: lumbar, sacral add on*	2.9	9	1.9	11
Injection paravertebral: lumbar, sacral*	1.9	10	2.2	9
Lesion removal colonoscopy, biopsy forceps or bipolar cautery	1.7	11	1.0	19
Colon cancer screen, not high-risk individual	1.7	12	1.4	14
Injection foramen epidural add on	1.6	13	2.1	10
Upper GI endoscopy, diagnosis	1.5	14	1.2	16
Colorectal screen, high-risk individual	1.4	15	1.8	12
Cystoscopy	1.3	16	1.1	18
Destruction paravertebral nerve, add on	1.1	17	1.6	13
Revision of upper eyelid	0.9	18	0.9	20
Cataract surgery, complex	0.9	19	1.3	15
Injection spine: cervical or thoracic	0.9	20	0.9	21
Total	74.6		67.8	

Note: ASC (ambulatory surgical center), IOL (intraocular lens), GI (gastrointestinal).
*The description of these services changed in 2010 to include imaging guidance.

Source: MedPAC analysis of 5 percent carrier standard analytic claims files, 2007 and 2011.

of outpatient diagnostic and surgical procedures performed on all patients increased dramatically between 2000 and 2009, from 10.2 percent to 32.5 percent, but did not change between 2009 and 2011 (Pennsylvania Health Care Cost Containment Council 2012).

We believe it is desirable to maintain beneficiaries' access to ASCs because services provided there are less costly to Medicare and beneficiaries than services delivered in HOPDs. Our comparison of the number of cataract surgeries with intraocular lens insertion provided in ASCs with those in HOPDs illustrates this point. We found that, from 2006 through 2011, the proportion of these procedures provided in ASCs increased from 65 percent to 71 percent. Meanwhile, the payment rate for these procedures in 2011 was $951 in ASCs compared with $1,691 in HOPDs. Medicare's portion of this payment was $761 in ASCs and $1,195 in HOPDs, while the beneficiary's copayment was $190 in ASCs and $496 in HOPDs. Moreover, ASCs offer patients additional advantages over HOPDs, such as more convenient locations and shorter waiting times.

However, we must be attentive to the fact that most ASCs have some degree of physician ownership, and this ownership could give physicians an incentive to perform more surgical services than they would if they provided outpatient surgery only in HOPDs. This additional volume could partially offset the effect of lower rates in ASCs on Medicare spending. Recent studies offer limited evidence that physicians with an ownership stake in an ASC perform a higher volume of certain procedures than nonowning physicians (Hollingsworth et al. 2010, Mitchell 2010, Strope et al. 2009). One study, using a proxy measure of physician ownership of ASCs in Florida, found that physicians who invested in ASCs increased their volume of four common surgical procedures in all settings more

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TABLE 5-7 **Medicare payments to ASCs have grown, 2006–2011**

	2006	2007	2008	2009	2010	2011
Medicare payments (billions of dollars)	$2.8	$2.9	$3.1	$3.2	$3.3	$3.4
Medicare payments per FFS beneficiary	$85	$89	$97	$102	$104	$106
Percent change per FFS beneficiary from previous year	8.6%	5.0%	8.1%	5.3%	2.0%	2.2%

Note: ASC (ambulatory surgical center), FFS (fee-for-service). Medicare payments include program spending and beneficiary cost sharing for ASC facility services. Payments include new technology intraocular lenses.

Source: MedPAC analysis of data from the Office of the Actuary at CMS.

rapidly than nonowning physicians (Hollingsworth et al. 2010).[17] Although this study had limitations (it was based on a single state, used a proxy measure of physician ownership, and did not examine whether the additional procedures were inappropriate), it suggests that physician ownership of ASCs is associated with greater overall volume of surgical procedures.

Two studies found that the growth of ASCs in a market is associated with higher overall volume of certain procedures (Hollingsworth et al. 2011, Koenig and Gu 2013). The first study, which was limited to Florida, found that the volume of colonoscopy and upper gastrointestinal endoscopy in ambulatory settings increased at faster rates in health care markets after ASCs entered the markets compared with markets that had no ASC entry (Hollingsworth et al. 2011). The authors found no significant relationship between ASC entry and the growth of cataract surgery or cancer-directed breast surgery. The second study examined national Medicare data and found that an increase in the number of ASC operating rooms in a state was associated with additional colonoscopy procedures in all outpatient settings (Koenig and Gu 2013). However, there was no significant relationship between growth in the number of ASC operating rooms and the volume of cataract surgery, upper gastrointestinal procedures, or arthroscopy. Based on the results of these studies, it is plausible that reductions in Medicare spending due to lower payment rates for ASCs could be partially offset by a higher overall number of certain procedures.

Providers' access to capital: Growth in number of ASCs suggests adequate access

Owners of ASCs require capital to establish new facilities and upgrade existing ones. The change in the number of ASCs is the best available indicator of ASCs' ability to obtain capital. The number of ASCs continued to increase in 2011, although at a slower rate than in previous years (Table 5-3, p. 111). This slowing growth may reflect the sluggish pace of recovery from the downturn in the economy that began in the fall of 2008, the widening difference between payment rates in the ASC payment system and the OPPS, and the increase in physician employment by hospitals. In 2008, the average payment rate for most services provided in ASCs was 62.6 percent of what would have been paid in HOPDs. This percentage fell to 56.5 in 2011. However, Medicare accounts for a relatively small share of ASCs' overall revenue on average, so factors other than Medicare payments may have a larger effect on access to capital for this sector.

In addition, the only publicly traded ASC chain—Amsurg—continues to acquire new ASCs, which indicates that it has sufficient access to capital. During the third quarter of 2012, for example, the company announced its intention to acquire 15 new facilities (it currently has over 220 facilities) (Deutsche Bank 2012a). We caution, however, that this chain represents only 4 percent of all Medicare-certified ASCs, so its experience may not represent the entire ASC sector.

Medicare payments: Payments have increased rapidly

In 2011, ASCs received about $3.4 billion in Medicare payments and beneficiaries' cost sharing (Table 5-7). Spending per FFS beneficiary increased by an average of 5.1 percent per year from 2006 through 2010 and by 2.2 percent in 2011. CMS increased the ASC conversion factor by 0.2 percent in 2011. Annual changes in spending on ASC services can be affected by the amount of spending on new technology intraocular lenses (NTIOLs) because the number of NTIOLs that are eligible for

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Creating a value-based purchasing program for ambulatory surgical centers

To improve the quality of care provided to beneficiaries in ambulatory surgical centers (ASCs), the Commission previously recommended that CMS implement a value-based purchasing (VBP) program to reward high-performing providers and penalize low-performing providers (Medicare Payment Advisory Commission 2012). CMS should also publicly report quality measurement results to help consumers compare quality among facilities. CMS established a Quality Reporting Program for ASCs that requires them to submit quality data beginning in October 2012; ASCs that do not submit data will have their annual update reduced by 2 percentage points in 2014. However, Medicare payments to ASCs would not be adjusted based on the provider's actual performance on quality measures. CMS currently lacks the statutory authority to implement a VBP program for ASCs.

The Commission supports the quality data reporting program for ASCs but believes that, eventually, high-performing ASCs should be rewarded and low-performing facilities should be penalized through the payment system. In our March 2012 report, the Commission made the following recommendation:

The Congress should direct the Secretary to implement a value-based purchasing program for ambulatory surgical center services no later than 2016.

The current quality reporting program could lay the foundation for a VBP program. Consistent with the Commission's overall position on VBP (also known as pay-for-performance) programs in Medicare, an ASC VBP program should include a relatively small set of measures to reduce the administrative burden on ASCs and CMS, and the measure set should primarily focus on clinical outcomes, as Medicare's central concern should be improving outcomes across all ASCs and over time. The program should also include some clinical process, structural, and patient experience measures. Several of these indicators are already being reported through the ASC Quality Reporting Program, but other measures need to be developed, such as a surgical site infection (SSI) indicator and a patient experience measure. An ASC VBP program should reward ASCs for improving care and exceeding quality benchmarks. In addition, funding for the VBP incentive payments should come from existing Medicare spending for ASC services. Initially, funding for the incentive payments should be set at 1 percent to 2 percent of aggregate ASC payments. The size of this pool should be expanded gradually as more measures are developed and ASCs become more familiar with the program.

CMS should consider incorporating the following outcome measures into an ASC VBP program:

- patient fall in the ASC;
- patient burn;
- wrong site, wrong side, wrong patient, wrong procedure, wrong implant;

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separate payment changes from year to year. Therefore, we also examined the change in Medicare spending on surgical services provided in ASCs excluding spending on NTIOLs. In 2011, per capita spending on surgical services increased 2.6 percent. Per capita spending on surgical services newly covered after 2007 increased 4.5 percent, and spending on surgical services covered in both 2007 and 2011 increased 2.6 percent.

How should Medicare payments change in 2014?

Our payment adequacy analysis indicates that the number of Medicare-certified ASCs has increased, beneficiaries' use of ASCs has increased, and access to capital has been adequate. However, our information for assessing payment adequacy is limited because, unlike other types of

Creating a value-based purchasing program for ambulatory surgical centers (cont.)

- hospital transfer or admission after an ASC procedure, whether the patient is transferred directly to the hospital from the ASC or admitted to the hospital after returning home from an ASC procedure; and
- SSI rate.

The first three outcome measures listed above are patient safety indicators identified by the National Quality Forum as "serious reportable events," which are defined as errors in medical care that are clearly identifiable and measurable, usually preventable, serious in their consequences for patients, and indicate a problem in a health care facility's safety systems. ASCs have begun reporting these claims-based measures under the ASC Quality Reporting Program. Because these indicators represent errors that are usually preventable, they could be measured against an absolute national benchmark that starts very low and is reduced over time to a rate that approaches zero.

By contrast, the last two outcome measures listed above (hospital transfer or admission after an ASC procedure and SSI rate) may occur at low rates even in the highest quality facilities. Therefore, an ASC's performance on these indicators should be measured against the performance of other ASCs rather than an absolute benchmark. Because certain ASCs may report small numbers of cases for the calculation of these measures, the rates reported for these providers could vary substantially from one observation period to the next, due solely to random statistical variation. To address this issue, CMS could consider using a composite measure that would aggregate the rates for several measures of rare events into a single rate or using data from multiple years for a single measure.

Because measures of patient experience provide information on patients' perceptions of access to care and how well their providers communicate with them, the Commission supports the development of a survey to measure patients' perceptions of their ASC care. We recognize that scores on a patient experience measure may be similar across facilities because ASCs usually provide low-risk procedures to patients who tend to be less complex than patients treated in hospital outpatient departments. If patient experience scores turn out to be similar across all ASCs, CMS could assign this measure less weight in determining an ASC's overall performance. ■

facilities, Medicare does not require ASCs to submit cost data. We also do not yet have information on the quality of care in ASCs because they did not begin submitting quality data to CMS until October 2012. The Commission has recommended that Medicare develop a value-based purchasing program that would use ASC quality data to reward high-performing and penalize low-performing providers, but CMS does not have the statutory authority to implement such a program (see text box).

Cost data would enable the Commission to examine the growth of ASCs' costs over time and analyze Medicare payments relative to the costs of efficient providers, which would help inform decisions about the ASC update. Cost data are also needed to examine whether an alternative input price index would be an appropriate proxy for ASC costs or an ASC-specific market basket should be developed. As discussed in the text box on pp. 118–119, the Commission previously expressed concern that the price index that CMS uses to update ASC payments (the CPI–U) may not reflect ASCs' cost structure (Medicare Payment Advisory Commission 2010b). CMS has also concluded that it needs data on ASC costs to determine whether there is a better alternative than the CPI–U to measure changes in ASCs' input costs (Centers for Medicare & Medicaid Services 2012b).

Although CMS and ASCs have expressed concern that requiring ASCs to submit cost data may impose a burden on these facilities, we believe it is feasible for ASCs to provide a limited amount of cost information (Centers for Medicare & Medicaid Services 2011). Even though ASCs are generally small facilities that may have limited resources for collecting cost data, such businesses typically keep records of their costs for filing taxes and other purposes. To minimize the burden on CMS and ASCs, CMS should create a streamlined process for ASCs to track and submit a limited amount of cost data. One such

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Revisiting the ambulatory surgical center market basket

CMS uses the consumer price index for all urban consumers (CPI–U) as the market basket to update ambulatory surgical center (ASC) payments. Because of our concern that the CPI–U may not reflect ASCs' cost structure, the Commission examined in 2010 whether an alternative market basket index would better measure changes in ASCs' input costs (Medicare Payment Advisory Commission 2010b). Using data from a Government Accountability Office (GAO) survey of ASC costs in 2004, we compared the distribution of ASC costs with the distribution of hospital and physician practice costs. We found that ASCs' cost structure is different from that of hospitals and physicians' offices.

Although CMS has historically used the CPI–U as the basis for Medicare's annual updates to ASC payments, the mix of goods and services in this price index probably does not reflect ASC inputs. The CPI–U is based on a sample of prices for a broad mix of goods and services, including food, housing, apparel, transportation, medical care, recreation, personal care, education, and energy (IHS Global Insight 2009). The weight of each item is based on spending for that item by a sample of urban consumers during the survey period. Although some of these items are probably used by ASCs, their share of spending on each item is likely very different from the CPI–U weight. For example, housing accounts for 43.4 percent of the entire CPI–U (Bureau of Labor Statistics 2009).

We explored whether one of two existing Medicare indexes would be an appropriate proxy for ASC input costs: the hospital market basket, which is used to update payments for inpatient and outpatient hospital services, or the practice expense component of the Medicare Economic Index (MEI), which measures changes in physicians' practice expenses. It is reasonable to expect that ASCs have many of the same types of costs as hospitals and physicians' offices, such as medical equipment, medical supplies, building-related expenses, clinical staff, administrative staff, and malpractice insurance.

We used ASC cost data from the GAO survey to compare the distribution of ASC costs with the distribution of hospital costs (derived from the hospital market basket) and physician practice expenses (derived from the practice expense portion of the MEI). Our March 2010 report has more details on the method (Medicare Payment Advisory Commission 2010b). Although the GAO data are not sufficient for comparing

(continued next page)

mechanism could be annual surveys of a random sample of ASCs with mandatory response. CMS conducted cost surveys of a sample of ASCs in 1986 and 1994, and the Government Accountability Office conducted a survey of ASC costs in 2004. Another approach would be to require all ASCs to submit streamlined cost reports on an annual basis.

To enable the Commission and other analysts to determine the relationship between Medicare payments and the costs of efficient ASCs, ASCs would probably need to submit the following information:

- total costs for the facility;
- Medicare unallowable costs (e.g., entertainment, promotion, and bad debt);
- costs of clinical staff that bill Medicare separately, such as anesthesiologists and clinical nurse anesthetists (these costs would be excluded from the facility's costs because these clinicians are paid separately under Medicare);
- total charges across all payers and charges for Medicare patients (CMS could allocate total facility costs to Medicare based on Medicare's proportion of total charges);
- total Medicare payments; and
- total Medicare visits (this information would enable CMS to validate the cost data with Medicare claims data).

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Revisiting the ambulatory surgical center market basket (cont.)

each category of costs across settings, they suggest that ASCs have a different cost structure from hospitals and physicians' offices. ASCs appear to have a much higher share of expenses related to medical supplies and drugs than the other two settings, a much smaller share of employee compensation costs than hospitals, and a smaller share of all other costs (such as rent and capital costs) than physicians' offices. ASCs' larger share of costs for medical supplies and drugs could be related to their high volume of cataract removal and lens insertion procedures. These procedures use intraocular lenses, which are included in the medical supplies category and are relatively expensive. Another factor could be that ASCs primarily perform surgical procedures, whereas hospitals and physicians' offices provide a significant number of imaging, tests, and evaluation and management services, which probably have lower supply costs than surgical procedures.

Since our 2010 analysis, CMS also considered whether the hospital market basket or the practice expense component of the MEI is a better proxy for ASC costs than the CPI–U (Centers for Medicare & Medicaid Services 2012b). However, CMS believes that the hospital market basket does not align with the cost structure of ASCs because hospitals provide a much wider range of services than ASCs, such as room and board and emergency care. Therefore, the agency concluded that it needs data on the cost inputs of ASCs to determine whether there is a better alternative than the CPI–U to measure changes in ASC input costs. CMS asked for public comment on the feasibility of collecting cost information from ASCs but did not propose a plan to collect cost data.

The ASC cost data from GAO used in our comparative analysis are nine years old and do not contain information on several types of costs. Therefore, the Commission has recommended several times that the Congress require ASCs to submit new cost data to CMS (Medicare Payment Advisory Commission 2010b, Medicare Payment Advisory Commission 2011, Medicare Payment Advisory Commission 2012). CMS should use this information to examine whether an existing Medicare price index is an appropriate proxy for ASC costs or an ASC-specific market basket should be developed. A new ASC market basket could include the same types of costs that appear in the hospital market basket or MEI but with different cost weights that reflect the unique cost structure of ASCs. ■

In addition to the information described above, CMS would need to collect data on specific cost categories to determine an appropriate input price index for ASCs. For example, CMS would need data on the share of ASCs' costs related to employee compensation, medical supplies, medical equipment, building expenses, and other professional expenses (e.g., legal, accounting, and billing services). CMS should use this information to examine the cost structure of ASCs and determine whether an existing Medicare price index is an appropriate proxy for ASC costs or an ASC-specific market basket should be developed.

CMS increased the ASC conversion factor by 0.2 percent in 2011, 1.6 percent in 2012, and 0.6 percent in 2013. The update for 2013 was based on a projected 1.4 percent increase in the CPI–U, minus a 0.8 percent deduction for multifactor productivity growth, as mandated by the Patient Protection and Affordable Care Act of 2010 (PPACA).[18]

Update recommendation

In recommending an update to the ASC conversion factor for 2014, the Commission balanced the following objectives:

- maintain beneficiaries' access to ASC services;
- pay providers adequately;
- hold down the burden on the beneficiaries, workers, and firms who finance Medicare;
- maintain the sustainability of the Medicare program by appropriately restraining spending on ASC services;

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- keep providers under financial pressure to constrain costs; and
- require ASCs to submit cost data.

In balancing these goals, the Commission concludes that the ASC update for 2014 should be eliminated and that the Congress should require ASCs to submit cost data.

RECOMMENDATION 5

The Congress should eliminate the update to the payment rates for ambulatory surgical centers for calendar year 2014. The Congress should also require ambulatory surgical centers to submit cost data.

RATIONALE 5

On the basis of our payment adequacy indicators, the importance of maintaining financial pressure on providers to constrain costs, and the lack of ASC cost and quality data, we believe that ASC payment rates should not be increased for 2014. The indicators of payment adequacy for which we have information are positive: The number of Medicare-certified ASCs continues to grow, as does beneficiaries' use of ASC services, and ASCs have adequate access to capital. Therefore, although we do not have cost and quality data, the indicators we have suggest that payments have been at least adequate.

As we have stated in prior reports, it is vital that CMS begin collecting cost data from ASCs without further delay. The lack of such data for ASCs is one reason why our recommended update for ASCs is lower than that for HOPDs (1.0 percent for 2014) (Chapter 3 of this report). Cost data would enable the Commission to examine the growth of ASCs' costs over time and evaluate Medicare payments relative to the costs of efficient providers, which would help inform decisions about the ASC update. Such data are also needed to analyze whether an alternative input price index would be an appropriate proxy for ASC costs or an ASC-specific market basket should be developed.

IMPLICATIONS 5

Spending

- CMS has decided to increase ASC payment rates by the change in the CPI–U (Centers for Medicare & Medicaid Services 2007). PPACA requires that the update factor be reduced by a multifactor productivity measure. The currently projected CPI–U increase for 2014 is 1.9 percent, and the forecast of productivity growth for 2014 is 0.4 percent, resulting in a projected update of 1.5 percent for 2014 (IHS Global Insight 2012). However, we recommend that the update be eliminated. Therefore, relative to the statutory update, our recommendation would decrease federal spending by less than $50 million in the first year and by less than $1 billion over five years.

Beneficiary and provider

- Because of the growth in the number of Medicare-certified ASCs and the volume of ASC services, we do not anticipate that this recommendation would diminish beneficiaries' access to ASC services or providers' willingness or ability to provide those services.
- ASCs would incur some administrative costs to track and submit cost data. ■

Endnotes

1 Because CMS updates payment rates in the OPPS and the PFS independently of each other, it is possible for the ASC payment rate for an office-based procedure to be based on the OPPS relative weight in one year and the PFS rate the next year (or vice versa).

2 ASCs and HOPDs receive the same amount for drugs that are paid for separately under the OPPS and for pass-through devices.

3 GAO surveyed a random sample of 600 ASCs to obtain cost data from 2004; they received reliable cost data from 290 facilities.

4 The average time includes time spent by the patient in the operating room and postoperative recovery room.

5 The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 eliminated a requirement that the Secretary collect cost data from ASCs every five years.

6 Medicare's share of total ASC revenue varies by type of ASC, ranging from 7 percent for ASCs that specialize in orthopedic procedures to 43 percent for ASCs that specialize in ophthalmology cases (Medical Group Management Association 2009).

7 Because some states have a disproportionately high number of ASCs per beneficiary (Maryland, Idaho, Washington, and Georgia), we weighted beneficiaries so that in each state the percentage of beneficiaries receiving care in ASCs matched the national percentage. This process prevented idiosyncrasies in states that have high concentrations of ASCs from biasing the results. The analysis excluded beneficiaries who received services that Medicare does not cover in ASCs.

8 The CMS–HCC model is an abbreviated version of the full HCC model. The full HCC model includes 189 disease categories, while the CMS–HCC includes 70. We excluded beneficiaries who had missing risk scores and beneficiaries who were new Medicare enrollees in 2010 because those beneficiaries' risk scores were not based on diagnosis data. Our analysis included only surgical procedures that were covered in the ASC payment system in 2010.

9 We dropped APCs that did not have any ASC volume.

10 These data are based on 266 ASCs and 165 hospitals.

11 The sample of freestanding ASCs in the NSAS includes facilities listed in the 2005 Verispan Freestanding Outpatient Surgery Center Database and Medicare-certified ASCs from CMS's Provider of Services file (Cullen et al. 2009).

12 Whether a state has certificate-of-need (CON) laws for ASCs appears to affect the number of ASCs in the state. Twenty-six states and the District of Columbia have CON laws for ASCs. The 12 states with the lowest number of ASCs per FFS beneficiary all have CON laws, while only 4 of the 10 states that have the highest number of ASCs per beneficiary have CON laws. Among these four states, Maryland and Georgia have exceptions in their CON requirements for ASCs that make it easier to establish new ASCs.

13 By statute, the copayment for a service paid under the OPPS cannot exceed the hospital inpatient deductible ($1,184 in 2013). The ASC payment system does not have the same limitation on copayments, and for a few services the ASC copayment exceeds the inpatient deductible. In these instances, the ASC copayment exceeds the OPPS copayment.

14 Our analysis of service volume in 2011 included surgical procedures only, as nearly all these procedures had Current Procedural Terminology codes in the range 10000–69999. Our analysis did not include nonsurgical services, such as radiology services, brachytherapy sources, drugs, and pass-through devices. In addition, it did not include services that were packaged in 2011.

15 Nerve procedures are represented by APCs 220 and 221.

16 This group of services is represented by APCs 239 through 242.

17 This study assumed that physicians who performed at least 30 percent of their outpatient surgeries at a given ASC within a year were ASC owners. The four procedures for which there was a significant relationship between ASC ownership and volume were carpal tunnel release, cataract excision, colonoscopy, and knee arthroscopy. There was no significant relationship for myringotomy with tube placement.

18 Unlike update factors for other providers, such as the hospital market basket, the CPI–U is an output price index that already accounts for productivity changes (Centers for Medicare & Medicaid Services 2012b). Nevertheless, CMS is mandated to subtract multifactor productivity growth from the increase in the CPI–U.

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OUTPATIENT

PULSE REPORT 2008

Patient Perspectives on American Health Care

PRESS GANEY®

Executive Summary

Outpatient services, including outpatient surgery, continue to grow rapidly as technological and clinical advancements reduce the need for customary overnight hospital stays. Outpatient care centers can be a financially sound business decision for health care organizations and can enhance patient satisfaction by reducing their time away from home. As outpatient services have a lower barrier to entry and significant profit potential, hospitals face competition from independent and doctor-owned facilities. Maintaining a high standard of care is essential to maintaining market viability.

Outpatient services traditionally include diagnostic testing, laboratory testing, radiology, therapies, and other similar services that do not require anesthesia. Outpatient surgery services, in contrast, consist of tests and treatments that require some form of sedation.

Outpatient services and surgery providers are meeting patients' needs by improving the quality of patient care and service. Press Ganey research has found a slow and steady improvement in overall patient satisfaction over the past five years. Challenges do exist however; including registration, facility environment, attention to patient-specific needs, and offering room for continuous improvement.

Patients have expectations for outpatient services, anticipating short wait times and high-quality care. With the total wait time at an average of 24.5 minutes, increases in the time spent waiting can have a negative impact on a patient's overall perception.

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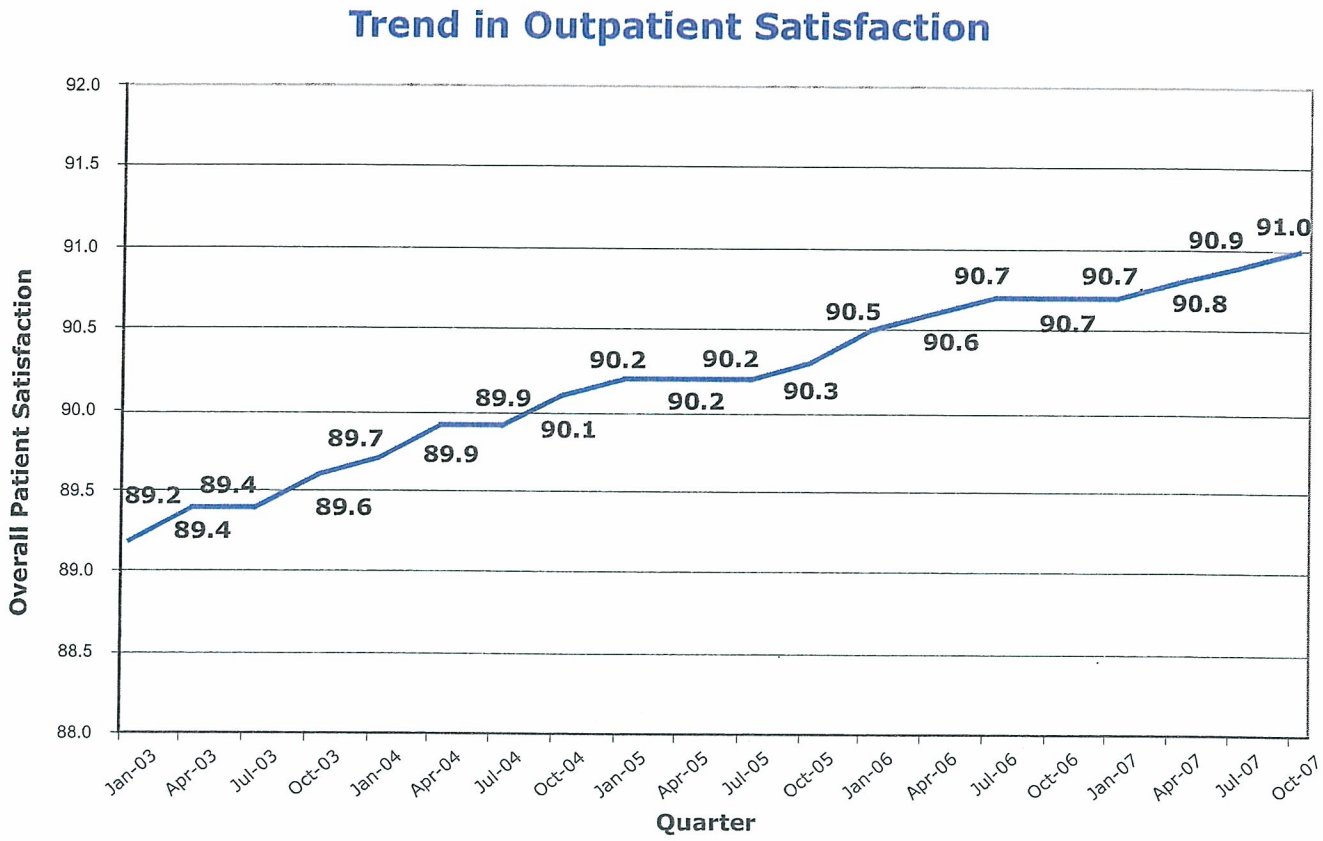
Section I
Outpatient Services

Trend in Outpatient Satisfaction

Outpatient satisfaction is gradually but steadily climbing. As the overall performance of the industry continues to improve, facilities face greater expectations from patients. Patients are looking for comfortable, fast, and compassionate care. Outpatient services commonly include laboratory tests, therapy, diagnostic testing, and many other tests or treatments that typically do not require anesthesia or an inpatient visit. As hospitals have expanded their outpatient services, they have faced stiff competition from freestanding and independent facilities. Many facilities nationwide are leading the way to better service, evidenced by the continued upward trend in satisfaction. To remain competitive, outpatient facilities must continue to improve the patient care experience.



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Priorities for Improvement in Outpatient Care

Unlike hospitals, outpatient service providers have a short time to create a positive experience for patients. Most patients are highly satisfied with their outpatient services, but small errors in service can have a negative impact on the patient's overall perception. The National Outpatient Priority Index identifies the service areas in greatest need of improvement. Interestingly, four out of the five top priorities relate to how frontline staff responds to patient needs. Whereas, in the hospital setting a staff member may have several opportunities to attend to an unmet need, outpatients may make their concern or complaint known only once—if at all. All caregivers have a limited window of opportunity to make a positive impression on the patient.

National Outpatient Priority Index

Survey Item	Priority Rank
Response to concerns/complaints made during your visit	1
Our sensitivity to your needs	2
How well staff worked together to provide care	3
Staff's concern for your questions and worries	4
Waiting time in registration	5

Represents the experiences of 2,110,415 patients treated at 1,215 facilities nationwide between January 1 and December 31, 2007

Survey items are correlated to patient ratings of "Likelihood of your recommending our facility to others"

Service Standards—Set the Expectations for Care Delivery

Service standards are a common tool to provide practical guidance to staff members regarding patient interactions. Standards include items such as "Ask before touching a patient," and "Always introduce yourself to the patient."

Developing service standards is only the first step in their implementation. After the standards are chosen and shared, accountability is essential. Baptist Mammography Center at Macy's, The Falls, Miami, Florida, a Press Ganey Summit Award Winner, includes service standards in its employee evaluations as a tool to require direct accountability for staff actions. Through this form of accountability, service standards become an expectation, not a suggestion.

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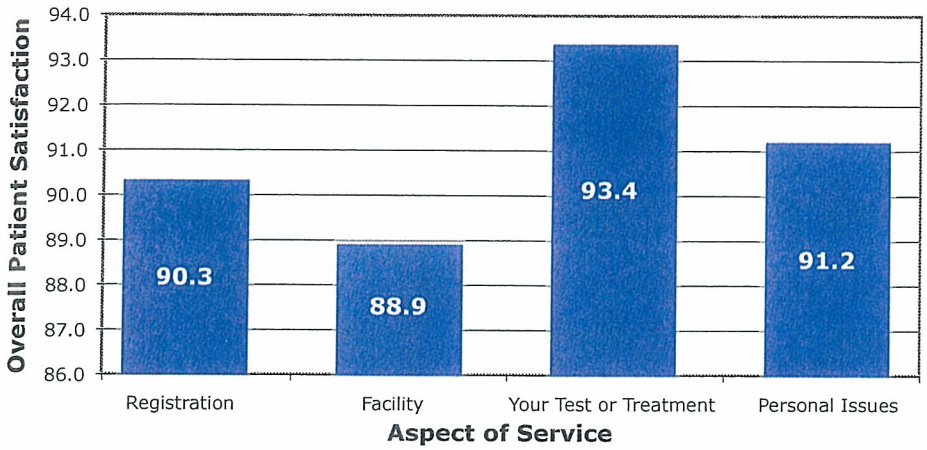
Patient Satisfaction with Outpatient Service Operations

Patients are very satisfied with the experience of the actual test/treatment and the personal care they receive. These areas all score around 90, so the bar is very high for an outpatient services provider. Despite the high scores, opportunities still exist to improve the efficiency and ease of registration and to improve the overall facility environment. Overall, the performance of American outpatient service providers is strong.

Outpatient Satisfaction by Aspect of Service



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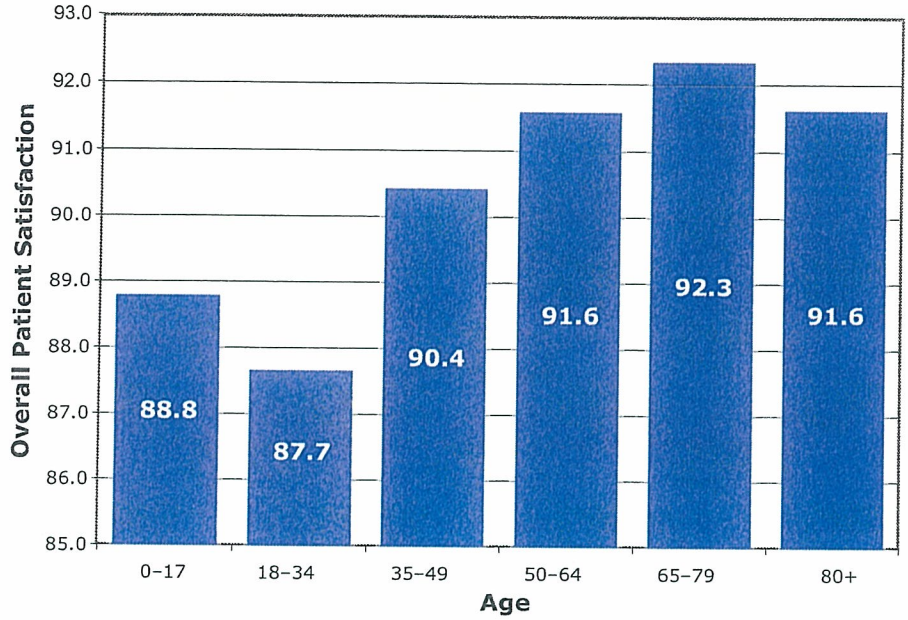
Age and Patient Satisfaction

Patient satisfaction with outpatient services generally increases with age. Outpatient services have improved dramatically in frequency and quality compared to thirty years ago. Older patients may remember more frequent inpatient stays and fewer outpatient options compared to today's services, and thus may have a greater appreciation for these advances than do their younger counterparts. Younger patients have come to expect faster service and may hold outpatient providers to a higher standard.

Outpatient Satisfaction by Age



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Survey items are correlated to patient ratings of "Likelihood of your recommending our facility to others"

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Outpatient Satisfaction by Service Type

Patients receiving radiation treatments report the highest overall satisfaction with outpatient services, followed by patients receiving cardiac rehabilitation. Both of these services typically see patients on multiple occasions, providing more opportunities to establish a positive relationship. Establishing such a relationship is a more notable challenge for services such as mammography, when the patient visit is a single instance and very short. Facilities can better connect with these patients by providing patient education information and similar services. This list is limited to the top ten outpatient specialties; specialties below the 10th position were not included.

Top Ten Outpatient Specialties

Service	Mean	Rank
Radiation Oncology/Therapy	93.9	1
Cardiac Rehabilitation	93.5	2
Mammography	93.1	3
Bone Densitometry	92.9	4
Infusion Clinic	92.8	5
Cardiac Catheterization	92.6	6
Physical Therapy	92.4	7
PET Scan	92.2	8
Sleep Disorders	92.0	9
Rehab Services	92.0	10

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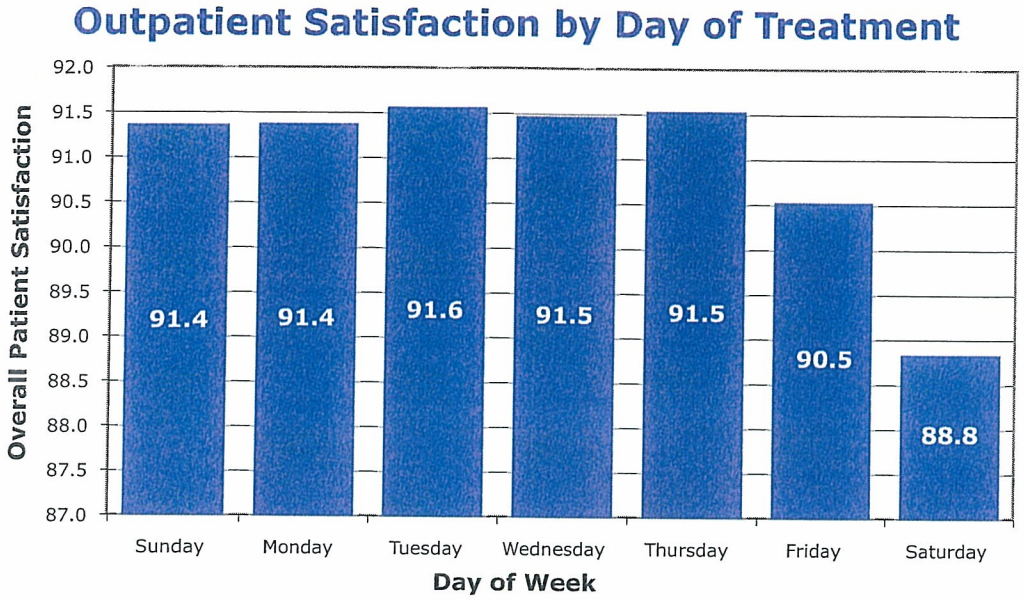
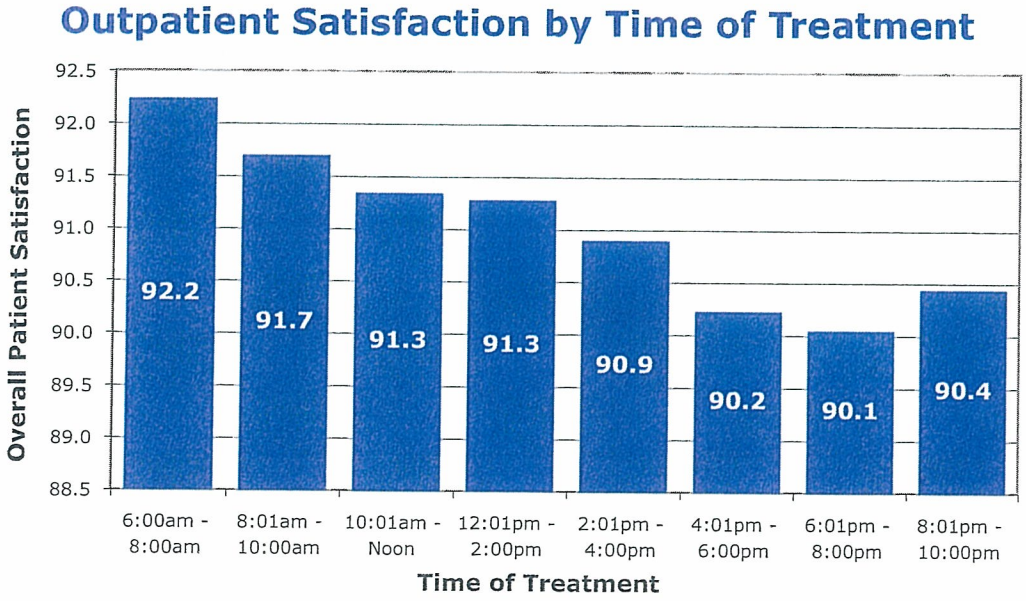
Best Time for an Appointment

Patients report little difference in overall outpatient satisfaction during the work week, but report lower overall satisfaction when receiving care on Saturday.



Represents the experiences of 2,110,415 patients treated at 1,215 facilities nationwide between January 1 and December 31, 2007

Overall satisfaction continues to decline as the workday wears on. Patients with appointments during the 6–8 AM time slot report the greatest satisfaction. Satisfaction declines considerably from that time period, though there is a slight rebound for patients who receive care after 8 PM. Patients who receive care earlier in the day may be more satisfied partly due to the lack of disruption their test/treatment may have been to their day. Patients who receive care during the middle of the day make a greater sacrifice to the day's overall productivity.



Represents the experiences of 2,110,415 patients treated at 1,215 facilities nationwide between January 1 and December 31, 2007

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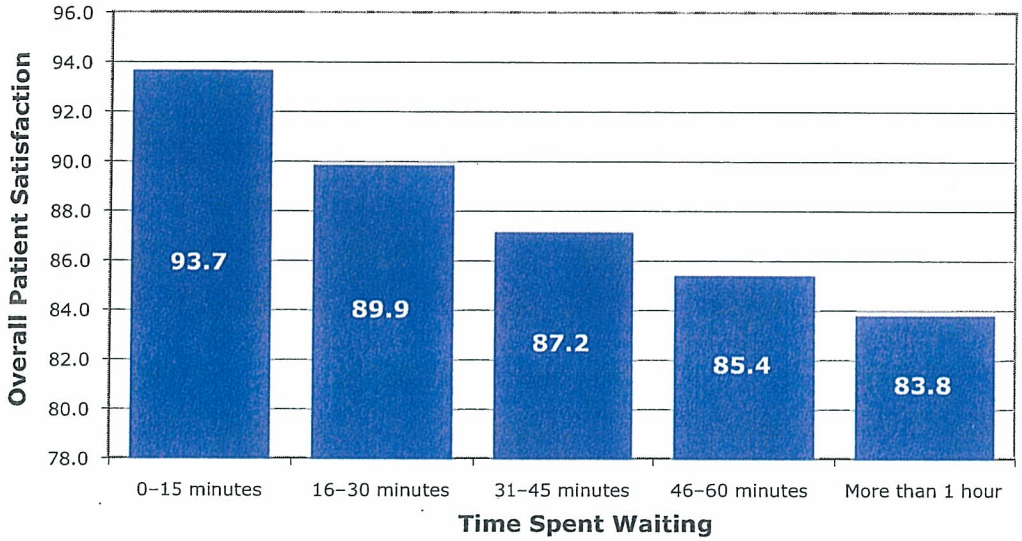
Satisfaction and Wait Time

In our fast-paced world, most Americans consider waiting to be an inconvenience. Patients appreciate prompt, courteous care to ease the stress of tests or treatments.

The average patient waits a total of 24.5 minutes to receive outpatient care—11 minutes in the waiting room and more than 13 minutes in the treatment area.

Overall patient satisfaction steadily declines as the wait time increases. Ninety-three percent of outpatient procedures occur between 6 a.m. and 4 p.m., requiring patients to take time away from work and family. Wait time is a critical factor in patients' overall perception. A long time spent waiting can seem disrespectful of the patient's time and is inconvenient for patients.

Outpatient Overall Satisfaction by Time Spent Waiting



Represents the experiences of 2,110,415 patients treated at 1,215 facilities nationwide between January 1 and December 31, 2007

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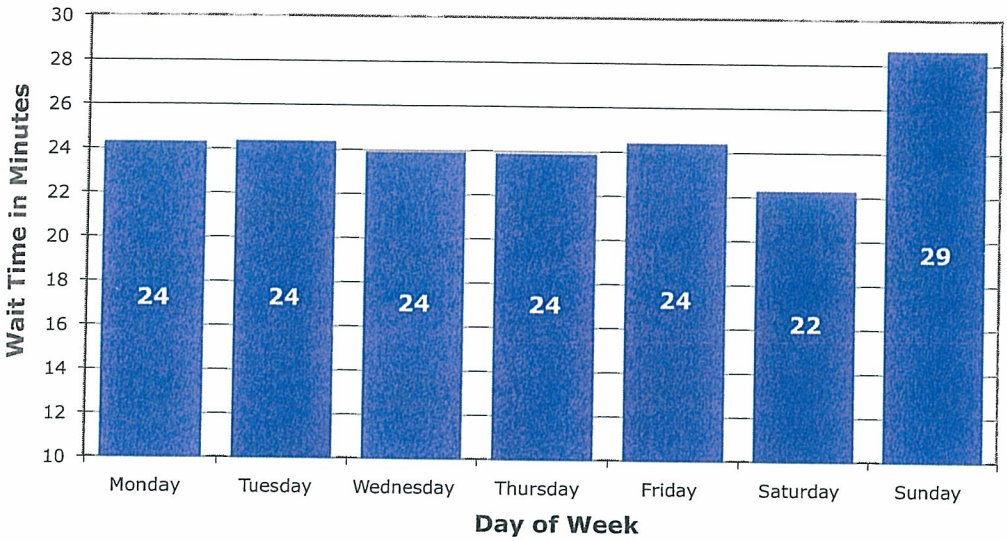
When Patients Wait

Patients receiving outpatient care during the work week are likely to wait the same amount of time regardless of the day of the week. The average wait time for outpatient care is consistently 24 minutes, Monday through Friday, when most outpatient services are received.

The weekends vary—on Saturday there is a below-average wait of 22 minutes, but on Sunday the wait jumps to 29 minutes. This increase likely reflects the limited staff and availability of weekend outpatient services.

Outpatient Time Spent Waiting by Day of Week



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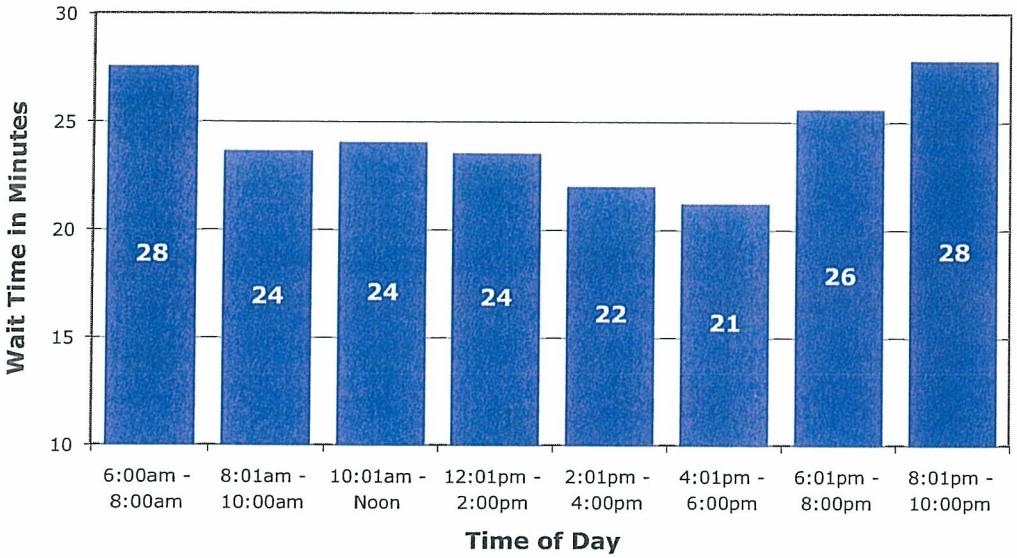
When Patients Wait (continued)

Patients want to schedule appointments that will require the least amount of waiting. Conventional wisdom says that receiving treatment earlier in the day is preferable because there is less of a chance that the facility is running behind schedule. But Press Ganey data reveal that earlier appointments do not always offer the shortest wait.

At an average of 28 minutes, the 6–8 AM time slot has one of the longest wait times compared to the rest of the workday. At an average of 21–22 minutes, the 2–6 PM time slot has the shortest wait time compared to the rest of the day.

Outpatient Wait Time by Time of Appointment



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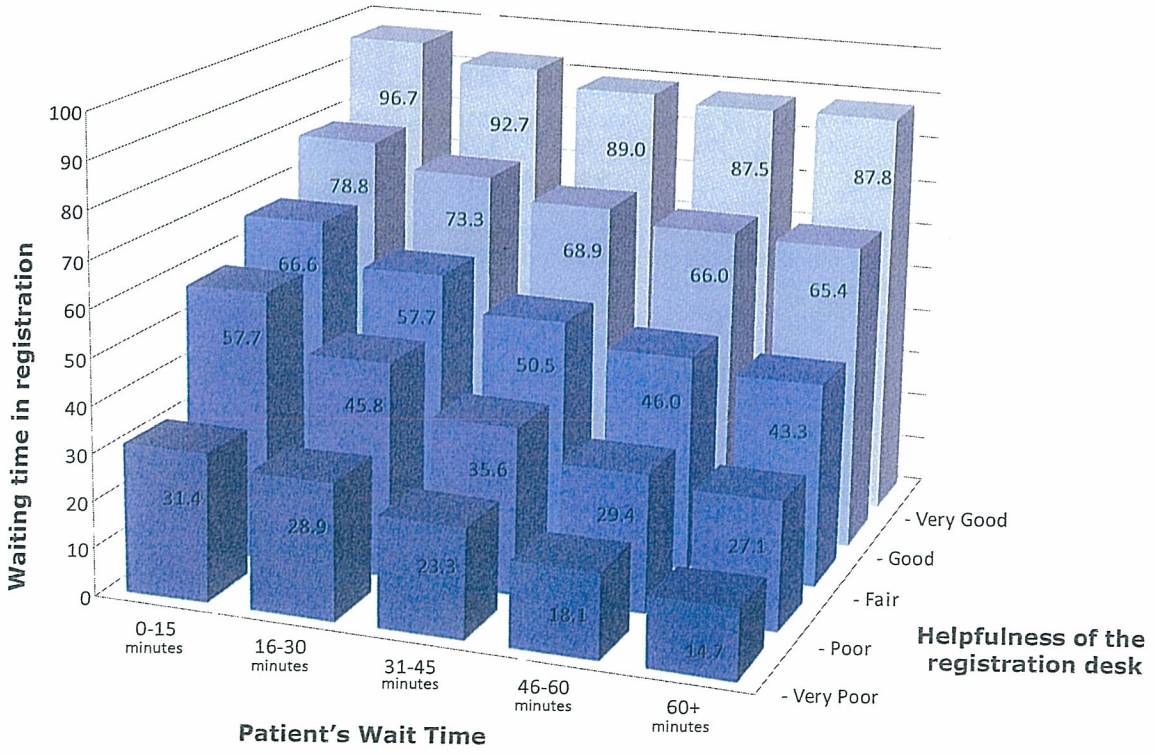
Waiting Patiently

Reducing the time patients spend waiting for an outpatient test or treatment is an effective strategy to improve overall patient satisfaction. There are, however, occasions when patients will have to wait for services. The negative impact of a long wait can be mitigated by the helpfulness of the staff at the registration desk.

Staff members who first greet patients when registering are critical to making the wait more manageable. The graph below shows that the scores of those who found the person at the registration desk to be very helpful were less influenced by a long wait. On the opposite point, those who waited just a short time but found the registration staff unhelpful reported a more negative impression.

Facilities should equip the employees at the registration desk with the tools that they need to provide patients with accurate information. Registration staff should be informed of all potential delays so they may relay this information to patients as appropriate. Staff should also be educated on the location of other commonly requested services, the typical turnaround time for results, and other common patient questions. The staff member at the registration desk has the first opportunity to form a positive relationship between the facility and the patient.

Waiting Time in Registration by Time Spent in Waiting and Helpfulness of the Registration Desk



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What Patients Are Saying

Patient comments add life and vitality to patient satisfaction data. Patient comments help explain the specific thoughts that patients use to determine their ratings. Given the short amount of time a patient typically spends in an outpatient visit, comments provide an invaluable opportunity to hear the patient's voice.

Positive, negative, mixed, and neutral comments appeared with similar frequencies in all sections of the patient surveys used for this report. This is true for all survey sections. This even distribution indicates that there are as many opportunities for improvement as there are reasons to celebrate success.

The following are sample comments from organizations across the country:

- Response to concerns and complaints is the greatest opportunity for improvement nationwide. Patient comments can provide insight into issues that were not resolved during the patient's visit.
  - » **I wanted to see if my doctor could get the results any faster. They didn't seem to think that was important.**
- Sensitivity to needs and concern for questions and worries are two of the top priorities for improvement. Patients may be experiencing nervousness about the results of a test or even the test itself. Patients undergoing treatments are also likely to experience some anxiety. Things that are routine to caregivers are often new and frightening experiences for patients.
  - » **I told the person who drew my blood that I really am afraid of needles. She just nodded.**
  - » **I didn't know what was going on. The person running the machine didn't even speak to me, except to tell me when to move.**
- Given the short duration of the visit, staff members have to be especially aware of the patient's words and body language in order to recognize these concerns. Staff members who are attuned have a profound impact on the patient's experience.
  - » **Betty could tell I was nervous about the MRI. She let me take it slow when getting in the machine and was very reassuring.**

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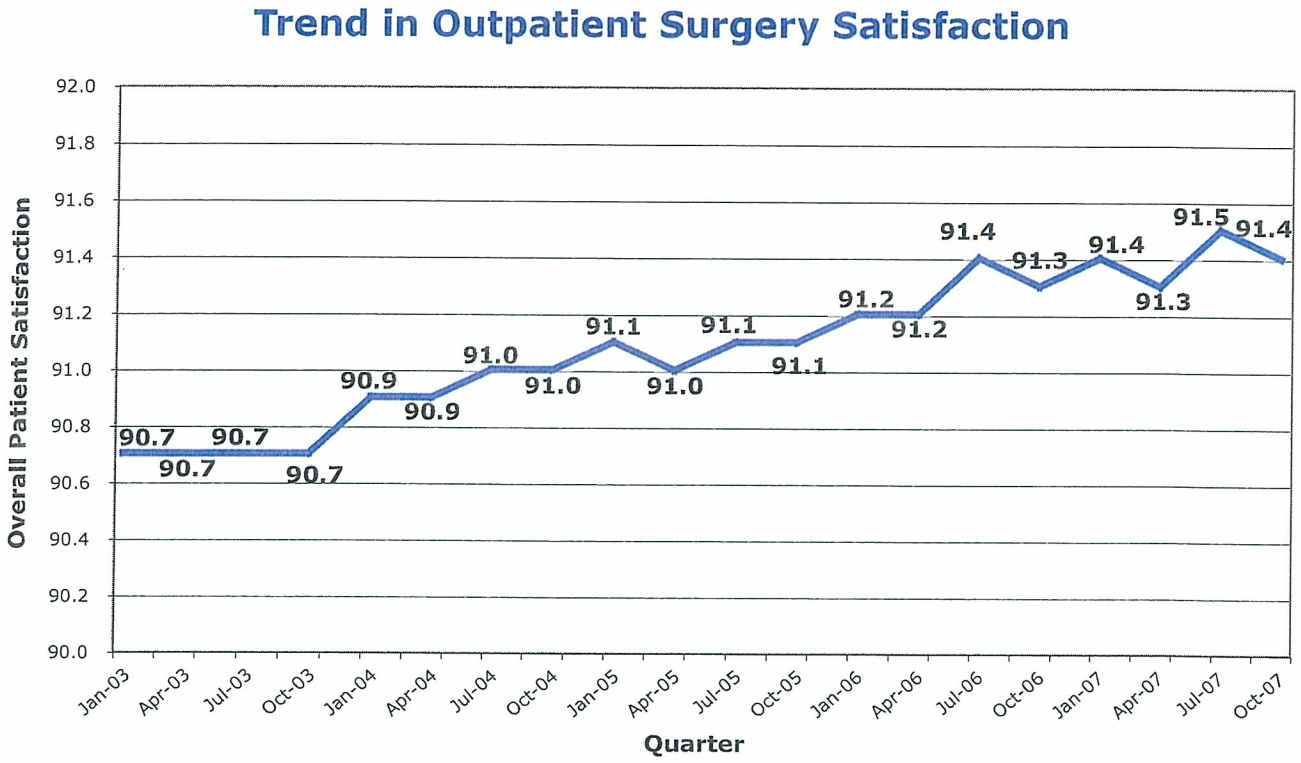
Section II
Outpatient Surgery

Trend in Outpatient Surgery Satisfaction

Patients report very high satisfaction with the care they receive in outpatient surgical facilities. Over the past three years, the national mean score has continued to climb, making it increasingly competitive for facilities to remain in the top percentiles in comparative benchmarking. Same-day surgery facilities face continued high patient expectations for service, timeliness, and response to patients' individual needs.



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Priorities for Improvement in Outpatient Surgery

As technology continues to advance, many surgical procedures that previously required an overnight stay are now completed in the outpatient setting. Outpatient surgery facilities are likely to experience steady growth as technology continues to improve. Since patients may be able to select from several different facilities within their community for these outpatient procedures, a high level of service excellence is necessary to remain competitive in this environment. Communication issues are an opportunity for improvement as shown in the National Outpatient Surgery Priority Index.

National Outpatient Surgery Priority Index

Survey Item	Priority Rank
Response to concerns/complaints made during your visit	1
Information provided about delays	2
Our concern for your privacy	3
Attractiveness of the surgery center	4
Comfort of your room or resting area in the center	5

Represents the experiences of 1,039,289 patients treated at 1,218 facilities nationwide between January 1 and December 31, 2007

Survey items are correlated to patient ratings of "Likelihood of your recommending our facility to others"

Keeping Patients and Families Updated About Delays

After responding to concerns and complaints, information about delays is the next opportunity for improvement. Americans expect timely service when having outpatient surgery. With patient anxiety already high, unexpected delays can cause greater stress in an already tense situation.

The Service Excellence Team at Avera Dell Rapids Area Health Center, Dell Rapids, South Dakota, has worked diligently to improve the communication between the facility and patients regarding delays. Nurses and surgical staff are responsible for informing patient families about delays, surgery progress, and the patient's status following surgery. This is in addition to the meeting the surgeon has with the patient's family.

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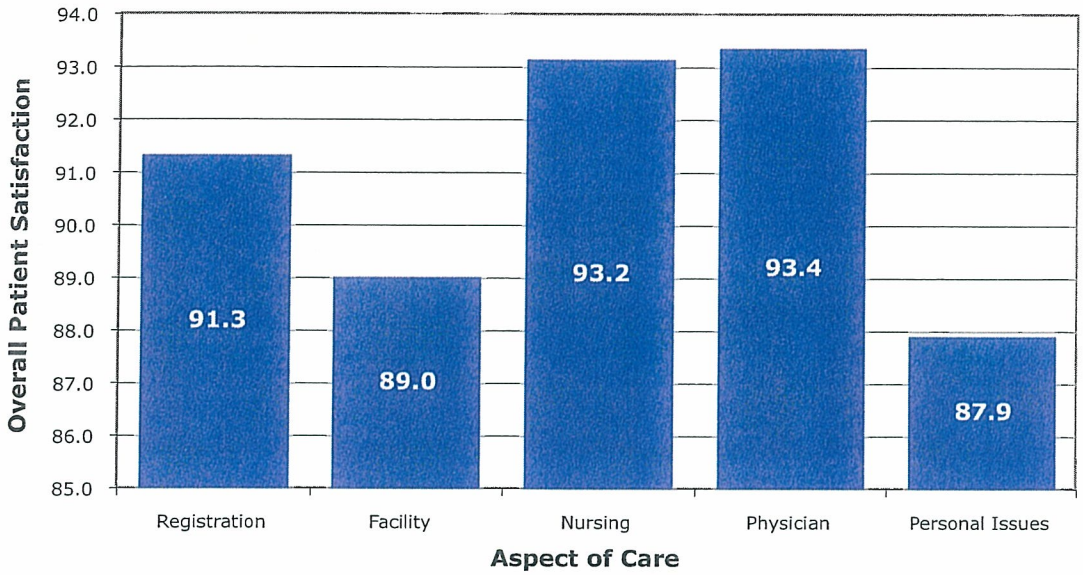
Satisfaction with Outpatient Surgery Operations

'Staff response to personal needs' received the lowest patient satisfaction score for aspect of care. High satisfaction was reported for individual nurses and physicians. These scores may indicate larger system issues that prevent staff from delivering the high-quality care patients desire. Patients may feel the compassion and courtesy from individual care providers but may be put off by institutional barriers.

Outpatient Satisfaction by Aspect of Care



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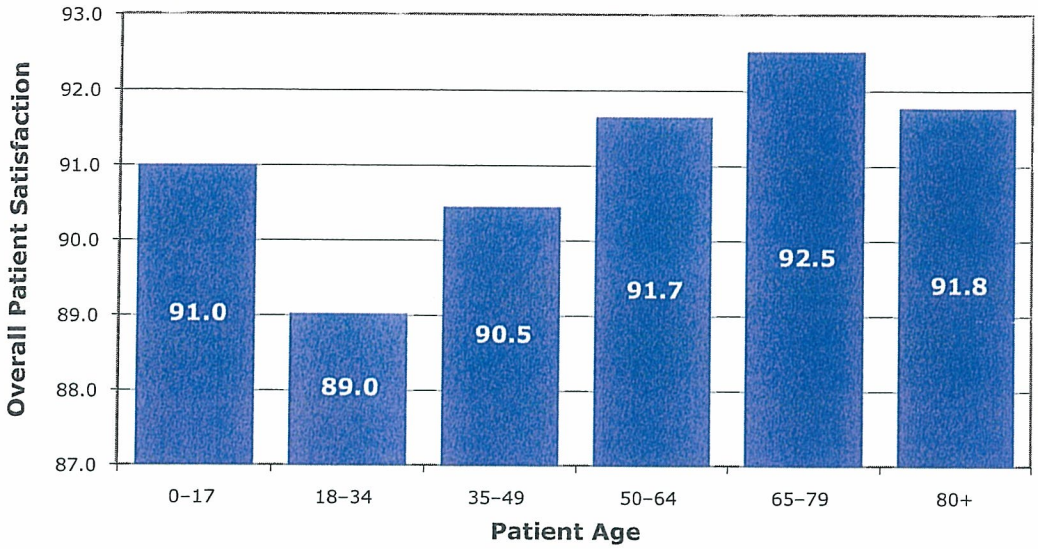
Overall Satisfaction by Age of the Patient

Patient satisfaction with outpatient surgery steadily increases with age except for a slight decline for patients over age 80. Outpatient surgery has increased dramatically in frequency and quality compared to health care thirty years ago. Older patients may remember more frequent inpatient stays and fewer outpatient options and may have a greater appreciation for these advances compared to their younger counterparts.

Outpatient Surgery Satisfaction by Age



Represents the experiences of 1,039,289 patients treated at 1,218 facilities nationwide between January 1 and December 31, 2007

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Services Leading the Way in High Patient Satisfaction

Patients who have outpatient surgery for podiatry conditions report the highest overall satisfaction with their surgery, followed by ophthalmology patients. These services are typically less invasive compared to other services on the top ten list, which may contribute to the slightly higher scores. Enhancing the patient's comfort and responding to her/his needs is critical to improving patient satisfaction.

Top Ten Outpatient Surgery Services According to Patient Satisfaction

Specialty	Mean	Rank
Podiatry	93.1	1
Ophthalmology	92.7	2
Cosmetic Surgery	92.3	3
Colonoscopy	92.1	4
Orthopedics	91.6	5
Cardiac Catheterization	91.6	6
Endoscopy	91.5	7
Gynecology	91.2	8
Ear Nose Throat	91.1	9
Urology	90.6	10

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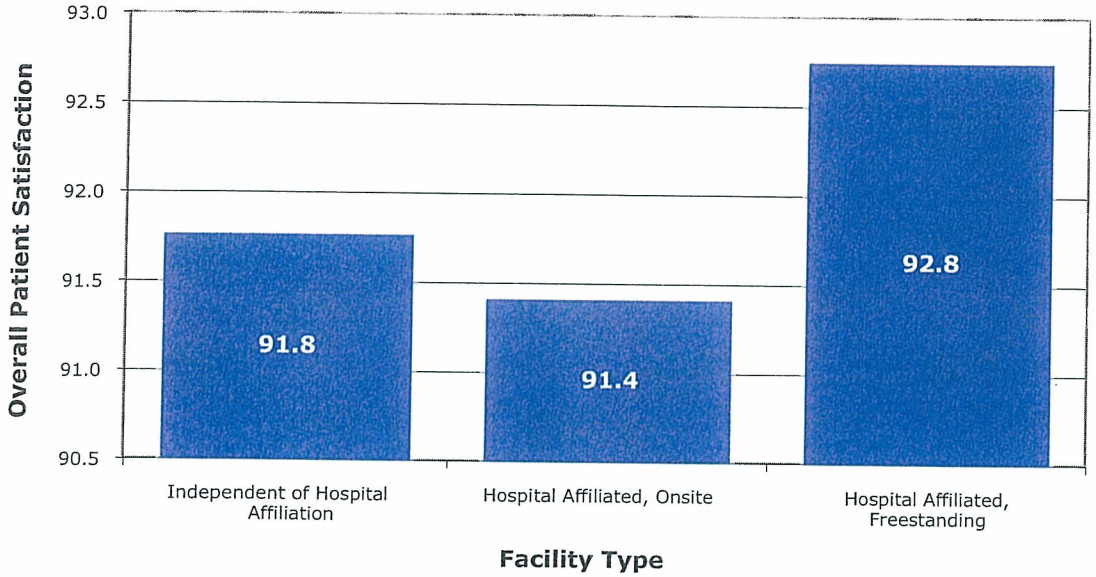
Where Patients Go

Press Ganey compared overall patient satisfaction among three facility types:

Independent of hospital affiliation
Hospital affiliated, onsite
Hospital affiliated, freestanding

Patients reported the highest level of satisfaction with freestanding, hospital-affiliated outpatient surgery facilities.

Outpatient Surgery Satisfaction by Facility Type



Represents the experiences of 1,039,289 patients treated at 1,218 facilities nationwide between January 1 and December 31, 2007

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What Patients Are Saying

Patient comments add life and vitality to patient satisfaction data. Patient comments help explain the specific thoughts patients used to determine their ratings. The distribution of comments was evenly spread among the categories of positive, negative, mixed, and neutral categories for all sections of the survey.

No one comment type is more prevalent, nor does any one area of the survey receive more positive or negative comments. This even distribution indicates that there are as many opportunities for improvement as there are reasons to celebrate success. The following are sample comments from organizations across the country:

- Response to concerns and complaints is the greatest opportunity for improvement nationwide. Patient comments can provide insight into issues that were not resolved during the patient's visit.
  - **I tried to tell the nurse how cold I was but she never did anything to help it. I don't think she realized I was shivering.**
  - **The people next to us had their TV really loud. I mentioned something but I never heard them ask the next family to be quieter.**
  - **I was so frustrated that we had to wait for five hours for my surgery. Nobody apologized for our delay.**
- Similarly, patients sometimes recognize those who go out of their way to provide high-quality service.
  - **Jan was so nice to me. She found me some different crackers when I told her I didn't really care for saltines.**
  - **Robert was so kind when I had to get my IV. He had my husband hold a magazine over the area so I wouldn't have to watch.**
- Delays, and the lack of information regarding them, is another area that receives comments.
  - **My surgery was scheduled for 9 a.m. but I didn't get in until almost 2. I still have no idea what the problem was.**
  - **We arrived promptly at 6 a.m. only to find out I wasn't going until 3 that afternoon. I could have stayed home where it is far more comfortable.**

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Journey of Improvement Case Study: Parkridge Surgery Center

In an effort to improve the patient experience and develop a culture focused on quality improvement, the Parkridge Surgery Center in Columbia, South Carolina, began measuring patient satisfaction with the Press Ganey tool. Parkridge was able to find opportunities for improvement and develop processes to address priority items. IV starts and communication about delays were identified as the two areas having the greatest impact on patient satisfaction.

The Journey

To begin the improvement process, Parkridge recognized that achieving employee buy-in was critical to its success. The goal was to develop a culture where trust, excellence, and fairness served as the guiding principles. The administrators wanted a culture that encourages and respects staff input. As the organization struggled in its improvement efforts, the leaders actively sought the opinions of staff members. The staff members were continually updated about scores and current improvement efforts during staff meetings. This regular exchange of information and ideas helped build a culture where staff recognized that their individual contributions make a difference in the lives of patients.

To effectively engage the physicians, the center first set up its Press Ganey reports to include physician identifiers. This allowed physicians to receive individualized reports from their patient population on a monthly basis. There was considerable variation from physician to physician for both ratings of skill and friendliness. The individualized reports helped physicians who were struggling to identify ways they could improve. Physician-specific data eliminated the mindset of "it isn't my patients who feel this way."

Skill of the Nurse Starting the IV

As most outpatient surgery patients require some form of an IV, the staff recognized improving this particular question was important to each patient experience. Having an IV inserted can cause a lot of anxiety for patients. One Parkridge anesthesiologist recommended the staff undergo training for IV starts. As part of their training, each of Parkridge's nurses spent one shift starting IVs in a partner-hospital's outpatient department. Despite some initial resistance, every nurse completed the training. The nurses refined their technique and identified tools to help improve IV starts. The effort resulted in a great improvement in patient satisfaction.

Information About Delays

To keep patients informed about delays, the staff at Parkridge Surgery Center initially hired a waiting room liaison to help improve communication with patients. The staff implemented a script to inform patients about delays. Yet the scores continued to decline. It was soon realized that the people who were being informed about delays were the family members in the waiting room, not the patients who would be filling out the survey. Many of the patients who experienced delays did so in the pre-op holding area. The nurses from that area were then asked to make a concerted effort to keep patients informed about delays. As a result of this finding, the other initiatives were eliminated since they were not affecting patient satisfaction. Parkridge Surgery Center used its data effectively to monitor improvement efforts and ensure its efforts were yielding the desired results.

Results

Parkridge's efforts to improve patient satisfaction have produced many positive results. The "skill of the nurse starting the IV" survey item began in the 10th percentile; after extensive training, the center was able to reach

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the 99th percentile in one quarter. The physician score has moved from the 26th percentile to scores in the 80th and 90th percentiles. The center's overall score has improved from a low in the 47th percentile to the 96th percentile.

Positive results have occurred in other metrics beyond patient satisfaction. The center's patient volume has grown 400 percent in recent years, the medical staff has increased from 10 to 39 physicians, employee turnover is low, and overall employee satisfaction is stable.

These results were achieved by developing a culture that focuses on continuous quality improvement.

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Methodology

Press Ganey's outpatient services and surgery surveys give patients who have been treated in various outpatient settings the opportunity to provide feedback about their experiences. The surveys are used by medical practices, ambulatory surgery centers, and outpatient facilities across the United States to improve the quality of the service and care they deliver.

Highly valid and reliable, each Press Ganey survey consists of a set of standard questions organized into sections. The outpatient services survey contains seventeen standard questions within five sections: Registration, Test or Treatment, Facility, Personal Issues, and Overall Assessment. The Outpatient Surgery survey contains 29 standard questions within six sections: Registration, Nursing, Physicians, Facility, Personal Issues, and Overall Assessment.

Distribution of Surveys

Surveys are mailed to patients soon after discharge, while their experiences are still fresh in mind. Upon receipt by Press Ganey, completed surveys are processed and added to a national database. Press Ganey complies with the Health Insurance Portability and Accountability Act (HIPAA), which establishes national standards for the security and privacy of health data.

Definition and Calculation of Overall Mean Score

Once surveys are returned to Press Ganey, surveys are processed and added to the client's electronic data storage area. Processing of surveys takes place immediately so that clients can have up-to-the-minute information about their service quality. Responses to survey questions are converted to a series of 100-point maximum scales so that clients can compare different aspects of their performance on a common yardstick. First, for each person who took the survey, responses to the survey questions are translated from a 5-point scale to the 100-point scale. Items rated "Very Good" are awarded 100 points; those rated "Good," 75 points; items rated "Fair," 50 points; "Poor," 25 points; and any items rated "Very Poor" are awarded zero points. Next, each respondent's individual item scores within a survey section (see above) are averaged to become scores for each section. Finally, section scores are averaged to become that respondent's overall satisfaction score. The average of all respondents' overall satisfaction scores is called the client's Overall Mean Score, and is stored electronically and made available to the client.

Priority Index Calculation

The Priority Index is an ordered list of survey items that shows the areas needing the most improvement. In the Priority Index, survey items are arranged from the "first item to work on" to the "last item to work on." The Priority Index reflects service issues that clients are performing relatively poorly on that are important to their patients. The index is calculated by looking at two aspects of each survey item's data: its average score, and how well it mirrors the respondent's overall satisfaction score, as determined above. Survey items that have low average scores (indicating that the facility's quality for that aspect of care is lacking relative to other care aspects) and faithfully mirror the respondent's overall satisfaction score will have high Priority Index scores.

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For more than 20 years, Press Ganey has been committed to providing insightful information that allows our more than 7,000 health care client facilities to continuously improve their performance. Our foundation for success is built upon dedication to scientific integrity, relentless responsiveness to our clients' changing requirements, and an overall passion for helping our clients succeed. By pursuing and acting upon input from our clients, we are consistently able to develop and deliver the newest innovations. We continue to succeed by exchanging knowledge with our clients, and facilitating the exchange of knowledge between our clients.

With more than 11 million surveys processed annually, Press Ganey has the most extensive data and resources for improving patient satisfaction, employee engagement, physician engagement, and patient safety. Press Ganey's tools and services—measurement tools, consulting services, networking opportunities, and solutions for improvement—use patient, employee, and physician feedback to drive health care improvement initiatives.

All data and findings represent surveys returned by patients, physicians, and employees to Press Ganey clients.

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Advisory Board Growth Projections - Orthopedics
HHC Southington ASC Primary Service Area

Summary of Southington PSA Orthopedic Outpatient Care

Southington PSA	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Outpatient[1]	33,524	37,141	42,644	**11%**	**27%**

1. Outpatient Orthopedic data from the Advisory Board Outpatient Market Estimator for the Southington PSA.

Summary of Southington PSA Orthopedic OR Case Volumes

Southington PSA	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Outpatient[1]	5,594	6,045	6,850	**8%**	**22%**
Inpatient[2]	2,741	2,756	2,880	**1%**	**5%**
Total	**8,335**	**8,801**	**9,730**	**6%**	**17%**

1. Outpatient data from the Advisory Board Outpatient Market Estimator for the Southington PSA. Orthopedic procedure descriptions were reviewed by four consultants to identify those procedures that are generally performed in an operating room. All other procedures were excluded.

2. Inpatient data from the Advisory Board Inpatient Market Estimator for the Southington PSA. Data represent the number of projected admissions for the orthopedic service line. The analysis assumes one operating room case per surgical admission which may understate volumes slightly.

Summary of Southington PSA Total OR Case Volumes

Southington PSA	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Outpatient[1]	39,417	42,642	48,141	**8%**	**22%**
Inpatient[2]	9,946	9,830	9,940	**-1%**	**0%**
Total	**49,363**	**52,472**	**58,081**	**6%**	**18%**

1. Outpatient data from the Advisory Board Outpatient Market Estimator for the Southington PSA. Procedure descriptions were reviewed by four consultants to identify those procedures that are generally performed in an operating room. All other procedures were excluded.

2. Inpatient data from the Advisory Board Inpatient Market Estimator for the Southington PSA. Data represent the number of projected admissions for surgical service lines. The analysis assumes one operating room case per surgical admission which may understate volumes slightly.

Health Care Advisory Board
Outpatient Market Estimator

Brief Description

Welcome to the Innovations Center Outpatient Market Estimator. Developed by the Advisory Board's Data & Analytics Group, this model generates current and forecasted outpatient volume estimates for any geography within the United States. Users can select any set of counties or zip codes and view market estimates for service lines, sub-service lines or individual services/procedures. The tool has been further enhanced to allow users to view estimates and forecasts for all patients within their market or to focus the results on local pediatric or adult populations. For more information, please contact the Data and Analytics Group at AnalyticsAdvisory.com

› select which level you would like to view your customized service est

Service Line | Sub Service Line | Procedure Group | ermr and Conditin

Session Name

BradleyMidStateZipCoder

Session Description

LOCALES SELECTED

06450(Connecticut)
06023(Connecticut)
06037(Connecticut)
06052(Connecticut)
06492(Connecticut)
06111(Connecticut)
06053(Connecticut)
06479(Connecticut)
06410(Connecticut)
06062(Connecticut)
06451(Connecticut)
06051(Connecticut)
06489(Connecticut)

DEMOGRAPHICS SELECTED

0 - 4 years old
5 - 9 years old
10 - 14 years old
15 - 19 years old
20 - 24 years old
25 - 29 years old
30 - 34 years old
35 - 39 years old
40 - 44 years old
45 - 49 years old
50 - 54 years old
55 - 59 years old
60 - 64 years old
65 - 69 years old
70 - 74 years old
75 - 79 years old
80 - 84 years old
85+ years old
Female
Male

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	OR Case Volumes: Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Cardiology	Cardiac Cath	Concomitant Diagnostic Coronary and Peripheral Catheterization	42	41	41	-4%	-3%	35	33	33	-6%	-6%	Cath Lab					
Cardiology	Cardiac Cath	Diagnostic Cardiac Catheterization	1,152	986	817	-14%	-29%	930	770	622	-17%	-33%	Cath Lab					
Cardiology	Cardiac Cath	Heart Biopsy	23	24	25	4%	6%	23	24	25	4%	6%	Cath Lab					
Cardiology	Cardiac Cath	Intracoronary Brachytherapy	1	0	0	-100%	-100%	1	0	0	-100%	-100%	Cath Lab					
Cardiology	Cardiac Cath	Intravascular Coronary Ultrasound	15	21	26	41%	76%	15	21	25	40%	73%	Cath Lab					
Cardiology	Cardiac Cath	Other Diagnostic Cardiac Catheterization	24	26	30	9%	25%	12	13	15	9%	25%	Cath Lab					
Cardiology	Cardiac Cath	Other Transcatheter Cardiac Procedure	8	9	10	8%	22%	0	0	0	8%	22%	Cath Lab					
Cardiology	Cardiac Cath	Percutaneous Transluminal Balloon Valvuloplasty (Aortic Valve)	0	1	1	38%	96%	0	1	1	38%	96%	Cath Lab					
Cardiology	Cardiac Cath	Percutaneous Transluminal Balloon Valvuloplasty (Pulmonary Valve)	1	1	2	33%	79%	1	1	2	33%	79%	Cath Lab					
Cardiology	Cardiac Cath	Percutaneous Transluminal Coronary Artery Angioplasty	39	39	40	-2%	2%	39	37	37	-4%	-4%	Cath Lab					
Cardiology	Cardiac Cath	Percutaneous Transluminal Coronary Artery Atherectomy	2	2	2	0%	1%	2	2	2	-1%	-1%	Cath Lab					
Cardiology	Cardiac Cath	Percutaneous Transluminal Coronary Artery Stent Placement	245	241	243	-2%	-1%	241	231	226	-4%	-6%	Cath Lab					
Cardiology	Cardiac Cath	Percutaneous Transluminal Coronary Thrombectomy	1	1	1	6%	6%	1	1	1	4%	3%	Cath Lab					
Cardiology	Cardiac Cath	Pericardial Procedures	2	2	2	-5%	-3%	2	2	2	-5%	-3%	Cath Lab					
Cardiology	Cardiac Cath	Transcatheter Coronary Thrombolysis	2	2	1	-25%	-42%	2	2	1	-25%	-42%	Cath Lab					
Cardiology	Electrophysiology	Cardiac Event Recorder Implant	7	9	12	26%	63%	7	9	11	23%	59%	Cath Lab					
Cardiology	Electrophysiology	Cardiac Event Recorder Removal	5	6	8	26%	64%	5	6	7	23%	60%	Cath Lab					
Cardiology	Electrophysiology	Electronic Evaluation Of Cardiac Event Recorder	57	88	138	55%	142%	8	11	18	49%	133%	Cath Lab					
Cardiology	Electrophysiology	Electronic Evaluation Of ICD	1,741	2,052	2,400	18%	38%	318	349	386	10%	22%	Cath Lab					
Cardiology	Electrophysiology	Electronic Evaluation Of Pacemaker	3,720	4,140	4,347	11%	17%	679	705	700	4%	3%	Cath Lab					
Cardiology	Electrophysiology	Electrophysiology Study	16	18	20	11%	24%	16	17	19	9%	21%	Cath Lab					
Cardiology	Electrophysiology	Heart Electrode Procedure	9	10	12	10%	26%	9	10	11	8%	23%	Cath Lab					
Cardiology	Electrophysiology	ICD Implant	117	127	142	9%	22%	114	121	131	6%	15%	Cath Lab					
Cardiology	Electrophysiology	ICD Removal	1	1	2	15%	33%	1	1	2	15%	33%	Cath Lab					
Cardiology	Electrophysiology	Intracardiac Catheter Ablation	70	82	94	18%	34%	68	81	91	18%	34%	Cath Lab					
Cardiology	Electrophysiology	Intracardiac Echocardiography	3	6	11	147%	319%	3	6	10	140%	296%	Cath Lab					
Cardiology	Electrophysiology	Intracardiac Pacing	2	2	3	13%	36%	2	2	2	12%	35%	Cath Lab					
Cardiology	Electrophysiology	Other Electrophysiology Procedure	30	34	38	14%	27%	5	5	6	14%	27%	0					
Cardiology	Electrophysiology	Pacemaker Implant	167	167	175	0%	5%	159	153	158	-3%	0%	Cath Lab					
Cardiology	Electrophysiology	Pacemaker Removal	3	4	5	27%	68%	3	4	5	26%	69%	Cath Lab					
Cardiology	Electrophysiology	Tilt Table Test	55	56	58	3%	6%	39	36	34	-7%	-13%	0					
Cardiology	Medical Cardiology	Ambulatory Blood Pressure Monitoring	82	85	88	4%	8%	4	4	4	-1%	3%	0					
Cardiology	Medical Cardiology	Audioelectric Cardiography	0	1	2	91%	222%	0	0	0	91%	222%	0					
Cardiology	Medical Cardiology	Cardiac Rehabilitation	3,802	3,985	4,133	5%	9%	1,901	1,992	2,066	5%	9%	0					
Cardiology	Medical Cardiology	Cardiopulmonary Resuscitation	72	77	84	6%	16%	70	74	80	5%	14%	0					
Cardiology	Medical Cardiology	Cardiovascular Stress Test	6,963	7,262	7,513	4%	8%	1,688	1,672	1,660	-1%	-2%	0					
Cardiology	Medical Cardiology	Cardioversion	122	142	163	16%	33%	115	132	150	15%	30%	Cath Lab					
Cardiology	Medical Cardiology	Electrocardiogram	50,655	54,163	59,877	7%	18%	17,352	18,415	20,358	6%	17%	0					
Cardiology	Medical Cardiology	Electrocardiogram Monitoring	2,100	2,172	2,222	3%	6%	504	521	533	3%	6%	0					
Cardiology	Medical Cardiology	External Circulatory Assist	549	589	626	7%	14%	11	12	13	7%	14%	0					
Cardiology	Medical Cardiology	Other Medical Cardiology Diagnostic	631	452	347	-28%	-45%	13	9	7	-28%	-45%	0					
Cardiology	Medical Cardiology	Other Medical Cardiology Procedure	75	83	92	10%	21%	8	8	9	10%	21%	0					
Cardiology	Medical Cardiology	Transesophageal Echocardiography	166	184	207	11%	25%	154	168	185	9%	20%	0					
Cardiology	Medical Cardiology	Transthoracic Echocardiography	15,625	16,619	17,781	6%	14%	3,633	3,661	3,751	1%	3%	0					
Cosmetic Procedure	Breast Procedures	Breast Augmentation With Implant	381	446	518	17%	36%	48	45	39	-8%	-19%	OR	381	446	518	0.17	0.36
Cosmetic Procedure	Breast Procedures	Breast Augmentation Without Implant	10	10	11	7%	13%	1	1	1	-15%	-33%	OR	10	10	11	0.07	0.13
Cosmetic Procedure	Breast Procedures	Breast Implant Preparation	4	5	6	22%	50%	0	0	0	0%	0%	OR	4	5	6	0.22	0.5
Cosmetic Procedure	Breast Procedures	Breast Implant Removal	27	27	27	1%	-1%	17	16	16	-1%	-3%	OR	27	27	27	0.01	-0.01
Cosmetic Procedure	Breast Procedures	Breast Lift (Mastopexy)	158	234	342	49%	117%	97	141	205	46%	112%	OR	158	234	342	0.49	1.17
Cosmetic Procedure	Breast Procedures	Breast Reduction	148	147	146	-1%	-2%	90	88	87	-2%	-3%	OR	148	147	146	-0.01	-0.02
Cosmetic Procedure	Facial Procedures	Blepharoplasty - Lower Eyelid	10	11	12	12%	22%	0	0	0	6%	16%	OR	10	11	12	0.12	0.22
Cosmetic Procedure	Facial Procedures	Blepharoplasty - Upper Eyelid	261	300	341	15%	31%	11	12	14	8%	23%	OR	261	300	341	0.15	0.31
Cosmetic Procedure	Facial Procedures	Facial Bone Augmentation	18	19	19	5%	8%	1	1	1	-1%	2%	OR	18	19	19	0.05	0.08
Cosmetic Procedure	Facial Procedures	Facial Bone Reduction	4	5	5	5%	10%	0	0	0	-3%	2%	OR	4	5	5	0.05	0.1
Cosmetic Procedure	Facial Procedures	Forehead Reduction	46	47	50	3%	9%	2	2	2	-4%	1%	OR	46	47	50	0.03	0.09
Cosmetic Procedure	Facial Procedures	Rhinoplasty	146	150	153	3%	5%	6	6	6	-3%	-1%	OR	146	150	153	0.03	0.05
Cosmetic Procedure	Facial Procedures	Rhytidectomy	128	141	149	11%	17%	5	6	6	4%	10%	OR	128	141	149	0.11	0.17
Cosmetic Procedure	Fat Removal	Lipectomy	274	288	304	5%	11%	74	69	65	-6%	-12%	OR	274	288	304	0.05	0.11
Cosmetic Procedure	Fat Removal	Liposuction	77	79	83	4%	8%	21	19	18	-8%	-14%	OR	77	79	83	0.04	0.08
Cosmetic Procedure	Nonsurgical Procedures	Chemical Peel	1,122	1,224	1,331	9%	19%	0	0	0	0%	0%	0					
Cosmetic Procedure	Nonsurgical Procedures	Dermabrasion	80	89	100	11%	24%	10	9	8	-12%	-26%	0					
Cosmetic Procedure	Nonsurgical Procedures	Electrolysis/Laser Hair Removal	1,241	1,252	1,270	1%	2%	25	25	25	1%	3%	0					
Cosmetic Procedure	Nonsurgical Procedures	Injection - Filling Material (ex. Collagen)	1,922	2,327	2,807	21%	46%	0	0	0	0%	0%	0					
Cosmetic Procedure	Nonsurgical Procedures	Salabrasion (Tattoo Removal)	111	130	147	17%	33%	0	0	0	0%	0%	0					
Cosmetic Procedure	Other Cosmetic Procedures	Hair Transplantation/Analysis	22	24	26	9%	20%	2	2	3	9%	20%	0					
Cosmetic Procedure	Other Cosmetic Procedures	Muscle/Skin Flap	18	22	27	21%	48%	8	10	12	21%	48%	OR	18	22	27	0.21	0.48
Cosmetic Procedure	Other Cosmetic Procedures	Skin Flap	25	30	36	20%	45%	11	14	16	20%	45%	OR	25	30	36	0.2	0.45
Cosmetic Procedure	Other Cosmetic Procedures	Tissue Expander Procedures - Skin	9	11	12	16%	33%	6	6	7	16%	33%	0					
Dermatology	Acne & Warts	Acne Surgery	1,224	1,118	1,014	-9%	-17%	12	11	10	-9%	-17%	0					
Dermatology	Acne & Warts	Chemical Exfoliation - Acne	41	40	38	-4%	-7%	0	0	0	0%	0%	0					
Dermatology	Acne & Warts	Cryotherapy - Acne	140	130	120	-7%	-14%	1	1	1	-7%	-14%	0					
Dermatology	Acne & Warts	Wart Destruction	1,159	1,136	1,118	-2%	-4%	23	23	22	-2%	-4%	0					
Dermatology	Eczema & Psoriasis	Actinotherapy (UV Therapy) - Eczema/Psoriasis	234	212	192	-9%	-18%	7	6	6	-9%	-18%	0					
Dermatology	Eczema & Psoriasis	Debridement - Eczema/Psoriasis	368	361	355	-2%	-4%	11	11	11	-2%	-4%	0					
Dermatology	Eczema & Psoriasis	Laser Treatment - Eczema/Psoriasis	31	47	64	50%	107%	1	2	3	50%	107%	0					
Dermatology	Eczema & Psoriasis	Photochemotherapy - Eczema/Psoriasis	1,361	1,255	1,142	-8%	-16%	27	25	23	-8%	-16%	0					
Dermatology	Other Dermatology Procedures	Foreign Body Removal - Skin	369	371	380	0%	3%	92	93	95	0%	3%	0					
Dermatology	Other Dermatology Procedures	Other Procedures - Skin	43	43	44	0%	2%	4	4	4	0%	2%	0					
Dermatology	Other Dermatology Procedures	Tattooing for Coloration Defect	14	14	13	-2%	-3%	2	2	2	-2%	-3%	0					

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
														OR Case Volumes				
Dermatology	Other Skin Lesions	Benign Lesion Destruction - Skin	18,172	19,684	21,965	8%	21%	363	394	439	8%	21%	0					
Dermatology	Other Skin Lesions	Benign Lesion Excision - Skin	4,137	4,381	4,760	6%	15%	372	394	428	6%	15%	0					
Dermatology	Other Skin Lesions	Benign Lesion Incision/Drainage - Skin	3,073	3,141	3,308	2%	8%	307	314	331	2%	8%	0					
Dermatology	Other Skin Lesions	Intralesional Injection - Skin	1,328	1,322	1,347	0%	1%	27	26	27	0%	1%	0					
Dermatology	Other Skin Lesions	Lesion Shaving - Skin	1,936	1,972	2,064	2%	7%	19	20	21	2%	7%	0					
Dermatology	Other Skin Lesions	Skin Tag Removal	768	770	785	0%	2%	15	15	16	0%	2%	0					
Dermatology	Skin Cancer	Biopsy - Lip	56	64	75	14%	33%	1	1	1	14%	33%	0					
Dermatology	Skin Cancer	Biopsy - Skin	7,426	8,458	9,961	14%	34%	149	169	199	14%	34%	0					
Dermatology	Skin Cancer	Malignant Lesion Destruction - Skin	1,742	2,222	2,962	28%	70%	52	67	89	28%	70%	0					
Dermatology	Skin Cancer	Malignant Lesion Excision - Skin	1,878	2,181	2,633	16%	40%	263	305	369	16%	40%	0					
Dermatology	Skin Cancer	Mohs Surgery	1,062	1,567	2,386	48%	125%	32	47	72	48%	125%	0					
Dermatology	Skin Cancer	Photodynamic Therapy (PDT)	7	8	9	7%	18%	1	1	1	7%	18%	0					
Dermatology	Skin Cancer	Whole Body Photography	0	0	1	19%	47%	0	0	0	20%	47%	0					
Dermatology	Skin Grafts and Transfers	Allograft - Skin	10	12	15	20%	47%	6	7	8	20%	47%	0					
Dermatology	Skin Grafts and Transfers	Bilaminate Skin Graft	58	70	86	21%	48%	36	43	53	21%	48%	OR	58	70	86	0.21	0.48
Dermatology	Skin Grafts and Transfers	Composite Graft	2	2	3	20%	50%	1	2	2	20%	50%	OR	2	2	3	0.2	0.5
Dermatology	Skin Grafts and Transfers	Derma-Fat-Fascia Graft	2	2	2	17%	38%	1	1	1	17%	38%	OR	2	2	2	0.17	0.38
Dermatology	Skin Grafts and Transfers	Full Thickness Skin Graft	60	73	91	21%	52%	20	24	30	21%	52%	OR	60	73	91	0.21	0.52
Dermatology	Skin Grafts and Transfers	Other Grafts	0	0	1	20%	51%	0	0	0	20%	51%	0					
Dermatology	Skin Grafts and Transfers	Pinch Graft	3	3	4	20%	51%	1	1	2	20%	51%	0					
Dermatology	Skin Grafts and Transfers	Skin Graft Preparation	14	17	21	21%	49%	5	6	8	21%	49%	OR	14	17	21	0.21	0.49
Dermatology	Skin Grafts and Transfers	Split Graft	34	42	52	21%	51%	24	29	36	21%	51%	OR	34	42	52	0.21	0.51
Dermatology	Skin Grafts and Transfers	Tissue Transfer	458	551	685	20%	49%	128	154	192	20%	49%	OR	458	551	685	0.2	0.49
Dermatology	Skin Grafts and Transfers	Xenograft - Skin	42	51	63	21%	50%	16	20	24	21%	50%	0					
Endocrinology	Diabetes Management	Diabetes Management Training	581	719	913	24%	57%	226	245	271	8%	20%	0					
Endocrinology	Diabetes Management	Glucose Monitoring	16	19	24	21%	52%	1	1	1	21%	52%	0					
ENT	Endocrine (Thyroid/Parathyroid/Thymus) Procedures	Biopsy - Percutaneous - Thyroid	98	99	103	1%	6%	44	40	37	-10%	-17%	OR	98	99	103	0.01	0.06
ENT	Endocrine (Thyroid/Parathyroid/Thymus) Procedures	Lesion Aspiration/Injection - Thyroid	31	32	34	3%	9%	4	3	2	-31%	-54%	OR	31	32	34	0.03	0.09
ENT	Endocrine (Thyroid/Parathyroid/Thymus) Procedures	Lesion Excision - Thyroid	8	8	8	2%	8%	6	5	5	-6%	-7%	OR	8	8	8	0.02	0.08
ENT	Endocrine (Thyroid/Parathyroid/Thymus) Procedures	Other Procedures - Endocrine System	0	1	1	2%	6%	0	0	0	-5%	-8%	OR	0	1	1	0.02	0.06
ENT	Endocrine (Thyroid/Parathyroid/Thymus) Procedures	Parathyroid Autotransplantation	3	4	7	52%	137%	3	4	6	46%	121%	OR	3	4	7	0.52	1.37
ENT	Endocrine (Thyroid/Parathyroid/Thymus) Procedures	Removal/Exploration - Parathyroid	30	48	78	58%	155%	29	44	69	52%	138%	OR	30	48	78	0.58	1.55
ENT	Endocrine (Thyroid/Parathyroid/Thymus) Procedures	Thyroidectomy	80	123	194	54%	142%	76	113	173	48%	127%	OR	80	123	194	0.54	1.42
ENT	Endoscopic Nasal/Sinus Procedures	Endoscopic Sinus Surgery - Diagnostic	57	60	65	5%	14%	38	38	39	0%	4%	OR	57	60	65	0.05	0.14
ENT	Endoscopic Nasal/Sinus Procedures	Endoscopic Sinus Surgery - Procedural	789	823	883	4%	12%	523	519	532	-1%	2%	OR	789	823	883	0.04	0.12
ENT	Endoscopic Nasal/Sinus Procedures	Nasal Endoscopy - Diagnostic	1,215	1,290	1,411	6%	16%	182	193	212	6%	16%	OR	1215	1290	1411	0.06	0.16
ENT	Endoscopic Nasal/Sinus Procedures	Nasal/Sinus Endoscopy - Other Procedures	58	63	70	7%	20%	23	25	28	7%	20%	OR	58	63	70	0.07	0.2
ENT	External Ear Procedures	Biopsy - External Ear	43	50	60	16%	40%	2	2	2	16%	40%	OR	43	50	60	0.16	0.4
ENT	External Ear Procedures	Debridement - Mastoid Cavity	135	140	152	4%	13%	5	6	6	4%	13%	OR	135	140	152	0.04	0.13
ENT	External Ear Procedures	Ear Removal/Reattachment	10	10	11	4%	12%	8	8	9	4%	12%	OR	10	10	11	0.04	0.12
ENT	External Ear Procedures	Ear Wax Removal	3,994	4,333	4,882	8%	22%	120	130	146	8%	22%	OR/DO					
ENT	External Ear Procedures	Foreign Body Removal - Auditory Canal	155	157	165	1%	6%	26	22	19	-16%	-28%	OR	155	157	165	0.01	0.06
ENT	External Ear Procedures	Lesion Drainage/Excision - External Ear	33	33	34	1%	4%	6	5	5	-15%	-26%	OR	33	33	34	0.01	0.04
ENT	External Ear Procedures	Other Procedures - External Ear	9	9	9	-1%	3%	1	1	1	-20%	-34%	OR	9	9	9	-0.01	0.03
ENT	External Ear Procedures	Reconstruction - Auditory Canal	6	6	6	2%	7%	4	4	4	-4%	-7%	OR	6	6	6	0.02	0.07
ENT	Hearing/Speech Aid Services	Cochlear Implant Analysis/Programming	23	28	34	18%	44%	3	3	4	18%	44%	DO					
ENT	Hearing/Speech Aid Services	Hearing/Speech Aid Selection/Evaluation	88	91	95	3%	8%	4	4	4	3%	8%	DO					
ENT	Hearing/Speech Aid Services	Hearing/Speech Therapy - Post-Cochlear Implant	37	39	44	6%	18%	4	4	4	6%	18%	OR	37	39	44	0.06	0.18
ENT	Hearing/Speech Aid Services	Implantation - Cochlear Implant	7	8	10	20%	50%	5	6	6	7%	17%	OR	7	8	10	0.2	0.5
ENT	Hearing/Speech Aid Services	Implantation/Removal - Other Hearing/Speech Aid	3	3	4	13%	29%	2	2	2	5%	11%	OR	3	3	4	0.13	0.29
ENT	Hearing/Speech Aid Services	Other Hearing/Speech Aid Services	335	351	377	5%	13%	7	7	8	5%	13%	DO					
ENT	Hearing/Speech Examinations/Therapy	Hearing Examinations	9,649	10,275	11,402	6%	18%	193	205	228	6%	18%	DO					
ENT	Hearing/Speech Examinations/Therapy	Hearing/Speech Therapy	3,437	3,810	4,432	11%	29%	470	379	305	-19%	-35%	DO					
ENT	Hearing/Speech Examinations/Therapy	Speech Examinations	221	235	260	6%	17%	35	26	19	-27%	-47%	DO					
ENT	Larynx Procedures	Laryngectomy	1	2	2	17%	41%	1	1	2	15%	35%	OR	1	2	2	0.17	0.41
ENT	Larynx Procedures	Laryngoplasty	4	4	4	5%	16%	3	3	4	3%	11%	OR	4	4	4	0.05	0.16
ENT	Larynx Procedures	Laryngoscopy - Aspiration	4	4	5	5%	14%	1	1	1	-8%	-10%	OR	4	4	5	0.05	0.14
ENT	Larynx Procedures	Laryngoscopy - Biopsy	38	40	43	5%	13%	26	26	27	0%	3%	OR	38	40	43	0.05	0.13
ENT	Larynx Procedures	Laryngoscopy - Diagnostic	1,951	2,118	2,366	9%	21%	117	127	142	9%	21%	OR	1951	2118	2366	0.09	0.21
ENT	Larynx Procedures	Laryngoscopy - Other Procedures	4	4	4	3%	10%	2	2	2	-5%	-7%	OR	4	4	4	0.03	0.1
ENT	Larynx Procedures	Laryngoscopy - Stroboscopy	112	125	145	12%	30%	17	15	14	-10%	-18%	OR/DO					
ENT	Larynx Procedures	Laryngoscopy - Tumor Removal	55	56	59	3%	9%	39	37	37	-4%	-6%	OR	55	56	59	0.03	0.09
ENT	Larynx Procedures	Laryngoscopy - Vocal Cord Injection	15	16	17	7%	18%	4	4	3	-11%	-19%	OR	15	16	17	0.07	0.18
ENT	Larynx Procedures	Lesion Excision - Larynx	1	1	1	1%	3%	0	0	0	-5%	-10%	OR	1	1	1	0.01	0.03
ENT	Larynx Procedures	Other Procedures - Larynx	3	3	3	5%	14%	1	1	1	-2%	0%	OR	3	3	3	0.05	0.14
ENT	Middle/Inner Ear Procedures	Eustachian Tube Procedure - Middle Ear	13	12	12	-6%	-9%	0	0	0	-6%	-9%	OR	13	12	12	-0.06	-0.09
ENT	Middle/Inner Ear Procedures	Exploratory Surgery - Middle Ear	5	4	4	-9%	-15%	2	2	1	-19%	-33%	OR	5	4	4	-0.09	-0.15
ENT	Middle/Inner Ear Procedures	Labyrinthotomy	10	9	9	-7%	-11%	1	1	1	-7%	-11%	OR	10	9	9	-0.07	-0.11
ENT	Middle/Inner Ear Procedures	Lesion Excision - Middle Ear	4	4	4	-9%	-14%	2	2	1	-18%	-31%	OR	4	4	4	-0.09	-0.14
ENT	Middle/Inner Ear Procedures	Mastoidectomy	8	9	9	6%	17%	5	5	6	-1%	1%	OR	8	9	9	0.06	0.17
ENT	Middle/Inner Ear Procedures	Myringoplasty	22	23	26	5%	16%	11	10	10	-6%	-6%	OR	22	23	26	0.05	0.16
ENT	Middle/Inner Ear Procedures	Myringotomy	52	47	44	-10%	-17%	26	21	17	-21%	-36%	OR	52	47	44	-0.1	-0.17
ENT	Middle/Inner Ear Procedures	Other Procedures - Inner Ear	3	3	3	2%	7%	1	1	1	-6%	-9%	OR	3	3	3	0.02	0.07
ENT	Middle/Inner Ear Procedures	Other Procedures - Middle Ear	3	3	3	-8%	-13%	1	1	1	-16%	-28%	OR	3	3	3	-0.08	-0.13
ENT	Middle/Inner Ear Procedures	Stapes Procedures	16	16	17	0%	2%	11	11	10	-7%	-11%	OR	16	16	17	0	0.02
ENT	Middle/Inner Ear Procedures	Tympanic Membrane Repair	35	35	38	1%	8%	10	9	8	-9%	-14%	OR	35	35	38	0.01	0.08
ENT	Middle/Inner Ear Procedures	Tympanoplasty	49	43	39	-13%	-21%	25	19	15	-23%	-39%	OR	49	43	39	-0.13	-0.21
ENT	Middle/Inner Ear Procedures	Tympanoplasty With Mastoidectomy	20	18	16	-12%	-20%	14	12	10	-18%	-31%	OR	20	18	16	-0.12	-0.2
ENT	Middle/Inner Ear Procedures	Tympanostomy	554	497	461	-10%	-17%	278	219	179	-21%	-36%	OR	554	497	461	-0.1	-0.17

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	OR Case Volumes: Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
ENT	Middle/Inner Ear Procedures	Ventilating Tube Removal - Eardrum	20	18	16	-12%	-19%	7	6	5	-19%	-32%	OR	20	18	16	-0.12	-0.19
ENT	Nasal Procedures (Non-Endoscopy)	Biopsy - Nose	9	9	10	7%	18%	0	0	0	7%	18%	OR	9	9	10	0.07	0.18
ENT	Nasal Procedures (Non-Endoscopy)	Dislocation Treatment - Nose	5	5	6	2%	6%	0	0	0	2%	6%	OR	5	5	6	0.02	0.06
ENT	Nasal Procedures (Non-Endoscopy)	Foreign Body Removal - Nose	49	50	53	2%	8%	14	12	11	-11%	-19%	OR	49	50	53	0.02	0.08
ENT	Nasal Procedures (Non-Endoscopy)	Fracture Treatment - Nose	69	68	69	-2%	-1%	45	44	45	-2%	-1%	OR	69	68	69	-0.02	-0.01
ENT	Nasal Procedures (Non-Endoscopy)	Hemorrhage Control - Nose	510	531	572	4%	12%	189	175	169	-7%	-11%	OR	510	531	572	0.04	0.12
ENT	Nasal Procedures (Non-Endoscopy)	Lesion Drainage - Nose	4	4	4	0%	3%	1	1	0	-23%	-40%	OR	4	4	4	0	0.03
ENT	Nasal Procedures (Non-Endoscopy)	Lesion/Polyp Excision/Destruction - Nose	24	22	21	-8%	-13%	9	8	8	-8%	-13%	OR	24	22	21	-0.08	-0.13
ENT	Nasal Procedures (Non-Endoscopy)	Mucosa Cauterization/Ablation	21	20	19	-7%	-12%	3	2	2	-7%	-12%	OR	21	20	19	-0.07	-0.12
ENT	Nasal Procedures (Non-Endoscopy)	Other Procedures - Nose	14	13	12	-10%	-17%	6	5	5	-10%	-17%	OR	14	13	12	-0.1	-0.17
ENT	Nasal Procedures (Non-Endoscopy)	Reconstruction - Rhinoplasty	2	2	2	3%	9%	1	1	1	0%	7%	OR	2	2	2	0.03	0.09
ENT	Nasal Procedures (Non-Endoscopy)	Rhinectomy	1	1	1	5%	13%	1	1	1	5%	13%	OR	1	1	1	0.05	0.13
ENT	Nasal Procedures (Non-Endoscopy)	Septoplasty	81	81	82	-1%	0%	53	52	53	-1%	0%	OR	81	81	82	-0.01	0
ENT	Nasal Procedures (Non-Endoscopy)	Turbinate Excision/Resection	123	110	101	-10%	-18%	62	52	45	-16%	-28%	OR	123	110	101	-0.1	-0.18
ENT	Nasal Procedures (Non-Endoscopy)	Turbinate Injection	27	25	23	-9%	-15%	0	0	0	-9%	-15%	DO					
ENT	Oral Function Therapy	Oral Function Therapy	209	255	326	22%	56%	14	7	2	-53%	-82%	DO					
ENT	Oral/Maxillofacial Procedures	Arthroscopy - Jaw	3	3	3	-3%	-3%	1	1	1	-12%	-20%	OR	3	3	3	-0.03	-0.03
ENT	Oral/Maxillofacial Procedures	Biopsy - Mouth	55	57	60	3%	8%	3	3	4	3%	8%	OR	55	57	60	0.03	0.08
ENT	Oral/Maxillofacial Procedures	Biopsy - Tongue	29	30	31	3%	7%	2	2	2	3%	7%	OR	29	30	31	0.03	0.07
ENT	Oral/Maxillofacial Procedures	Bone Removal - Maxillofacial	14	15	16	3%	8%	11	11	12	3%	8%	OR	14	15	16	0.03	0.08
ENT	Oral/Maxillofacial Procedures	Cleft Lip/Nose Repair	3	3	3	-1%	2%	2	2	2	-1%	2%	OR	3	3	3	-0.01	0.02
ENT	Oral/Maxillofacial Procedures	Dislocation Treatment - Jaw	11	11	12	-1%	1%	4	3	3	-12%	-21%	OR	11	11	12	-0.01	0.01
ENT	Oral/Maxillofacial Procedures	Fistula Repair - Jaw	5	5	5	1%	3%	1	1	0	-22%	-40%	OR	5	5	5	0.01	0.03
ENT	Oral/Maxillofacial Procedures	Foreign Body Removal - Mouth	1	1	1	0%	4%	0	0	0	-14%	-23%	OR	1	1	1	0	0.04
ENT	Oral/Maxillofacial Procedures	Fracture Treatment - Oral/Facial Bone	17	17	17	-1%	0%	7	6	6	-10%	-18%	OR	17	17	17	-0.01	0
ENT	Oral/Maxillofacial Procedures	Frenectomy	12	11	10	-11%	-17%	2	1	1	-33%	-54%	OR	12	11	10	-0.11	-0.17
ENT	Oral/Maxillofacial Procedures	Frenoplasty	8	8	8	0%	3%	4	4	3	-10%	-17%	OR	8	8	8	0	0.03
ENT	Oral/Maxillofacial Procedures	Frenotomy	12	15	18	22%	53%	3	3	4	5%	12%	OR	12	15	18	0.22	0.53
ENT	Oral/Maxillofacial Procedures	Glossectomy	5	5	6	4%	10%	4	4	4	-2%	-2%	OR	5	5	6	0.04	0.1
ENT	Oral/Maxillofacial Procedures	Gum Procedures	127	127	129	0%	2%	21	15	11	-29%	-51%	OR	127	127	129	0	0.02
ENT	Oral/Maxillofacial Procedures	Laceration Repair - Mouth/Tongue	9	9	9	1%	4%	6	5	5	-7%	-11%	OR	9	9	9	0.01	0.04
ENT	Oral/Maxillofacial Procedures	Lesion Excision/Destruction - Mouth/Tongue	152	155	161	2%	6%	21	22	23	2%	6%	OR	152	155	161	0.02	0.06
ENT	Oral/Maxillofacial Procedures	Lesion Incision/Drainage - Mouth/Tongue	13	13	13	1%	4%	2	2	2	1%	4%	OR	13	13	13	0.01	0.04
ENT	Oral/Maxillofacial Procedures	Lip Excision	13	13	14	3%	10%	4	3	3	-15%	-26%	OR	13	13	14	0.03	0.1
ENT	Oral/Maxillofacial Procedures	Lip Repair	9	9	9	1%	5%	6	5	5	-6%	-10%	OR	9	9	9	0.01	0.05
ENT	Oral/Maxillofacial Procedures	Other Oral/Maxillofacial Procedures	36	35	36	-1%	0%	6	5	3	-24%	-42%	OR	36	35	36	-0.01	0
ENT	Oral/Maxillofacial Procedures	Palatopharynoplasty (Uvulopalatopharyngoplasty - Uvulopharyngoplasty)	51	65	84	28%	67%	31	36	42	16%	36%	OR	51	65	84	0.28	0.67
ENT	Oral/Maxillofacial Procedures	Palatoplasty	4	4	5	15%	37%	2	2	2	4%	12%	OR	4	4	5	0.15	0.37
ENT	Oral/Maxillofacial Procedures	Prosthetic Preparation - Maxillofacial	36	36	37	0%	2%	3	3	3	0%	2%	OR	36	36	37	0	0.02
ENT	Oral/Maxillofacial Procedures	Reconstruction - Chin	1	1	1	-3%	-3%	0	0	0	-3%	-3%	OR	1	1	1	-0.03	-0.03
ENT	Oral/Maxillofacial Procedures	Reconstruction - Facial	22	22	23	1%	4%	16	16	17	1%	4%	OR	22	22	23	0.01	0.04
ENT	Oral/Maxillofacial Procedures	Reconstruction - Jaw	30	30	30	0%	0%	23	23	23	0%	0%	OR	30	30	30	0	0
ENT	Oral/Maxillofacial Procedures	Tongue Reduction - Radiofrequency	2	4	6	73%	178%	1	2	3	59%	134%	OR	2	4	6	0.73	1.78
ENT	Oral/Maxillofacial Procedures	Tumor Removal - Bone - Face	41	41	42	0%	3%	31	31	31	0%	3%	OR	41	41	42	0	0.03
ENT	Oral/Maxillofacial Procedures	Tumor Removal - Soft Tissue - Face	12	14	16	14%	35%	8	8	9	5%	15%	OR	12	14	16	0.14	0.35
ENT	Oral/Maxillofacial Procedures	Uvulectomy	7	7	7	4%	11%	4	4	4	-6%	-10%	OR	7	7	7	0.04	0.11
ENT	Oral/Maxillofacial Procedures	Vestibuloplasty	2	2	2	5%	10%	1	1	1	-5%	-11%	OR	2	2	2	0.05	0.1
ENT	Other ENT Diagnostic Testing	Facial Nerve Function	2	3	4	22%	53%	0	0	0	22%	53%	DO					
ENT	Other ENT Diagnostic Testing	Laryngeal Function	10	13	16	22%	55%	1	2	2	22%	55%	DO					
ENT	Other ENT Diagnostic Testing	Nasal Function	22	24	28	11%	27%	0	0	0	11%	27%	DO					
ENT	Other ENT Diagnostic Testing	Nasopharyngoscopy	136	124	118	-8%	-13%	9	9	8	-8%	-13%	DO					
ENT	Other ENT Diagnostic Testing	Other ENT Diagnostic Testing	26	27	30	7%	19%	4	3	3	-19%	-34%	DO					
ENT	Other ENT Diagnostic Testing	Posturography	43	48	55	10%	27%	5	6	7	10%	27%	DO					
ENT	Other ENT Diagnostic Testing	Swallowing Function/Laryngeal Sensory Testing	42	56	79	35%	91%	18	22	28	23%	57%	DO					
ENT	Other ENT Diagnostic Testing	Swallowing Function/Laryngeal Sensory Testing - Endoscopic	4	5	8	40%	106%	1	1	1	0%	2%	DO					
ENT	Other ENT Procedures	Other Procedures - Trachea	5	5	5	5%	10%	3	3	3	-3%	-7%	OR	5	5	5	0.05	0.1
ENT	Other ENT Procedures	Repair/Revision - Neck	1	1	1	3%	7%	0	0	0	-4%	-8%	OR	1	1	1	0.03	0.07
ENT	Other ENT Procedures	Revision/Repair - Trachea	3	3	4	4%	9%	2	2	2	-3%	-7%	OR	3	3	4	0.04	0.09
ENT	Pharynx Procedures	Biopsy - Pharynx	17	18	19	3%	9%	5	4	4	-11%	-19%	OR	17	18	19	0.03	0.09
ENT	Pharynx Procedures	Foreign Body Removal - Pharynx	4	4	4	1%	6%	2	1	1	-9%	-15%	OR	4	4	4	0.01	0.06
ENT	Pharynx Procedures	Hemorrhage Control - Pharynx	11	11	12	-1%	2%	5	5	5	-9%	-14%	OR	11	11	12	-0.01	0.02
ENT	Pharynx Procedures	Lesion Drainage - Pharynx	1	1	1	5%	15%	0	0	0	-12%	-20%	OR	1	1	1	0.05	0.15
ENT	Pharynx Procedures	Lesion Excision/Destruction - Pharynx	4	4	4	2%	6%	1	1	1	-8%	-14%	OR	4	4	4	0.02	0.06
ENT	Pharynx Procedures	Other Procedures - Pharynx	0	0	1	7%	18%	0	0	0	0%	3%	OR	0	0	1	0.07	0.18
ENT	Pharynx Procedures	Pharyngoplasty	1	1	1	2%	5%	1	0	0	-8%	-14%	OR	1	1	1	0.02	0.05
ENT	Salivary Gland/Duct Procedures	Biopsy - Salivary Gland	12	12	13	4%	11%	2	1	1	-22%	-38%	OR	12	12	13	0.04	0.11
ENT	Salivary Gland/Duct Procedures	Cyst Procedures - Salivary Gland	3	3	3	-1%	1%	1	1	1	-14%	-24%	OR	3	3	3	-0.01	0.01
ENT	Salivary Gland/Duct Procedures	Dilation - Salivary Duct	6	6	7	3%	10%	0	0	0	3%	10%	OR	6	6	7	0.03	0.1
ENT	Salivary Gland/Duct Procedures	Incision - Salivary Gland	9	9	9	2%	7%	1	1	1	-29%	-51%	OR	9	9	9	0.02	0.07
ENT	Salivary Gland/Duct Procedures	Lesion Drainage - Salivary Gland	1	1	1	1%	7%	0	0	0	-8%	-3%	OR	1	1	1	0.01	0.07
ENT	Salivary Gland/Duct Procedures	Other Procedures - Salivary Gland/Duct	1	1	1	2%	7%	1	0	0	-7%	-10%	OR	1	1	1	0.02	0.07
ENT	Salivary Gland/Duct Procedures	Parotidectomy - Complete	9	12	16	33%	78%	6	8	10	24%	55%	OR	9	12	16	0.33	0.78
ENT	Salivary Gland/Duct Procedures	Parotidectomy - Partial	14	14	14	0%	0%	12	11	10	-6%	-11%	OR	14	14	14	0	0
ENT	Salivary Gland/Duct Procedures	Salivary Gland Excision	13	14	14	3%	10%	10	10	10	-3%	-4%	OR	13	14	14	0.03	0.1
ENT	Sinus Procedures (Non-Endoscopy)	Ethmoidectomy	6	5	4	-18%	-30%	3	2	2	-25%	-41%	OR	6	5	4	-0.18	-0.3
ENT	Sinus Procedures (Non-Endoscopy)	Other Procedures - Sinus	2	1	1	-19%	-33%	0	0	0	-35%	-57%	OR	2	1	1	-0.19	-0.33
ENT	Sinus Procedures (Non-Endoscopy)	Sinus Lavage	23	18	15	-19%	-32%	1	1	0	-19%	-32%	OR	23	18	15	-0.19	-0.32
ENT	Sinus Procedures (Non-Endoscopy)	Sinusotomy	5	4	4	-19%	-32%	2	1	1	-30%	-49%	OR	5	4	4	-0.19	-0.32
ENT	Sinus Procedures (Non-Endoscopy)	Therapeutic Sinus Injection	3	2	2	-19%	-32%	0	0	0	-46%	-71%	OR	3	2	2	-0.19	-0.32

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	Procedure Location	OR Case Volumes 2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
ENT	Tonsils/Adenoids Procedures	Adenoidectomy	178	186	204	5%	15%	125	121	124	-3%	-1%	OR	178	186	204	0.05	0.15
ENT	Tonsils/Adenoids Procedures	Lesion Drainage - Tonsils/Adenoids	21	20	20	-2%	-2%	14	14	14	-2%	-2%	OR	21	20	20	-0.02	-0.02
ENT	Tonsils/Adenoids Procedures	Lesion Excision/Destruction - Tonsils/Adenoids	1	1	1	-2%	-1%	1	1	1	-2%	-1%	OR	1	1	1	-0.02	-0.01
ENT	Tonsils/Adenoids Procedures	Other Procedures - Tonsils/Adenoids	1	1	1	0%	3%	1	1	1	0%	3%	OR	1	1	1	0	0.03
ENT	Tonsils/Adenoids Procedures	Tonsillectomy	195	199	208	2%	6%	137	129	126	-5%	-8%	OR	195	199	208	0.02	0.06
ENT	Tonsils/Adenoids Procedures	Tonsillectomy/Adenoidectomy	441	452	489	3%	11%	308	294	296	-5%	-4%	OR	441	452	489	0.03	0.11
Evaluation and Mar	Evaluation and Management	Confirmatory Consultations	511	520	543	2%	6%	61	62	65	2%	6%	0					
Evaluation and Mar	Evaluation and Management	Coordinated Care	160	203	262	27%	63%	0	0	0	0%	0%	0					
Evaluation and Mar	Evaluation and Management	Emergency Department Services	59,977	61,284	64,016	2%	7%	59,377	60,672	63,376	2%	7%	0					
Evaluation and Mar	Evaluation and Management	Health/Behavior Assessment	44	55	69	23%	55%	7	9	11	23%	55%	0					
Evaluation and Mar	Evaluation and Management	Health/Behavior Intervention	95	117	147	23%	55%	12	15	19	23%	55%	0					
Evaluation and Mar	Evaluation and Management	Home Services	287	325	381	13%	32%	0	0	0	0%	0%	0					
Evaluation and Mar	Evaluation and Management	Home Services - Non-Physician	43	51	60	19%	42%	0	0	0	0%	0%	0					
Evaluation and Mar	Evaluation and Management	Hospital Observation	1,807	2,058	2,424	14%	34%	1,771	2,017	2,376	14%	34%	0					
Evaluation and Mar	Evaluation and Management	Medical Nutrition Assessment	2	2	3	26%	69%	0	0	1	26%	69%	0					
Evaluation and Mar	Evaluation and Management	Medical Nutrition Assessment/Intervention	759	931	1,146	23%	51%	152	186	229	23%	51%	0					
Evaluation and Mar	Evaluation and Management	Nursing Facility/Rest Home Services	112	116	126	4%	13%	0	0	0	0%	0%	0					
Evaluation and Mar	Evaluation and Management	Office Consultation	41,548	42,459	44,496	2%	7%	2,908	2,972	3,115	2%	7%	0					
Evaluation and Mar	Evaluation and Management	Office/Outpatient Evaluation	749,216	763,015	798,953	2%	7%	29,969	30,521	31,958	2%	7%	0					
Evaluation and Mar	Evaluation and Management	Other Evaluation and Management	227	239	263	5%	16%	5	5	5	5%	16%	0					
Evaluation and Mar	Evaluation and Management	Other Physician Services	8,669	8,721	9,008	1%	4%	1,127	1,134	1,171	1%	4%	0					
Evaluation and Mar	Evaluation and Management	Preventive Medicine Services	42,926	42,274	42,728	-2%	0%	1,717	1,691	1,709	-2%	0%	0					
Evaluation and Mar	Evaluation and Management	Prolonged Services	80	82	85	1%	6%	10	10	10	1%	6%	0					
Evaluation and Mar	Evaluation and Management	Smoking Cessation	1	1	1	19%	47%	0	0	0	19%	48%	0					
Gastroenterology	Anoscopy	Anoscopy - Diagnostic	510	517	541	1%	6%	51	52	54	1%	6%	0					
Gastroenterology	Anoscopy	Anoscopy - Procedural	18	19	20	2%	8%	2	2	2	2%	8%	0					
Gastroenterology	Capsule Endoscopy	Capsule Endoscopy	64	77	97	20%	51%	42	46	54	9%	27%	0					
Gastroenterology	Colonoscopy	Colonoscopy - Diagnostic/Screening	6,372	7,143	8,061	12%	27%	2,992	3,077	3,249	3%	9%	0					
Gastroenterology	Colonoscopy	Colonoscopy - Procedural	6,268	7,068	8,022	13%	28%	3,178	3,258	3,404	3%	7%	0					
Gastroenterology	Endoscopic Retrograde Cholangiopancreatography (ERCP)	ERCP - Diagnostic	45	48	52	6%	17%	43	45	50	6%	17%	0					
Gastroenterology	Endoscopic Retrograde Cholangiopancreatography (ERCP)	ERCP - Procedural	112	124	142	10%	26%	107	118	135	10%	26%	0					
Gastroenterology	Enteroscopy	Enteroscopy - Diagnostic	45	46	48	2%	6%	20	19	19	-5%	-8%	OR	45	46	48	0.02	0.06
Gastroenterology	Enteroscopy	Enteroscopy - Procedural	79	89	105	13%	33%	51	56	64	10%	25%	OR	79	89	105	0.13	0.33
Gastroenterology	Esophagogastroduodenoscopy (EGD)	EGD - Diagnostic	760	789	847	4%	11%	404	372	354	-8%	-13%	0					
Gastroenterology	Esophagogastroduodenoscopy (EGD)	EGD - Procedural	3,950	4,412	5,041	12%	28%	2,101	2,079	2,105	-1%	0%	0					
Gastroenterology	Esophagoscopy	Esophagoscopy - Diagnostic	17	18	19	5%	13%	9	8	8	-7%	-12%	0					
Gastroenterology	Esophagoscopy	Esophagoscopy - Procedural	56	63	73	13%	31%	30	30	31	0%	3%	0					
Gastroenterology	GERD Testing	Acid Reflux Test/PH Probe	99	107	115	9%	17%	64	66	66	2%	3%	0					
Gastroenterology	GERD Testing	Manometry/Function Study - Esophagus/Stomach	86	93	100	9%	17%	50	53	56	6%	12%	0					
Gastroenterology	Other GI Diagnostic Testing	Fecal Occult Blood Test	3,203	3,574	4,140	12%	29%	32	36	41	12%	29%	0					
Gastroenterology	Other GI Diagnostic Testing	Intubation/Collection - Esophagus	78	81	84	4%	7%	60	63	65	4%	7%	0					
Gastroenterology	Other GI Diagnostic Testing	Manometry - Anus	48	66	92	36%	90%	13	16	23	30%	81%	0					
Gastroenterology	Other GI Diagnostic Testing	Other Endoscopic Ultrasound	9	12	15	28%	67%	7	8	10	19%	46%	0					
Gastroenterology	Other GI Diagnostic Testing	Other GI Diagnostic Testing	75	85	99	13%	32%	14	15	18	7%	25%	0					
Gastroenterology	Other GI Procedures	Abscess Drainage - Abdomen - Percutaneous	13	15	17	12%	31%	10	11	12	6%	15%	0					
Gastroenterology	Other GI Procedures	Dilation - Esophagus	301	316	341	5%	13%	142	133	128	-6%	-10%	0					
Gastroenterology	Other GI Procedures	Gastric Intubation/Irrigation	21	21	22	-1%	2%	21	21	21	-1%	2%	0					
Gastroenterology	Other GI Procedures	Other Tube Placememt	7	8	10	11%	29%	6	7	8	11%	29%	0					
Gastroenterology	Other GI Procedures	Puncture/Drainage - Abdomen	158	177	203	12%	29%	125	133	143	6%	14%	0					
Gastroenterology	Percutaneous Liver Biopsy	Percutaneous Liver Biopsy	231	257	294	11%	27%	194	213	241	10%	24%	0					
Gastroenterology	Proctosigmoidoscopy	Proctosigmoidoscopy - Diagnostic	94	62	45	-34%	-52%	14	9	7	-34%	-52%	0					
Gastroenterology	Proctosigmoidoscopy	Proctosigmoidoscopy - Procedural	8	6	6	-21%	-33%	4	3	2	-21%	-33%	0					
Gastroenterology	Sigmoidoscopy	Sigmoidoscopy - Diagnostic/Screening	432	281	200	-35%	-54%	65	42	30	-35%	-54%	0					
Gastroenterology	Sigmoidoscopy	Sigmoidoscopy - Procedural	127	99	82	-22%	-36%	57	44	37	-22%	-36%	0					
General Surgery	Abdomen	Biopsy - Abdomen - Laparoscopic	14	14	14	0%	4%	12	12	13	0%	4%	OR	14	14	14	0	0.04
General Surgery	Abdomen	Biopsy - Abdomen - Percutaneous	27	29	32	7%	18%	24	26	29	7%	18%	OR	27	29	32	0.07	0.18
General Surgery	Abdomen	Catheter Implantation/Removal - Abdomen	31	33	35	5%	13%	27	29	31	5%	13%	OR	31	33	35	0.05	0.13
General Surgery	Abdomen	Exploratory Laparoscopy - Abdomen	114	100	92	-12%	-19%	93	82	75	-12%	-19%	OR	114	100	92	-0.12	-0.19
General Surgery	Abdomen	Exploratory Laparotomy - Abdomen	6	6	6	-3%	-3%	6	5	5	-3%	-3%	OR	6	6	6	-0.03	-0.03
General Surgery	Abdomen	Lesion Drainage/Aspiration - Abdomen	1	1	1	-10%	-16%	1	1	1	-10%	-16%	OR	1	1	1	-0.1	-0.16
General Surgery	Abdomen	Lesion Drainage/Aspiration - Abdomen - Laparoscopic	22	24	27	10%	24%	18	19	22	10%	24%	OR	22	24	27	0.1	0.24
General Surgery	Abdomen	Other Laparoscopic Procedures - Abdomen	6	6	7	15%	32%	4	5	6	15%	32%	OR	6	6	7	0.15	0.32
General Surgery	Abdomen	Other Procedures - Abdomen	15	14	13	-6%	-8%	13	12	12	-6%	-8%	OR	15	14	13	-0.06	-0.08
General Surgery	Abdomen	Tumor Excision - Abdomen	14	14	14	1%	5%	10	11	11	1%	5%	OR	14	14	14	0.01	0.05
General Surgery	Adhesions	Enterolysis - Laparoscopic	24	29	35	21%	49%	21	25	30	18%	42%	OR	24	29	35	0.21	0.49
General Surgery	Appendix	Appendectomy - Laparoscopic	75	87	109	16%	45%	71	82	101	15%	42%	OR	75	87	109	0.16	0.45
General Surgery	Appendix	Appendectomy - Open	7	5	4	-29%	-48%	7	5	4	-29%	-50%	OR	7	5	4	-0.29	-0.48
General Surgery	Bariatric	Gastric Restrictive Procedure - Laparoscopic (Lap Band)	38	39	45	2%	17%	34	32	34	-5%	-1%	OR	38	39	45	0.02	0.17
General Surgery	Bone Marrow/Stem Cell Procedures	Aspiration - Bone Marrow	54	60	69	11%	28%	25	27	30	6%	18%	OR	54	60	69	0.11	0.28
General Surgery	Bone Marrow/Stem Cell Procedures	Biopsy - Bone Marrow	390	455	550	17%	41%	125	146	176	17%	41%	OR	390	455	550	0.17	0.41
General Surgery	Bone Marrow/Stem Cell Procedures	Bone Marrow/Stem Cell Harvesting	20	21	22	5%	10%	16	17	18	5%	10%	OR	20	21	22	0.05	0.1
General Surgery	Bone Marrow/Stem Cell Procedures	Bone Marrow/Stem Cell Transplatation	1	2	2	10%	19%	1	1	1	10%	19%	OR	1	2	2	0.1	0.19
General Surgery	Bone Marrow/Stem Cell Procedures	Transplant Preparation	0	1	1	10%	16%	0	0	0	10%	16%	0					
General Surgery	Breast	Biopsy - Breast - Open	33	29	26	-12%	-21%	19	16	13	-18%	-32%	OR	33	29	26	-0.12	-0.21
General Surgery	Breast	Biopsy - Breast - Percutaneous	780	840	917	8%	17%	414	421	433	2%	5%	0					
General Surgery	Breast	Brachytherapy Catheter Implantation - Breast	23	37	64	62%	179%	20	31	53	58%	167%	OR	23	37	64	0.62	1.79
General Surgery	Breast	Breast Reconstruction/Revision	62	62	63	0%	0%	40	37	35	-7%	-14%	OR	62	62	63	0	0
General Surgery	Breast	Breast Reconstruction/Revision with Implant	23	23	23	0%	2%	16	15	14	-6%	-12%	OR	23	23	23	0	0.02
General Surgery	Breast	Cyst/Abscess Drainage - Breast	357	329	309	-8%	-13%	107	92	81	-14%	-24%	OR	357	329	309	-0.08	-0.13

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	OR Case Volumes: Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
General Surgery	Breast	Lesion Removal - Breast	552	485	435	-12%	-21%	420	354	306	-16%	-27%	OR	552	485	435	-0.12	-0.21
General Surgery	Breast	Lumpectomy	156	154	151	-1%	-3%	128	121	113	-6%	-12%	OR	156	154	151	-0.01	-0.03
General Surgery	Breast	Mastectomy	65	70	77	7%	18%	55	56	58	2%	7%	OR	65	70	77	0.07	0.18
General Surgery	Breast	Nipple Exploration	10	10	11	2%	5%	8	8	9	2%	5%	OR	10	10	11	0.02	0.05
General Surgery	Breast	Other Procedures - Breast	6	6	6	1%	4%	3	3	3	1%	4%	OR	6	6	6	0.01	0.04
General Surgery	Breast	Tumor Destruction (Thermotherapy) - Breast	3	21	197	727%	7694%	2	15	113	584%	5173%	OR	3	21	197	7.27	76.94
General Surgery	Colorectal/Lower GI	Abscess Drainage - Anus/Rectum	59	59	61	0%	3%	26	26	27	0%	3%	OR	59	59	61	0	0.03
General Surgery	Colorectal/Lower GI	Anal Fissure Procedures	31	31	31	0%	3%	17	17	17	0%	3%	OR	31	31	31	0	0.03
General Surgery	Colorectal/Lower GI	Anal Sphincter Incision	19	19	20	0%	3%	15	15	15	0%	3%	OR	19	19	20	0	0.03
General Surgery	Colorectal/Lower GI	Biopsy - Bowel	1	1	1	5%	14%	1	1	1	5%	14%	OR	1	1	1	0.05	0.14
General Surgery	Colorectal/Lower GI	Biopsy - Rectum	7	7	8	3%	9%	4	4	5	3%	9%	OR	7	7	8	0.03	0.09
General Surgery	Colorectal/Lower GI	Fecal Incontinence/Rectal Prolapse Procedures	32	57	97	80%	206%	24	42	68	73%	183%	OR	32	57	97	0.8	2.06
General Surgery	Colorectal/Lower GI	Fistula Repair - Anus	50	50	51	0%	3%	37	37	38	0%	3%	OR	50	50	51	0	0.03
General Surgery	Colorectal/Lower GI	Hemorrhoid Destruction	166	210	265	27%	60%	5	6	8	27%	60%	OR	166	210	265	0.27	0.6
General Surgery	Colorectal/Lower GI	Hemorrhoid Injection	31	32	35	3%	10%	0	0	0	3%	10%	OR	31	32	35	0.03	0.1
General Surgery	Colorectal/Lower GI	Hemorrhoid Ligation	11	12	13	8%	20%	2	2	2	-5%	-7%	OR	11	12	13	0.08	0.2
General Surgery	Colorectal/Lower GI	Hemorrhoidectomy	330	326	329	-1%	0%	89	82	76	-8%	-14%	OR	330	326	329	-0.01	0
General Surgery	Colorectal/Lower GI	Lesion Destruction - Anus	58	58	59	-1%	1%	13	12	11	-9%	-16%	OR	58	58	59	-0.01	0.01
General Surgery	Colorectal/Lower GI	Other Procedures - Anus/Rectum	40	41	42	2%	6%	22	22	23	2%	6%	OR	40	41	42	0.02	0.06
General Surgery	Colorectal/Lower GI	Other Procedures - Bowel	28	31	35	10%	26%	26	28	32	10%	26%	OR	28	31	35	0.1	0.26
General Surgery	Colorectal/Lower GI	Rectal Stricture Procedures	3	3	4	4%	11%	2	2	2	4%	11%	OR	3	3	4	0.04	0.11
General Surgery	Colorectal/Lower GI	Transabdominal Colonoscopy	6	6	7	3%	9%	5	5	5	3%	9%	OR	6	6	7	0.03	0.09
General Surgery	Colorectal/Lower GI	Tumor Destruction/Excision - Anus/Rectum	16	17	19	5%	14%	14	14	16	5%	14%	OR	16	17	19	0.05	0.14
General Surgery	Gallbladder	Cholecystectomy - Laparoscopic	757	835	940	10%	24%	674	711	764	5%	13%	OR	757	835	940	0.1	0.24
General Surgery	Gallbladder	Other Procedures - Gallbladder	1	1	1	7%	19%	0	1	1	7%	19%	OR	1	1	1	0.07	0.19
General Surgery	Hepatobiliary/Pancreatic	Abscess Drainage - Liver	0	1	1	6%	18%	0	0	0	6%	18%	OR	0	1	1	0.06	0.18
General Surgery	Hepatobiliary/Pancreatic	Biopsy - Liver - Wedge	3	3	4	4%	12%	3	3	3	4%	12%	OR	3	3	4	0.04	0.12
General Surgery	Hepatobiliary/Pancreatic	Biopsy - Pancreas - Percutaneous	6	7	8	7%	19%	6	6	7	7%	19%	OR	6	7	8	0.07	0.19
General Surgery	Hepatobiliary/Pancreatic	Catheter Implantation/Removal - Bile Duct	17	18	21	11%	29%	16	18	21	11%	29%	OR	17	18	21	0.11	0.29
General Surgery	Hepatobiliary/Pancreatic	Cryosurgical Tumor Ablation - Liver - Laparoscopic	2	4	6	72%	189%	2	4	6	72%	189%	OR	2	4	6	0.72	1.89
General Surgery	Hepatobiliary/Pancreatic	Lesion Drainage - Liver - Percutaneous	1	1	2	6%	20%	1	1	2	7%	20%	OR	1	1	2	0.06	0.2
General Surgery	Hepatobiliary/Pancreatic	Other Laparoscopic Procedures - Liver	1	1	1	6%	16%	1	1	1	6%	16%	OR	1	1	1	0.06	0.16
General Surgery	Hepatobiliary/Pancreatic	Other Procedures - Biliary Tract	1	1	1	6%	17%	1	1	1	6%	17%	OR	1	1	1	0.06	0.17
General Surgery	Hepatobiliary/Pancreatic	Other Procedures - Pancreas	1	1	1	5%	12%	1	1	1	5%	12%	OR	1	1	1	0.05	0.12
General Surgery	Hepatobiliary/Pancreatic	Radiofrequency Tumor Ablation - Liver - Percutaneous	7	12	19	66%	165%	7	11	18	66%	165%	OR	7	12	19	0.66	1.65
General Surgery	Hepatobiliary/Pancreatic	Stent Placement - Bile Duct	4	6	10	50%	134%	4	6	10	50%	134%	OR	4	6	10	0.5	1.34
General Surgery	Hernia	Epigastric Hernia Repair	15	15	16	1%	5%	12	12	12	-3%	-3%	OR	15	15	16	0.01	0.05
General Surgery	Hernia	Femoral Hernia Repair	13	13	14	3%	11%	11	11	11	0%	3%	OR	13	13	14	0.03	0.11
General Surgery	Hernia	Inguinal Hernia Repair	531	545	565	3%	6%	387	360	338	-7%	-13%	OR	531	545	565	0.03	0.06
General Surgery	Hernia	Inguinal Hernia Repair - Laparoscopic	106	123	149	15%	40%	80	84	92	5%	15%	OR	106	123	149	0.15	0.4
General Surgery	Hernia	Lumbar Hernia Repair	1	1	1	2%	8%	1	1	1	2%	8%	OR	1	1	1	0.02	0.08
General Surgery	Hernia	Other Laparoscopic Hernia Repair	113	191	291	68%	157%	91	134	178	48%	97%	OR	113	191	291	0.68	1.57
General Surgery	Hernia	Spigelian Hernia Repair	3	3	3	5%	16%	2	2	2	2%	8%	OR	3	3	3	0.05	0.16
General Surgery	Hernia	Umbilical Hernia Repair	153	140	132	-8%	-14%	122	108	98	-12%	-20%	OR	153	140	132	-0.08	-0.14
General Surgery	Hernia	Ventral Hernia Repair	112	106	104	-5%	-7%	96	88	83	-8%	-13%	OR	112	106	104	-0.05	-0.07
General Surgery	Lymphatic	Biopsy/Excision - Lymph Node - Laparoscopic	1	1	2	17%	41%	1	1	1	17%	41%	OR	1	1	2	0.17	0.41
General Surgery	Lymphatic	Biopsy/Excision - Lymph Node - Open	125	128	136	3%	10%	100	103	109	3%	10%	OR	125	128	136	0.03	0.1
General Surgery	Lymphatic	Biopsy/Excision - Lymph Node - Percutaneous	24	25	26	4%	11%	8	9	9	4%	11%	OR	24	25	26	0.04	0.11
General Surgery	Lymphatic	Lesion Drainage - Lymph Node	6	6	7	8%	18%	2	2	2	8%	17%	OR	6	6	7	0.08	0.18
General Surgery	Lymphatic	Lesion Removal - Lymphatic	1	1	1	1%	6%	1	1	1	1%	6%	OR	1	1	1	0.01	0.06
General Surgery	Lymphatic	Other Procedures - Lymphatic	4	4	4	4%	10%	3	3	3	4%	10%	OR	4	4	4	0.04	0.1
General Surgery	Lymphatic	Radical Lymph Node Resection	32	32	33	1%	5%	28	28	29	1%	5%	OR	32	32	33	0.01	0.05
General Surgery	Other General Surgery	Adrenalectomy - Laparoscopic	1	1	2	68%	208%	0	1	2	69%	208%	OR	1	1	2	0.68	2.08
General Surgery	Other General Surgery	Lesion Excision - Skin	337	343	357	2%	6%	111	113	118	2%	6%	OR	337	343	357	0.02	0.06
General Surgery	Other General Surgery	Pilonidal Cyst Removal	51	50	50	-2%	-2%	35	32	31	-6%	-10%	OR	51	50	50	-0.02	-0.02
General Surgery	Other General Surgery	Pressure Ulcer Excision	5	6	6	4%	12%	4	4	4	4%	12%	OR	5	6	6	0.04	0.12
General Surgery	Other General Surgery	Sweat Gland Lesion Removal	19	18	19	-1%	0%	11	11	11	-1%	0%	OR	19	18	19	-0.01	0
General Surgery	Soft Tissue	Biopsy - Soft Tissue	49	51	53	2%	8%	19	19	20	2%	8%	OR	49	51	53	0.02	0.08
General Surgery	Soft Tissue	Lesion Drainage - Soft Tissue	7	7	7	4%	12%	3	3	3	4%	12%	OR	7	7	7	0.04	0.12
General Surgery	Soft Tissue	Other Soft Tissue Procedures	21	21	23	3%	10%	3	3	4	3%	10%	OR	21	21	23	0.03	0.1
General Surgery	Soft Tissue	Radical Tumor Resection - Soft Tissue	16	15	16	-1%	0%	11	11	11	-1%	0%	OR	16	15	16	-0.01	0
General Surgery	Soft Tissue	Tumor Excision - Soft Tissue	253	282	323	12%	28%	149	167	190	12%	28%	OR	253	282	323	0.12	0.28
General Surgery	Spleen	Splenectomy - Laparoscopic	1	2	2	27%	68%	1	1	2	27%	68%	OR	1	2	2	0.27	0.68
General Surgery	Trachea	Tracheotomy/Tracheostomy Procedures	18	19	21	7%	16%	17	18	20	7%	16%	OR	18	19	21	0.07	0.16
General Surgery	Trachea	Tracheotomy/Tracheostomy Procedures - Emergency	102	108	117	7%	16%	97	104	113	7%	16%	OR	102	108	117	0.07	0.16
General Surgery	Upper GI	Biopsy - Stomach	1	1	1	3%	7%	1	1	1	3%	7%	OR	1	1	1	0.03	0.07
General Surgery	Upper GI	Endoscopic GERD Procedures	1	2	6	164%	745%	0	1	2	101%	378%	OR	1	2	6	1.64	7.45
General Surgery	Upper GI	Feeding Tube Insertion/Removal	144	152	167	5%	16%	114	120	132	5%	16%	OR	144	152	167	0.05	0.16
General Surgery	Upper GI	Laparoscopic Fundoplication (Lap Nissen)	24	24	24	1%	0%	21	21	20	-4%	-9%	OR	24	24	24	0.01	0
General Surgery	Upper GI	Other Laparoscopic Procedures - Esophagus	12	14	17	18%	46%	9	11	14	18%	46%	OR	12	14	17	0.18	0.46
General Surgery	Upper GI	Other Laparoscopic Procedures - Stomach	7	9	11	21%	52%	7	8	10	21%	52%	OR	7	9	11	0.21	0.52
General Surgery	Upper GI	Other Procedures - Esophagus	6	7	8	11%	29%	5	6	7	12%	31%	OR	6	7	8	0.11	0.29
General Surgery	Upper GI	Other Procedures - Stomach	11	12	14	10%	27%	10	11	13	10%	27%	OR	11	12	14	0.1	0.27
Gynecology	Artificial Insemination/In Vitro Fertilization	Artificial Insemination - Intra-Cervical	5	5	5	-4%	-5%	1	1	0	-23%	-39%	0					
Gynecology	Artificial Insemination/In Vitro Fertilization	Artificial Insemination - Intra-Uterine	381	439	508	15%	33%	34	35	36	3%	6%	0					
Gynecology	Artificial Insemination/In Vitro Fertilization	Artificial Insemination - Sperm Washing	14	14	14	-2%	-2%	1	1	1	-2%	-2%	0					
Gynecology	Artificial Insemination/In Vitro Fertilization	In Vitro Fertilization - Egg Retrieval	138	159	185	15%	33%	21	19	18	-10%	-18%	0					
Gynecology	Artificial Insemination/In Vitro Fertilization	In Vitro Fertilization - Embryo Transfer	134	154	179	15%	33%	21	19	17	-10%	-18%	0					
Gynecology	Biopsy - Gynecology	Biopsy - Cervix	145	128	116	-11%	-20%	7	6	6	-11%	-20%	0					

													OR Case Volumes					
Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Gynecology	Biopsy - Gynecology	Biopsy - Cervix - Colposcopy	907	800	725	-12%	-20%	45	40	36	-12%	-20%	0					
Gynecology	Biopsy - Gynecology	Biopsy - Cervix - Colposcopy (Leep)	61	54	49	-12%	-20%	17	15	13	-14%	-22%	0					
Gynecology	Biopsy - Gynecology	Biopsy - Endometrium	1,037	938	870	-10%	-16%	52	47	44	-10%	-16%	0					
Gynecology	Biopsy - Gynecology	Biopsy - Uterus - Hysteroscopy	480	481	495	0%	3%	290	274	269	-6%	-7%	0					
Gynecology	Biopsy - Gynecology	Biopsy - Vagina	40	38	36	-5%	-8%	6	6	6	-5%	-8%	0					
Gynecology	Biopsy - Gynecology	Biopsy - Vagina - Colposcopy	19	17	17	-7%	-11%	1	1	1	-7%	-11%	0					
Gynecology	Biopsy - Gynecology	Biopsy - Vulva	148	139	134	-6%	-9%	12	11	11	-6%	-9%	0					
Gynecology	Biopsy - Gynecology	Biopsy - Vulva - Colposcopy	7	6	6	-6%	-9%	0	0	0	-6%	-9%	0					
Gynecology	General Gynecology Procedures	Adhesiolysis - Ovary/Fallopian Tube	3	3	3	0%	5%	2	2	2	-5%	-7%	OR	3	3	3	0	0.05
Gynecology	General Gynecology Procedures	Adhesiolysis - Ovary/Fallopian Tube - Laparoscopic	75	73	74	-3%	-2%	57	52	49	-9%	-14%	OR	75	73	74	-0.03	-0.02
Gynecology	General Gynecology Procedures	Brachytherapy Placement - Vagina/Uterus	2	3	4	22%	50%	2	2	2	14%	31%	OR	2	3	4	0.22	0.5
Gynecology	General Gynecology Procedures	Cervical Cauterization (Cryocautery)	158	146	139	-7%	-12%	8	7	7	-7%	-12%	OR	158	146	139	-0.07	-0.12
Gynecology	General Gynecology Procedures	Cervical Cauterization (Electro/Thermal)	18	17	16	-7%	-11%	1	1	1	-7%	-11%	OR	18	17	16	-0.07	-0.11
Gynecology	General Gynecology Procedures	Cervical Cauterization (Laser)	15	14	13	-7%	-12%	9	7	6	-15%	-27%	OR	15	14	13	-0.07	-0.12
Gynecology	General Gynecology Procedures	Cervical Conization (Cold Knife/Laser)	51	47	45	-7%	-10%	35	31	28	-13%	-22%	OR	51	47	45	-0.07	-0.1
Gynecology	General Gynecology Procedures	Cervical Conization (Leep)	124	122	122	-2%	-2%	40	34	30	-14%	-25%	OR	124	122	122	-0.02	-0.02
Gynecology	General Gynecology Procedures	Cervical Conization (Leep) - Colposcopy	15	14	13	-9%	-15%	4	4	3	-12%	-18%	OR	15	14	13	-0.09	-0.15
Gynecology	General Gynecology Procedures	Cervical Curettage	77	70	66	-8%	-14%	5	5	4	-8%	-14%	OR	77	70	66	-0.08	-0.14
Gynecology	General Gynecology Procedures	Cervical Curettage - Colposcopy	38	34	32	-9%	-15%	2	2	2	-9%	-15%	OR	38	34	32	-0.09	-0.15
Gynecology	General Gynecology Procedures	Cervical Dilation	55	54	54	-2%	-1%	9	8	8	-2%	-1%	OR	55	54	54	-0.02	-0.01
Gynecology	General Gynecology Procedures	Cervical Stump Excision	1	1	1	-1%	4%	1	1	1	-1%	4%	OR	1	1	1	-0.01	0.04
Gynecology	General Gynecology Procedures	Diagnostic Colposcopy	270	248	233	-8%	-14%	14	12	12	-8%	-14%	0					
Gynecology	General Gynecology Procedures	Diagnostic Hysteroscopy	55	53	53	-3%	-2%	25	21	19	-13%	-23%	OR	55	53	53	-0.03	-0.02
Gynecology	General Gynecology Procedures	Dilation & Curettage (D&C) - Non-Obstetrical	164	149	137	-10%	-17%	101	86	76	-15%	-25%	OR	164	149	137	-0.1	-0.17
Gynecology	General Gynecology Procedures	Endometrial Ablation - Hysteroscopy	114	113	116	-1%	1%	67	59	54	-12%	-19%	OR	114	113	116	-0.01	0.01
Gynecology	General Gynecology Procedures	Endometrial Ablation (Thermal)	33	50	78	50%	132%	16	19	22	17%	41%	OR	33	50	78	0.5	1.32
Gynecology	General Gynecology Procedures	Hymen Incision/Removal	6	6	6	-2%	-4%	5	5	5	-2%	-4%	OR	6	6	6	-0.02	-0.04
Gynecology	General Gynecology Procedures	Lesion Destruction - Vagina	44	43	43	-2%	-2%	12	11	11	-2%	-2%	OR	44	43	43	-0.02	-0.02
Gynecology	General Gynecology Procedures	Lesion Destruction - Vulva	146	144	144	-2%	-2%	21	21	21	-2%	-2%	OR	146	144	144	-0.02	-0.02
Gynecology	General Gynecology Procedures	Lesion Drainage - Ovary	7	7	7	-3%	-2%	4	4	4	-3%	-2%	OR	7	7	7	-0.03	-0.02
Gynecology	General Gynecology Procedures	Lesion Drainage - Percutaneous	1	1	1	6%	14%	0	0	0	6%	14%	OR	1	1	1	0.06	0.14
Gynecology	General Gynecology Procedures	Lesion Drainage - Vagina	3	3	3	-1%	1%	1	1	1	-1%	1%	OR	3	3	3	-0.01	0.01
Gynecology	General Gynecology Procedures	Lesion Drainage - Vulva	70	68	69	-2%	-1%	13	13	13	-2%	-1%	OR	70	68	69	-0.02	-0.01
Gynecology	General Gynecology Procedures	Lesion Removal - Ovary	4	4	4	-2%	0%	4	4	4	-2%	0%	OR	4	4	4	-0.02	0
Gynecology	General Gynecology Procedures	Lesion Removal - Ovary - Laparoscopic	152	147	148	-3%	-2%	119	116	116	-3%	-2%	OR	152	147	148	-0.03	-0.02
Gynecology	General Gynecology Procedures	Lesion Removal - Vagina	11	11	12	0%	3%	6	6	6	0%	3%	OR	11	11	12	0	0.03
Gynecology	General Gynecology Procedures	Lesion Removal - Vulva	6	6	6	-2%	-1%	4	4	4	-2%	-1%	OR	6	6	6	-0.02	-0.01
Gynecology	General Gynecology Procedures	Other Adhesiolysis	5	5	5	1%	7%	3	3	3	1%	7%	OR	5	5	5	0.01	0.07
Gynecology	General Gynecology Procedures	Other Hysteroscopic Procedures	7	8	9	7%	19%	5	6	6	7%	19%	OR	7	8	9	0.07	0.19
Gynecology	General Gynecology Procedures	Other Laparoscopic Procedures - Gynecology	3	4	4	9%	22%	3	3	3	5%	14%	OR	3	4	4	0.09	0.22
Gynecology	General Gynecology Procedures	Other Procedures - Gynecology	39	40	43	4%	12%	14	14	14	-2%	0%	OR	39	40	43	0.04	0.12
Gynecology	General Gynecology Procedures	Repair/Revision - Vagina	29	34	40	14%	36%	24	27	31	11%	27%	OR	29	34	40	0.14	0.36
Gynecology	General Gynecology Procedures	Speculoscopy	3	3	4	11%	25%	0	0	0	11%	25%	0					
Gynecology	General Gynecology Procedures	Uterine Adhesiolysis - Hysteroscopy	6	5	5	-3%	-2%	4	3	3	-9%	-14%	OR	6	5	5	-0.03	-0.02
Gynecology	General Gynecology Procedures	Uterine Suspension	2	2	2	-1%	2%	2	2	2	-4%	-6%	OR	2	2	2	-0.01	0.02
Gynecology	General Gynecology Procedures	Vaginal Infection Treatment	48	54	64	13%	34%	1	1	1	13%	34%	0					
Gynecology	General Gynecology Procedures	Vaginectomy	2	2	3	3%	11%	2	2	2	-3%	-3%	OR	2	2	3	0.03	0.11
Gynecology	General Gynecology Procedures	Vulvectomy	11	11	12	0%	4%	8	8	8	-6%	-9%	OR	11	11	12	0	0.04
Gynecology	Gynecological Exams	Exam For Suspected Abuse	3	3	3	-2%	2%	0	0	0	-2%	2%	0					
Gynecology	Gynecological Exams	Pap Smear	2,658	2,572	2,558	-3%	-4%	58	56	56	-3%	-4%	0					
Gynecology	Gynecological Exams	Pelvic Examination with Anesthesia	9	9	10	2%	7%	4	4	4	2%	7%	0					
Gynecology	Gynecological Exams	Post-Coital Exam	1	1	1	-1%	1%	0	0	0	0%	0%	0					
Gynecology	Gynecological Exams	Women's Cancer Screening	1,955	2,054	2,228	5%	14%	73	76	83	5%	14%	0					
Gynecology	Hysterectomy	Laparoscopic Assisted Vaginal Hysterectomy (LAVH)	57	89	102	57%	80%	52	81	93	56%	79%	OR	57	89	102	0.57	0.8
Gynecology	Hysterectomy	Laparoscopic Supracervical Hysterectomy (LSH)	26	40	46	57%	80%	24	37	42	56%	79%	OR	26	40	46	0.57	0.8
Gynecology	Hysterectomy	Total Laparoscopic Hysterectomy	1	1	2	57%	80%	1	1	1	56%	79%	OR	1	1	2	0.57	0.8
Gynecology	Hysterectomy	Vaginal Hysterectomy	1	2	2	57%	80%	1	2	2	56%	79%	OR	1	2	2	0.57	0.8
Gynecology	Uterine Fibroid Procedures	Uterine Fibroid Ablation - Ultrasound	4	11	16	176%	300%	3	9	12	164%	269%	OR	4	11	16	1.76	3
Gynecology	Uterine Fibroid Procedures	Uterine Fibroid Embolization (UAE)	56	104	109	86%	97%	45	80	81	78%	81%	OR	56	104	109	0.86	0.97
Gynecology	Uterine Fibroid Procedures	Uterine Fibroid Removal - Abdominal Approach	3	2	1	-12%	-56%	2	2	1	-14%	-58%	OR	3	2	1	-0.12	-0.56
Gynecology	Uterine Fibroid Procedures	Uterine Fibroid Removal - Hysteroscopy	32	34	21	8%	-35%	20	20	11	-1%	-45%	OR	32	34	21	0.08	-0.35
Gynecology	Uterine Fibroid Procedures	Uterine Fibroid Removal - Laparoscopic	7	7	4	-3%	-46%	6	6	3	-5%	-49%	OR	7	7	4	-0.03	-0.46
Gynecology	Uterine Fibroid Procedures	Uterine Fibroid Removal - Vaginal Approach	3	3	2	-2%	-45%	2	2	1	-5%	-49%	OR	3	3	2	-0.02	-0.45
Gynecology	Women's Reproductive Health Procedures	Cervical Cerclage	19	19	20	2%	9%	15	14	14	-4%	-4%	OR	19	19	20	0.02	0.09
Gynecology	Women's Reproductive Health Procedures	Contraceptive Capsule Implantation/Removal	6	6	5	-13%	-20%	1	1	1	-13%	-20%	0					
Gynecology	Women's Reproductive Health Procedures	Diaphragm Fitting	27	22	19	-18%	-29%	2	1	1	-18%	-29%	0					
Gynecology	Women's Reproductive Health Procedures	Fallopian Tube Assessment (Chromotubation)	2	2	2	-3%	-2%	1	1	1	-3%	-2%	OR	2	2	2	-0.03	-0.02
Gynecology	Women's Reproductive Health Procedures	Fallopian Tube Ligation/Occlusion	11	11	10	-8%	-11%	7	6	6	-12%	-18%	OR	11	11	10	-0.08	-0.11
Gynecology	Women's Reproductive Health Procedures	Fallopian Tube Ligation/Occlusion - Hysteroscopy	4	6	8	36%	95%	3	3	5	30%	81%	OR	4	6	8	0.36	0.95
Gynecology	Women's Reproductive Health Procedures	Fallopian Tube Ligation/Occlusion - Laparoscopic	174	160	154	-8%	-12%	106	93	87	-12%	-18%	OR	174	160	154	-0.08	-0.12
Gynecology	Women's Reproductive Health Procedures	Fallopian Tube Repair	5	5	5	-3%	-2%	5	4	4	-6%	-7%	OR	5	5	5	-0.03	-0.02
Gynecology	Women's Reproductive Health Procedures	Fallopian Tube Repair - Laparoscopic	1	1	1	2%	10%	1	1	1	0%	5%	OR	1	1	1	0.02	0.1
Gynecology	Women's Reproductive Health Procedures	Fern Test	1	1	1	6%	15%	0	0	0	6%	15%	0					
Gynecology	Women's Reproductive Health Procedures	Hormone Pellet Implantation (HRT)	77	73	70	-6%	-10%	1	1	1	-6%	-10%	0					
Gynecology	Women's Reproductive Health Procedures	IUD Implantation/Removal	215	219	233	2%	8%	22	22	23	2%	8%	0					
Gynecology	Women's Reproductive Health Procedures	Oophorectomy	3	3	4	5%	14%	3	3	3	5%	14%	OR	3	3	4	0.05	0.14
Gynecology	Women's Reproductive Health Procedures	Salpingectomy	1	1	1	-2%	1%	1	1	1	-6%	-8%	OR	1	1	1	-0.02	0.01
Gynecology	Women's Reproductive Health Procedures	Salpingo-Oophorectomy	6	6	6	-5%	-6%	5	5	5	-9%	-14%	OR	6	6	6	-0.05	-0.06
Gynecology	Women's Reproductive Health Procedures	Salpingo-Oophorectomy - Laparoscopic	104	117	134	12%	28%	87	94	102	7%	17%	OR	104	117	134	0.12	0.28

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	OR Case Volumes: Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Lab	Anatomic Pathology	Anatomic Pathology	1	1	1	-1%	1%	0	0	0	-4%	-2%	0					
Lab	Chemistry	Chemistry	64,327	66,563	71,372	3%	11%	4,503	4,659	4,996	3%	11%	0					
Lab	Consultation	Consultation	73	75	78	3%	8%	43	44	46	3%	8%	0					
Lab	Cytogenetic Studies	Cytogenetic Studies	392	477	579	22%	48%	66	67	66	1%	0%	0					
Lab	Cytopathology	Cytopathology	33,204	32,991	33,082	-1%	0%	3,895	3,629	3,639	-7%	-7%	0					
Lab	Drug Testing	Drug Testing	449	437	435	-3%	-3%	39	35	35	-11%	-11%	0					
Lab	Evocative/Suppression Testing	Evocative/Suppression Testing	4	4	4	-1%	-1%	0	0	0	-7%	-7%	0					
Lab	Hematology/Coagulation	Hematology/Coagulation	43,311	47,681	54,472	10%	26%	2,166	2,384	2,724	10%	26%	0					
Lab	Immunology	Immunology	12,404	12,632	13,359	2%	8%	1,116	1,137	1,202	2%	8%	0					
Lab	Microbiology	Microbiology	38,199	41,356	46,800	8%	23%	3,053	2,903	2,870	-5%	-6%	0					
Lab	Organ/Disease Panel	Organ/Disease Panel	102,785	108,657	116,301	6%	13%	8,223	8,693	9,304	6%	13%	0					
Lab	Other Lab	Other Lab	843	873	919	3%	9%	34	35	37	3%	9%	0					
Lab	PSA Test	PSA Test	1,093	1,359	1,675	24%	53%	33	41	50	24%	53%	0					
Lab	Reproductive Medicine Procedures	Reproductive Medicine Procedures	606	680	775	12%	28%	103	116	132	12%	28%	0					
Lab	Surgical Pathology	Surgical Pathology	27,912	29,277	31,819	5%	14%	8,584	8,783	9,546	2%	11%	0					
Lab	Therapeutic Drug Assays	Therapeutic Drug Assays	2,193	2,251	2,325	3%	6%	132	135	140	3%	6%	0					
Lab	Tissue Typing	Tissue Typing	48	48	47	0%	-2%	12	12	11	0%	-2%	0					
Lab	Transcutaneous Procedures	Transcutaneous Procedures	1	2	2	12%	26%	0	0	0	12%	26%	0					
Lab	Transfusion Medicine	Transfusion Medicine	276	278	290	1%	5%	85	86	90	1%	5%	0					
Lab	Urinalysis	Urinalysis	11,183	11,552	12,456	3%	11%	335	347	374	3%	11%	0					
Miscellaneous Servi	Allergy	Allergen Immunotherapy	42,102	41,674	42,722	-1%	1%	842	833	854	-1%	1%	0					
Miscellaneous Servi	Allergy	Allergy Testing	1,843	1,836	1,902	0%	3%	37	37	38	0%	3%	0					
Miscellaneous Servi	Fine Needle Aspiration	Fine Needle Aspiration	196	161	135	-18%	-31%	45	37	31	-18%	-31%	0					
Miscellaneous Servi	Fine Needle Aspiration	Fine Needle Aspiration - Image Guided	228	309	423	35%	85%	115	145	187	27%	63%	0					
Miscellaneous Servi	Immunization	Immunization Administration	59,218	68,857	81,341	16%	37%	592	689	813	16%	37%	0					
Miscellaneous Servi	Infusion/Transfusion	Blood Transfusion	94	97	99	3%	5%	41	43	44	3%	5%	0					
Miscellaneous Servi	Infusion/Transfusion	Other Infusion/Transfusion Services	7	7	7	0%	0%	5	5	5	0%	0%	0					
Miscellaneous Servi	Infusion/Transfusion	Therapeutic Infusion/Injection	31,248	36,538	43,144	17%	38%	1,875	2,192	2,589	17%	38%	0					
Miscellaneous Servi	Miscellaneous Services	Blood Letting (Phlebotomy)	411	442	486	7%	18%	49	53	58	7%	18%	0					
Miscellaneous Servi	Miscellaneous Services	Other Miscellaneous Services	786	780	790	-1%	1%	251	250	253	-1%	1%	0					
Miscellaneous Servi	Therapeutic Apheresis	Therapeutic Apheresis	102	172	278	68%	171%	75	125	203	68%	171%	0					
Miscellaneous Servi	Venipuncture	Venipuncture	24,973	26,110	27,845	5%	11%	4,245	4,439	4,734	5%	11%	0					
Nephrology	End Stage Renal Disease (ESRD)	ESRD Services	6,243	6,841	7,416	10%	19%	1,183	1,097	997	-7%	-16%	0					
Nephrology	End Stage Renal Disease (ESRD)	Hemodialysis	555	596	636	8%	15%	166	149	132	-10%	-20%	0					
Nephrology	End Stage Renal Disease (ESRD)	Other Dialysis Procedures	311	328	337	5%	8%	115	112	106	-3%	-8%	0					
Neurology	Functional Neurology Procedures	Chemodenervation - Face	255	401	650	57%	155%	23	28	35	23%	53%	0					
Neurology	Functional Neurology Procedures	Chemodenervation - Neck	167	256	402	54%	141%	27	36	49	35%	85%	0					
Neurology	Functional Neurology Procedures	Chemodenervation - Trunk/Extremity	141	214	337	52%	139%	30	41	58	38%	96%	0					
Neurology	Neuro-Electrodiagnostics	Electrocorticogram (ECOG)	1	1	2	71%	184%	0	0	1	70%	184%	0					
Neurology	Neuro-Electrodiagnostics	Electroencephalogram (EEG)	1,364	1,513	1,750	11%	28%	614	636	688	4%	12%	0					
Neurology	Neuro-Electrodiagnostics	Electromyography (EMG)	3,007	3,373	3,874	12%	29%	511	573	659	12%	29%	0					
Neurology	Neuro-Electrodiagnostics	Magnetoencephalography (MEG)	1	1	2	57%	157%	0	1	1	57%	157%	0					
Neurology	Neuro-Electrodiagnostics	Pharmacological/Physical Activation During EEG	2	2	2	6%	18%	0	0	0	6%	18%	0					
Neurology	Other Neurological Diagnostic Testing	Autonomic Nervous System Testing	127	182	268	43%	110%	6	9	13	43%	110%	0					
Neurology	Other Neurological Diagnostic Testing	Caloric Vestibular Test	226	258	308	14%	36%	23	26	31	14%	36%	0					
Neurology	Other Neurological Diagnostic Testing	Central Nervous System Testing	38	41	46	8%	21%	3	3	3	8%	21%	0					
Neurology	Other Neurological Diagnostic Testing	Cerebral Seizure Testing	83	88	96	5%	15%	33	34	37	5%	15%	0					
Neurology	Other Neurological Diagnostic Testing	Developmental Testing	410	522	694	27%	69%	16	21	28	27%	69%	0					
Neurology	Other Neurological Diagnostic Testing	H-Reflex Testing	147	174	212	18%	45%	10	12	15	18%	45%	0					
Neurology	Other Neurological Diagnostic Testing	Muscle/Range of Motion Testing	664	671	697	1%	5%	33	34	35	1%	5%	0					
Neurology	Other Neurological Diagnostic Testing	Nerve Conduction Testing	850	966	1,136	14%	34%	93	106	125	14%	34%	0					
Neurology	Other Neurological Diagnostic Testing	Neurobehaviorial Status Exam	192	233	303	22%	58%	12	14	18	22%	58%	0					
Neurology	Other Neurological Diagnostic Testing	Neuromuscular Junction Test	21	22	24	4%	12%	2	2	2	4%	12%	0					
Neurology	Other Neurological Diagnostic Testing	Neuropsychological Testing	331	422	567	28%	71%	53	68	91	28%	71%	0					
Neurology	Other Neurological Diagnostic Testing	Nystagmus Study	75	86	103	15%	38%	8	9	10	15%	38%	0					
Neurology	Other Neurological Diagnostic Testing	Oscillating Tracking Test	9	11	13	17%	46%	0	0	1	17%	46%	0					
Neurology	Other Neurological Diagnostic Testing	Other Neurological Diagnostic Testing	49	50	52	1%	6%	5	5	5	1%	6%	0					
Neurology	Other Neurological Diagnostic Testing	Psychological Testing	616	761	988	23%	60%	25	30	40	23%	60%	0					
Neurology	Other Neurological Diagnostic Testing	Sinusoidal Rotational Test	10	11	14	18%	47%	1	1	1	18%	47%	0					
Neurology	Other Neurological Diagnostic Testing	Somatosensory Testing	247	281	333	14%	35%	17	20	23	14%	35%	0					
Neurology	Sleep Studies	Polysomnography Testing	2,998	3,418	3,898	14%	30%	1,256	1,024	857	-18%	-32%	0					
Neurology	Sleep Studies	Sleep Latency Test	113	130	152	15%	35%	52	44	39	-15%	-24%	0					
Neurology	Sleep Studies	Sleep Study	72	100	138	38%	91%	30	30	30	-1%	0%	0					
Neurosurgery	Cranial/Peripheral Nerve Disorders	Neuroplasty - Arm/Leg	10	11	11	3%	9%	6	6	6	-7%	-10%	OR	10	11	11	0.03	0.09
Neurosurgery	Cranial/Peripheral Nerve Disorders	Neuroplasty - Cranial Nerve Transposition	1	1	1	3%	11%	0	0	0	-6%	-8%	OR	1	1	1	0.03	0.11
Neurosurgery	Cranial/Peripheral Nerve Disorders	Neuroplasty - Hand/Foot	7	8	8	1%	4%	4	4	4	-8%	-13%	OR	7	8	8	0.01	0.04
Neurosurgery	Cranial/Peripheral Nerve Disorders	Neuroplasty - Ulnar Nerve Transposition - Elbow	30	31	32	2%	5%	18	16	16	-8%	-13%	OR	30	31	32	0.02	0.05
Neurosurgery	Cranial/Peripheral Nerve Disorders	Neuroplasty - Ulnar Nerve Transposition - Wrist	2	2	2	3%	8%	1	1	1	-6%	-10%	OR	2	2	2	0.03	0.08
Neurosurgery	Functional Neurosurgery Procedures	Neurostimulation - Cortical/Subcortical Mapping	2	3	4	72%	175%	0	0	0	50%	141%	0					
Neurosurgery	Functional Neurosurgery Procedures	Neurostimulation - Electrical Lead Implantation - Open	14	14	12	-2%	-12%	13	13	11	-3%	-13%	OR	14	14	12	-0.02	-0.12
Neurosurgery	Functional Neurosurgery Procedures	Neurostimulation - Electrical Lead Implantation - Percutaneous	28	27	24	-3%	-12%	4	4	4	-3%	-12%	0					
Neurosurgery	Functional Neurosurgery Procedures	Neurostimulation - Electrical Lead Removal/Revision	6	10	15	63%	150%	6	9	14	62%	145%	OR	6	10	15	0.63	1.5
Neurosurgery	Functional Neurosurgery Procedures	Neurostimulation - Neurophysiologist Monitoring (MER)	127	214	338	69%	167%	7	11	17	48%	134%	0					
Neurosurgery	Functional Neurosurgery Procedures	Neurostimulation - Pulse Generator Implantation/Removal	20	34	55	70%	172%	19	32	50	69%	166%	OR	20	34	55	0.7	1.72
Neurosurgery	Functional Neurosurgery Procedures	Neurostimulator Programming	113	109	98	-4%	-13%	6	5	5	-15%	-24%	0					
Neurosurgery	Functional Neurosurgery Procedures	Surface Neurostimulator Application	249	260	258	4%	3%	7	8	8	4%	3%	0					
Neurosurgery	Other Nervous System Procedures	Biopsy - Nerve	5	5	5	5%	14%	3	3	3	-1%	-1%	OR	5	5	5	0.05	0.14
Neurosurgery	Other Nervous System Procedures	Excision - Neurofibroma/Neurolemmoma	3	4	4	6%	16%	2	2	2	-2%	-1%	OR	3	4	4	0.06	0.16
Neurosurgery	Other Nervous System Procedures	Excision - Neuroma	8	8	9	7%	16%	5	5	5	-1%	-1%	OR	8	8	9	0.07	0.16

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	OR Case Volumes: Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Neurosurgery	Other Nervous System Procedures	Implantation - Nerve End	2	2	2	9%	19%	1	1	1	2%	3%	OR	2	2	2	0.09	0.19
Neurosurgery	Other Nervous System Procedures	Nerve Decompression	34	34	35	0%	1%	3	3	3	0%	1%	OR	34	34	35	0	0.01
Neurosurgery	Other Nervous System Procedures	Nerve Graft	1	1	1	7%	17%	1	1	1	7%	17%	OR	1	1	1	0.07	0.17
Neurosurgery	Other Nervous System Procedures	Neuroplasty - Other	1	2	2	9%	20%	1	1	1	9%	20%	OR	1	2	2	0.09	0.2
Neurosurgery	Other Nervous System Procedures	Other Nervous System Procedures	35	37	39	5%	13%	10	10	11	5%	13%	OR	35	37	39	0.05	0.13
Neurosurgery	Other Nervous System Procedures	Suture - Hand/Foot Nerve	7	8	8	5%	12%	4	4	4	5%	12%	OR	7	8	8	0.05	0.12
Neurosurgery	Other Nervous System Procedures	Suture - Major Peripheral Nerve	1	1	1	5%	13%	1	1	1	5%	13%	OR	1	1	1	0.05	0.13
Neurosurgery	Other Nervous System Procedures	Sympathectomy - Spine	1	1	1	-9%	-15%	1	1	1	-14%	-24%	OR	1	1	1	-0.09	-0.15
Neurosurgery	Other Nervous System Procedures	Transection/Avulsion - Other Nerve	1	1	1	4%	9%	0	0	0	-5%	-10%	OR	1	1	1	0.04	0.09
Neurosurgery	Skull/Meninges/Brain Procedures	Application/Removal - Fixation Devices - Skull	3	3	4	5%	13%	1	1	1	5%	13%	OR	3	3	4	0.05	0.13
Neurosurgery	Skull/Meninges/Brain Procedures	Aspiration/Injection - Skull/Meninges/Brain	5	5	5	3%	10%	2	2	2	-6%	-9%	OR	5	5	5	0.03	0.1
Neurosurgery	Skull/Meninges/Brain Procedures	Cerebrospinal Fluid Shunt (CSF) - Replacement/Revision	1	1	1	5%	15%	1	1	1	5%	15%	OR	1	1	1	0.05	0.15
Neurosurgery	Skull/Meninges/Brain Procedures	Endoscopic Transnasal/Transphenoidal Surgery	0	1	4	213%	924%	0	1	4	213%	924%	OR	0	1	4	2.13	9.24
Neurosurgery	Skull/Meninges/Brain Procedures	Fracture Treatment - Skull	1	1	1	2%	8%	1	1	1	2%	8%	OR	1	1	1	0.02	0.08
Neurosurgery	Skull/Meninges/Brain Procedures	Other Procedures - Skull/Meninges/Brain	7	7	8	5%	16%	1	1	1	5%	16%	OR	7	7	8	0.05	0.16
Neurosurgery	Skull/Meninges/Brain Procedures	Stereotactic Lesion Creation - Skull/Brain	5	7	9	28%	68%	4	5	6	20%	48%	OR	5	7	9	0.28	0.68
Neurosurgery	Skull/Meninges/Brain Procedures	Ventricular Puncture	2	2	2	1%	7%	1	1	1	-6%	-7%	OR	2	2	2	0.01	0.07
Obstetrics	Abortion	Abortion - D&C	130	116	105	-10%	-19%	23	21	19	-10%	-19%	OR	130	116	105	-0.1	-0.19
Obstetrics	Abortion	Abortion - D&E	63	57	51	-10%	-20%	12	11	10	-10%	-20%	OR	63	57	51	-0.1	-0.2
Obstetrics	Abortion	Abortion - Other	9	8	8	-11%	-20%	2	2	2	-11%	-20%	OR	9	8	8	-0.11	-0.2
Obstetrics	Fetal Procedures	Ectopic Pregnancy Surgical Treatment	1	1	1	-3%	-6%	1	1	1	-3%	-6%	OR	1	1	1	-0.03	-0.06
Obstetrics	Fetal Procedures	Ectopic Pregnancy Surgical Treatment - Laparoscopic	9	9	8	-3%	-6%	8	8	7	-3%	-6%	OR	9	9	8	-0.03	-0.06
Obstetrics	Fetal Testing	Amniocentesis	154	100	66	-35%	-57%	51	33	22	-35%	-57%	0					
Obstetrics	Fetal Testing	Fetal Contraction Stress Test	15	15	14	-4%	-6%	6	6	5	-9%	-16%	0					
Obstetrics	Fetal Testing	Fetal Non-Stress Test	2,535	2,689	2,888	6%	14%	849	835	843	-2%	-1%	0					
Obstetrics	Fetal Testing	Genetic Testing	34	40	45	15%	30%	12	13	13	4%	8%	0					
Obstetrics	Fetal Testing	Other Fetal Testing	72	85	99	18%	37%	61	69	77	12%	25%	0					
Obstetrics	Newborn Care	Antepartum Care	545	527	514	-3%	-6%	26	25	25	-3%	-6%	0					
Obstetrics	Newborn Care	Newborn Evaluation And Management	58	59	60	1%	3%	17	17	17	1%	3%	0					
Obstetrics	Newborn Care	Newborn Resuscitation	0	1	1	2%	4%	0	1	1	2%	4%	0					
Obstetrics	Newborn Care	Postpartum Care	175	169	165	-4%	-6%	15	14	14	-3%	-6%	0					
Obstetrics	Other Obstetrical Procedures	Miscarriage Treatment	305	309	316	1%	4%	242	245	251	1%	4%	0					
Obstetrics	Other Obstetrical Procedures	Other Obstetrical Procedures	14	14	13	-3%	-6%	6	6	6	-3%	-6%	0					
Oncology	Chemotherapy	Chemotherapy	949	983	1,048	4%	10%	248	352	514	42%	107%	0					
Oncology	Radiation Therapy	Brachytherapy Treatment - High Dose Rate (HDR)	49	55	61	12%	25%	43	47	50	8%	15%	0					
Oncology	Radiation Therapy	Brachytherapy Treatment - Low Dose Rate (LDR)	69	74	81	7%	17%	62	63	65	2%	5%	0					
Oncology	Radiation Therapy	IMRT	228	286	343	25%	50%	163	189	210	16%	29%	0					
Oncology	Radiation Therapy	Proton Beam Treatment	7	11	19	56%	155%	7	11	19	56%	155%	0					
Oncology	Radiation Therapy	Radiation Treatment - Conventional	519	497	542	-4%	4%	339	314	333	-7%	-2%	0					
Oncology	Radiation Therapy	Stereotactic Body Radiation Therapy (SBRT)	15	17	20	17%	34%	14	16	18	14%	26%	0					
Oncology	Radiation Therapy	Stereotactic Radiosurgery (SRS)	26	28	31	10%	18%	25	27	28	7%	12%	0					
Ophthalmology	Cataract Procedures	Extracapsular Cataract Removal without Intraocular Lens Implantation	2	2	3	-1%	3%	1	1	1	-12%	-17%	OR	2	2	3	-0.01	0.03
Ophthalmology	Cataract Procedures	Extracapsular Phacoemulsification with Intraocular Lens Implantation	5,170	5,712	6,663	10%	29%	1,934	1,888	2,021	-2%	4%	OR	5170	5712	6663	0.1	0.29
Ophthalmology	Cataract Procedures	Intracapsular Cataract Removal with Intraocular Lens Implantation	6	6	6	-1%	1%	2	2	2	-12%	-18%	OR	6	6	6	-0.01	0.01
Ophthalmology	Cataract Procedures	Intracapsular Cataract Removal without Intraocular Lens Implantation	1	1	1	-5%	-5%	0	0	0	-16%	-23%	OR	1	1	1	-0.05	-0.05
Ophthalmology	Cataract Procedures	Intraocular Lens Implantation/Revision	34	37	42	8%	23%	13	12	13	-5%	-1%	OR	34	37	42	0.08	0.23
Ophthalmology	Cataract Procedures	Other Cataract Procedures	15	15	16	-1%	3%	4	3	2	-21%	-35%	OR	15	15	16	-0.01	0.03
Ophthalmology	Cataract Procedures	Other Cataract Procedures - Phacofragmentation	13	14	16	6%	20%	3	3	2	-8%	-12%	OR	13	14	16	0.06	0.2
Ophthalmology	Cataract Procedures	Secondary Cataract Laser Surgery (Yag Capsulotomy)	1,597	1,741	2,015	9%	26%	597	576	611	-4%	2%	PR					
Ophthalmology	Cornea Procedures	Biopsy - Cornea	0	1	1	4%	13%	0	0	0	-2%	-1%	OR	0	1	1	0.04	0.13
Ophthalmology	Cornea Procedures	Cornea Transplant	53	56	62	6%	17%	25	24	25	-2%	2%	OR	53	56	62	0.06	0.17
Ophthalmology	Cornea Procedures	Laceration Repair - Cornea	6	6	6	2%	9%	1	1	1	-6%	-8%	OR	6	6	6	0.02	0.09
Ophthalmology	Cornea Procedures	Lesion Destruction/Removal - Cornea	13	14	15	6%	16%	4	3	4	-4%	-2%	OR	13	14	15	0.06	0.16
Ophthalmology	Cornea Procedures	Other Procedures - Cornea	3	3	3	1%	6%	0	0	0	-3%	1%	OR	3	3	3	0.01	0.06
Ophthalmology	Cornea Procedures	Pterygium Excision/Transposition	44	48	54	10%	23%	20	21	22	3%	9%	OR	44	48	54	0.1	0.23
Ophthalmology	Cornea Procedures	Scraping - Cornea	17	19	21	8%	20%	0	0	0	8%	20%	OR	17	19	21	0.08	0.2
Ophthalmology	Eyeglasses & Contact Lens Services	Contact Lens Fitting	111	118	131	6%	18%	4	5	5	6%	18%	0					
Ophthalmology	Eyeglasses & Contact Lens Services	Eyeglasses Fitting	13	13	15	5%	15%	1	1	1	5%	15%	0					
Ophthalmology	Eyeglasses & Contact Lens Services	Other Eyeglasses & Contact Lens Services	12	12	12	1%	5%	0	0	0	1%	5%	0					
Ophthalmology	Eyelid Procedures	Biopsy - Eyelid	106	122	145	15%	37%	3	4	4	15%	37%	OR	106	122	145	0.15	0.37
Ophthalmology	Eyelid Procedures	Canthus Procedures	11	13	15	12%	32%	4	4	4	-1%	4%	OR	11	13	15	0.12	0.32
Ophthalmology	Eyelid Procedures	Chalazion (Cyst) Excision - Eyelid	171	172	180	1%	5%	11	10	11	-3%	1%	PR					
Ophthalmology	Eyelid Procedures	Entropion/Ectropian Repair	78	83	93	6%	19%	21	19	18	-9%	-13%	OR	78	83	93	0.06	0.19
Ophthalmology	Eyelid Procedures	Excision/Repair - Eyelid	28	31	36	10%	27%	10	10	11	-1%	2%	OR	28	31	36	0.1	0.27
Ophthalmology	Eyelid Procedures	Foreign Body Removal - Eyelid	8	9	9	2%	8%	1	1	1	-24%	-43%	OR	8	9	9	0.02	0.08
Ophthalmology	Eyelid Procedures	Lesion Destruction/Excision - Eyelid	153	167	188	9%	23%	9	10	11	9%	23%	OR	153	167	188	0.09	0.23
Ophthalmology	Eyelid Procedures	Lesion Drainage - Eyelid	15	16	18	8%	21%	1	1	1	8%	21%	OR	15	16	18	0.08	0.21
Ophthalmology	Eyelid Procedures	Other Procedures - Eyelid	19	20	23	10%	26%	4	4	4	-7%	-13%	OR	19	20	23	0.1	0.26
Ophthalmology	Eyelid Procedures	Reconstruction - Blepharoplasty	118	132	155	12%	31%	38	38	39	0%	2%	OR	118	132	155	0.12	0.31
Ophthalmology	Eyelid Procedures	Trichiasis Correction	505	586	718	16%	42%	6	8	9	16%	42%	PR					
Ophthalmology	Glaucoma Procedures	Aqueous Drainage	36	46	59	25%	62%	3	3	2	-18%	-33%	OR	36	46	59	0.25	0.62
Ophthalmology	Glaucoma Procedures	Injection - Anterior Chamber	5	5	7	16%	43%	0	0	0	-5%	17%	OR	5	5	7	0.16	0.43
Ophthalmology	Glaucoma Procedures	Iridectomy	5	5	5	1%	6%	1	1	1	-6%	-8%	OR	5	5	5	0.01	0.06
Ophthalmology	Glaucoma Procedures	Laser Repair - Iridectomy/Iridotomy	394	614	925	56%	135%	38	43	43	12%	13%	PR					
Ophthalmology	Glaucoma Procedures	Laser Repair - Trabeculoplasty	603	929	1,397	54%	132%	28	27	22	-4%	-21%	PR					
Ophthalmology	Glaucoma Procedures	Other Glaucoma Procedures	0	1	1	17%	44%	0	0	0	14%	38%	OR	0	1	1	0.17	0.44
Ophthalmology	Glaucoma Procedures	Sclera Fistulization - Trabeculectomy	79	105	144	32%	81%	40	50	67	26%	67%	OR	79	105	144	0.32	0.81
Ophthalmology	Glaucoma Procedures	Shunt Placement/Revision	29	33	41	16%	42%	14	15	17	9%	25%	OR	29	33	41	0.16	0.42
Ophthalmology	Glaucoma Procedures	Trabeculotomy	1	1	1	1%	8%	1	1	1	4%	16%	OR	1	1	1	0.01	0.08

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	OR Case Volumes: Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Ophthalmology	Lacrimal System Procedures	Dacryocystorhinostomy	18	19	21	5%	15%	8	8	8	-2%	0%	OR	18	19	21	0.05	0.15
Ophthalmology	Lacrimal System Procedures	Exploration/Probing - Lacrimal System	213	257	324	21%	52%	12	10	8	-16%	-33%	PR					
Ophthalmology	Lacrimal System Procedures	Foreign Body Removal - Lacrimal System	5	5	5	4%	14%	0	0	0	-21%	-37%	OR	5	5	5	0.04	0.14
Ophthalmology	Lacrimal System Procedures	Other Lacrimal System Procedures	9	9	10	4%	12%	2	1	1	-12%	-21%	OR	9	9	10	0.04	0.12
Ophthalmology	Lacrimal System Procedures	Punctum Closure - Plug	538	560	606	4%	13%	11	11	12	4%	13%	PR					
Ophthalmology	Lacrimal System Procedures	Punctum Closure - Thermocauterization/Ligation/Laser	34	35	38	3%	11%	1	1	1	5%	12%	OR	34	35	38	0.03	0.11
Ophthalmology	Lacrimal System Procedures	Punctum Dilation	71	79	92	11%	30%	1	1	1	11%	30%	PR					
Ophthalmology	Lacrimal System Procedures	Punctum Incision	11	13	15	11%	30%	0	0	0	11%	30%	OR	11	13	15	0.11	0.3
Ophthalmology	Other Eye Procedures	Adhesion Removal - Anterior Chamber	10	11	13	12%	31%	2	2	2	-7%	-12%	OR	10	11	13	0.12	0.31
Ophthalmology	Other Eye Procedures	Artificial Eye Fitting	1	1	1	0%	2%	0	0	0	0%	2%	0					
Ophthalmology	Other Eye Procedures	Biopsy - Conjunctiva	5	6	7	9%	21%	1	1	1	-15%	-29%	OR	5	6	7	0.09	0.21
Ophthalmology	Other Eye Procedures	Brow Reconstruction	19	22	27	17%	39%	10	11	13	11%	27%	OR	19	22	27	0.17	0.39
Ophthalmology	Other Eye Procedures	Ciliary Body Destruction	16	18	20	10%	25%	5	5	4	-4%	-6%	OR	16	18	20	0.1	0.25
Ophthalmology	Other Eye Procedures	Conjunctivoplasty	12	13	15	11%	26%	4	4	4	-2%	-2%	OR	12	13	15	0.11	0.26
Ophthalmology	Other Eye Procedures	Exploratory Surgery - Orbit	5	5	5	3%	8%	3	3	3	-2%	-2%	OR	5	5	5	0.03	0.08
Ophthalmology	Other Eye Procedures	Eye Removal	7	7	7	0%	3%	2	2	2	-9%	-14%	OR	7	7	7	0	0.03
Ophthalmology	Other Eye Procedures	Eye Removal with Implant	6	6	7	4%	11%	4	4	4	-1%	2%	OR	6	6	7	0.04	0.11
Ophthalmology	Other Eye Procedures	Foreign Body Removal - Eye	409	414	429	1%	5%	53	54	56	1%	5%	OR	409	414	429	0.01	0.05
Ophthalmology	Other Eye Procedures	Fracture Treatment - Eye Socket	5	5	5	0%	3%	3	3	3	0%	3%	OR	5	5	5	0	0.03
Ophthalmology	Other Eye Procedures	Injection - Orbit	75	84	96	11%	27%	2	3	3	11%	27%	OR	75	84	96	0.11	0.27
Ophthalmology	Other Eye Procedures	Iridoplasty - Photocoagulation	10	12	13	12%	28%	1	0	0	-32%	-51%	OR	10	12	13	0.12	0.28
Ophthalmology	Other Eye Procedures	Optic Nerve Decompression	1	2	2	14%	32%	1	1	1	9%	21%	OR	1	2	2	0.14	0.32
Ophthalmology	Other Eye Procedures	Orbital Implant Placement/Revision	3	3	3	2%	6%	1	1	1	-3%	-5%	OR	3	3	3	0.02	0.06
Ophthalmology	Other Eye Procedures	Orthoptic/Pleoptic Training (Eye Exercises)	264	270	292	2%	11%	8	8	9	2%	11%	OR	264	270	292	0.02	0.11
Ophthalmology	Other Eye Procedures	Other Eye Procedures	23	24	26	4%	11%	4	4	3	-9%	-15%	OR	23	24	26	0.04	0.11
Ophthalmology	Other Eye Procedures	Other Intraocular Lens Procedures	15	17	21	17%	42%	5	5	5	3%	9%	OR	15	17	21	0.17	0.42
Ophthalmology	Other Eye Procedures	Other Lesion Excision - Eye	8	9	9	9%	20%	4	4	4	0%	1%	OR	8	9	9	0.09	0.2
Ophthalmology	Other Eye Procedures	Other Procedures - Conjunctiva	35	38	42	8%	20%	4	4	3	-9%	-17%	OR	35	38	42	0.08	0.2
Ophthalmology	Other Eye Procedures	Other Procedures - Eye Muscle	4	4	4	4%	10%	1	1	1	-5%	-9%	OR	4	4	4	0.04	0.1
Ophthalmology	Other Eye Procedures	Reinforcement - Sclera	2	2	2	5%	16%	1	1	0	-8%	-12%	OR	2	2	2	0.05	0.16
Ophthalmology	Other Eye Procedures	Strabismus Surgery	80	80	83	1%	4%	45	43	41	-6%	-10%	OR	80	80	83	0.01	0.04
Ophthalmology	Other Eye Procedures	Subconjunctival Injection	36	40	45	10%	24%	1	2	2	10%	24%	PR					
Ophthalmology	Other Eye Procedures	Wound Repair - Sclera	24	26	29	6%	17%	5	4	4	-17%	-31%	OR	24	26	29	0.06	0.17
Ophthalmology	Other Ophthalmological Diagnostic Testing	Biometry	498	603	769	21%	55%	15	18	23	21%	55%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Electro-Oculography	15	17	20	14%	34%	0	1	1	14%	34%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Electroretinography	7	8	10	15%	34%	0	0	0	15%	35%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Fluorescein Angioscopy	1,203	1,422	1,755	18%	46%	36	43	53	18%	46%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Fundus Photography	964	1,131	1,365	17%	42%	29	34	41	17%	42%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Glaucoma Screening	3	4	5	22%	53%	0	0	0	22%	53%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Gonioscopy	627	746	917	19%	46%	19	22	28	19%	46%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Indocyanine-Green Angiography	9	10	12	17%	45%	0	0	0	17%	45%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Oculoelectromyography - Needle	1	1	1	16%	41%	0	0	0	17%	42%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Ophthalmodynamometry	3	3	4	19%	50%	0	0	0	19%	50%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Ophthalmoscopy	1,396	1,650	2,011	18%	44%	42	50	60	18%	44%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Photography - Extra-Ocular	167	196	236	17%	41%	5	6	7	17%	41%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Photography - Special Anterior Segment	79	95	120	20%	51%	2	3	4	20%	51%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Provocative Tests	8	9	11	18%	45%	0	0	0	18%	45%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Scanning Computerized Imaging	1,243	1,478	1,820	19%	46%	37	44	55	19%	46%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Serial Tonometry	49	58	72	19%	45%	1	2	2	19%	45%	0					
Ophthalmology	Other Ophthalmological Diagnostic Testing	Tonography	20	23	29	19%	47%	1	1	1	19%	47%	0					
Ophthalmology	Refractive Surgery	Astigmatism Sight Revision	8	9	10	7%	21%	1	0	0	-43%	-70%	OR	8	9	10	0.07	0.21
Ophthalmology	Refractive Surgery	Epithelium Removal	20	20	21	2%	8%	2	2	2	2%	8%	OR	20	20	21	0.02	0.08
Ophthalmology	Refractive Surgery	Keratomileusis (Lasik)	76	97	129	28%	70%	2	2	3	28%	70%	OR	76	97	129	0.28	0.7
Ophthalmology	Refractive Surgery	Radial Keratotomy	0	0	1	3%	10%	0	0	0	4%	11%	OR	0	0	1	0.03	0.1
Ophthalmology	Vision Exams	Other Medical Ophthalmology	123	128	141	4%	15%	6	6	7	4%	15%	0					
Ophthalmology	Vision Exams	Vision Exams	51,143	56,709	65,668	11%	28%	511	567	657	11%	28%	0					
Ophthalmology	Vitreo-Retinal Procedures	Aspiration - Retina/Vitreous	3	4	4	6%	18%	1	1	1	-11%	-18%	OR	3	4	4	0.06	0.18
Ophthalmology	Vitreo-Retinal Procedures	Detached Retina Procedures - Other	28	32	38	16%	36%	6	6	6	-3%	-8%	OR	28	32	38	0.16	0.36
Ophthalmology	Vitreo-Retinal Procedures	Detached Retina Procedures - Photocoagulation	134	155	180	16%	34%	7	5	3	-38%	-61%	OR	134	155	180	0.16	0.34
Ophthalmology	Vitreo-Retinal Procedures	Detached Retina Repair - Injection	10	11	11	4%	10%	1	1	2	33%	137%	OR	10	11	11	0.04	0.1
Ophthalmology	Vitreo-Retinal Procedures	Detached Retina Repair - Scleral Buckling	19	19	20	0%	2%	13	12	12	-7%	-12%	OR	19	19	20	0	0.02
Ophthalmology	Vitreo-Retinal Procedures	Detached Retina Repair with Vitrectomy	85	99	117	16%	39%	59	64	71	8%	20%	OR	85	99	117	0.16	0.39
Ophthalmology	Vitreo-Retinal Procedures	Diabetic Retinopathy Destruction - Cryotherapy/Diathermy	3	3	3	6%	15%	1	1	1	-11%	-20%	OR	3	3	3	0.06	0.15
Ophthalmology	Vitreo-Retinal Procedures	Diabetic Retinopathy Destruction - Photocoagulation	467	595	766	27%	64%	0	0	0	0%	0%	OR	467	595	766	0.27	0.64
Ophthalmology	Vitreo-Retinal Procedures	Implant Material Removal	5	6	7	17%	42%	3	4	4	13%	33%	OR	5	6	7	0.17	0.42
Ophthalmology	Vitreo-Retinal Procedures	Injection - Vitreous	136	222	365	64%	169%	8	11	15	37%	86%	PR					
Ophthalmology	Vitreo-Retinal Procedures	Lesion Destruction - Choroid	1	1	1	-1%	7%	0	0	0	0%	0%	OR	1	1	1	-0.01	0.07
Ophthalmology	Vitreo-Retinal Procedures	Lesion Destruction - Choroid - Photocoagulation	51	47	46	-8%	-10%	0	0	0	0%	0%	PR					
Ophthalmology	Vitreo-Retinal Procedures	Lesion Destruction - Choroid - Photodynamic Therapy	370	606	1,013	64%	174%	26	36	52	41%	101%	PR					
Ophthalmology	Vitreo-Retinal Procedures	Lesion Destruction - Choroid - Thermotherapy	10	13	17	26%	69%	0	0	0	0%	0%	OR	10	13	17	0.26	0.69
Ophthalmology	Vitreo-Retinal Procedures	Lesion Destruction - Retina	2	2	2	8%	17%	0	0	0	-12%	-24%	OR	2	2	2	0.08	0.17
Ophthalmology	Vitreo-Retinal Procedures	Lesion Destruction - Retina - Photocoagulation	472	509	558	8%	18%	0	0	0	0%	0%	PR					
Ophthalmology	Vitreo-Retinal Procedures	Lesion Destruction - Retina - Radiation	1	1	2	8%	18%	0	0	0	8%	18%	OR	1	1	2	0.08	0.18
Ophthalmology	Vitreo-Retinal Procedures	Other Vitreo-Retinal Procedures	1	1	2	7%	18%	0	0	1	7%	18%	OR	1	1	2	0.07	0.18
Ophthalmology	Vitreo-Retinal Procedures	Retrobulbar Injection - Diabetic Retinopathy	34	38	45	13%	34%	7	8	9	13%	34%	PR					
Ophthalmology	Vitreo-Retinal Procedures	Severing Vitreous Strands - Laser	10	11	13	14%	35%	1	1	1	-2%	0%	PR					
Ophthalmology	Vitreo-Retinal Procedures	Vitrectomy	203	241	295	19%	46%	122	133	149	9%	23%	OR	203	241	295	0.19	0.46
Ophthalmology	Vitreo-Retinal Procedures	Vitreous Substitute Injection	5	6	7	17%	39%	1	0	0	-44%	-73%	OR	5	6	7	0.17	0.39
Orthopedics	Foot	Achilles Tendon Repair	35	36	37	0%	4%	21	19	18	-8%	-13%	OR	35	36	37	0	0.04

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
														OR Case Volumes				
Orthopedics	Foot	Amputation - Foot	44	47	52	8%	20%	28	28	29	0%	3%	OR	44	47	52	0.08	0.2
Orthopedics	Foot	Biopsy - Foot	1	1	1	1%	11%	0	0	0	-17%	-26%	0					
Orthopedics	Foot	Bone Excision - Foot	151	156	165	3%	9%	83	78	75	-6%	-9%	OR	151	156	165	0.03	0.09
Orthopedics	Foot	Bone Removal - Foot	55	57	61	3%	11%	31	29	28	-6%	-8%	OR	55	57	61	0.03	0.11
Orthopedics	Foot	Bone Repair/Revision - Foot	26	26	27	1%	4%	14	13	12	-8%	-14%	OR	26	26	27	0.01	0.04
Orthopedics	Foot	Bunion Correction	279	283	293	1%	5%	139	128	119	-8%	-14%	OR	279	283	293	0.01	0.05
Orthopedics	Foot	Excision - Morton's Neuroma	64	65	68	2%	6%	29	27	25	-9%	-16%	OR	64	65	68	0.02	0.06
Orthopedics	Foot	Exploratory Surgery - Foot	10	10	10	3%	9%	5	5	5	-6%	-10%	OR	10	10	10	0.03	0.09
Orthopedics	Foot	Foreign Body Removal - Foot	55	56	59	1%	6%	15	16	16	1%	6%	OR	55	56	59	0.01	0.06
Orthopedics	Foot	Fusion - Foot	63	67	74	7%	18%	42	42	43	0%	1%	OR	63	67	74	0.07	0.18
Orthopedics	Foot	Hammertoe Repair	302	315	340	5%	13%	145	136	131	-6%	-9%	OR	302	315	340	0.05	0.13
Orthopedics	Foot	Joint Lining Removal - Foot	4	4	4	1%	5%	3	3	3	-6%	-10%	OR	4	4	4	0.01	0.05
Orthopedics	Foot	Joint/Muscle Release - Foot	46	48	52	4%	13%	25	24	24	-5%	-6%	OR	46	48	52	0.04	0.13
Orthopedics	Foot	Lesion Excision - Tendon - Foot	32	33	34	1%	5%	18	16	15	-8%	-13%	OR	32	33	34	0.01	0.05
Orthopedics	Foot	Lesion Excision/Currettage - Foot	16	16	17	3%	9%	9	8	8	-6%	-10%	OR	16	16	17	0.03	0.09
Orthopedics	Foot	Lesion Incision/Drainage - Foot	25	26	28	5%	14%	7	8	8	5%	14%	0					
Orthopedics	Foot	Metatarsal Incision	14	15	16	3%	8%	8	7	7	-6%	-11%	OR	14	15	16	0.03	0.08
Orthopedics	Foot	Nerve Excision - Foot	1	1	1	1%	3%	0	0	0	-9%	-18%	OR	1	1	1	0.01	0.03
Orthopedics	Foot	Other Procedures - Foot	59	61	65	3%	10%	32	30	29	-6%	-9%	0					
Orthopedics	Foot	Plantar Fascia Procedures - Endoscopic Fasciotomy	22	25	28	10%	23%	11	11	11	-1%	0%	OR	22	25	28	0.1	0.23
Orthopedics	Foot	Plantar Fascia Procedures - Extracorporeal Shock Wave Therapy (ESWT)	16	23	35	48%	125%	4	5	7	22%	51%	0					
Orthopedics	Foot	Plantar Fascia Procedures - Fasciectomy/Fasciotomy	49	53	59	8%	20%	24	24	24	-2%	-2%	OR	49	53	59	0.08	0.2
Orthopedics	Foot	Repair/Revision - Foot	3	3	3	4%	12%	1	1	1	-7%	-11%	OR	3	3	3	0.04	0.12
Orthopedics	Foot	Soft Tissue Biopsy - Foot	8	9	9	2%	8%	2	2	2	-16%	-27%	0					
Orthopedics	Foot	Tendon/Muscle Repair/Revision - Foot	21	21	22	0%	3%	13	12	11	-8%	-13%	OR	21	21	22	0	0.03
Orthopedics	Foot	Tumor Excision - Foot	41	42	43	1%	4%	21	19	17	-9%	-15%	OR	41	42	43	0.01	0.04
Orthopedics	Fracture/Dislocation Treatment	Cast Application/Removal - Arm/Leg	1,691	1,676	1,691	-1%	0%	85	84	85	-1%	0%	0					
Orthopedics	Fracture/Dislocation Treatment	Cast Application/Removal - Body	33	33	34	0%	1%	4	4	4	0%	1%	0					
Orthopedics	Fracture/Dislocation Treatment	Cast Application/Removal - Hand	59	58	57	-2%	-2%	2	2	2	-2%	-2%	0					
Orthopedics	Fracture/Dislocation Treatment	Cast Application/Removal - Hip	1	1	1	1%	5%	1	1	1	1%	5%	0					
Orthopedics	Fracture/Dislocation Treatment	Cast Application/Removal - Other	183	179	177	-2%	-3%	13	13	12	-2%	-3%	0					
Orthopedics	Fracture/Dislocation Treatment	Cast Application/Removal - Shoulder	2	2	2	1%	4%	1	1	1	1%	4%	0					
Orthopedics	Fracture/Dislocation Treatment	Dislocation Treatment - Arm/Wrist	5	5	5	1%	5%	3	3	3	1%	5%	0					
Orthopedics	Fracture/Dislocation Treatment	Dislocation Treatment - Foot	27	27	27	1%	3%	18	18	19	1%	3%	0					
Orthopedics	Fracture/Dislocation Treatment	Dislocation Treatment - Hand	57	57	57	-1%	0%	45	45	45	-1%	0%	0					
Orthopedics	Fracture/Dislocation Treatment	Dislocation Treatment - Hip	36	40	45	11%	27%	33	37	42	11%	27%	0					
Orthopedics	Fracture/Dislocation Treatment	Dislocation Treatment - Knee	11	11	11	-3%	-4%	10	9	9	-3%	-4%	0					
Orthopedics	Fracture/Dislocation Treatment	Dislocation Treatment - Shoulder	118	120	122	1%	3%	97	98	100	1%	3%	0					
Orthopedics	Fracture/Dislocation Treatment	Fixation Device Application/Removal	333	336	342	1%	3%	143	135	128	-6%	-11%	0					
Orthopedics	Fracture/Dislocation Treatment	Fracture Debridement	13	14	15	4%	10%	6	6	6	4%	10%	OR	13	14	15	0.04	0.1
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Elbow	109	111	115	2%	6%	81	81	82	-1%	0%	0					
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Femur	43	45	48	4%	11%	26	27	29	4%	11%	OR	43	45	48	0.04	0.11
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Foot	762	762	774	0%	2%	175	153	135	-13%	-23%	0					
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Hand	606	591	590	-2%	-3%	170	148	132	-13%	-22%	0					
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Hip	2	2	2	5%	13%	1	1	1	5%	13%	OR	2	2	2	0.05	0.13
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Humerus	201	207	220	3%	9%	58	56	55	-4%	-5%	0					
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Knee	55	60	66	8%	20%	15	15	15	0%	3%	OR	55	60	66	0.08	0.2
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Lower Leg	67	67	68	0%	3%	25	24	23	-5%	-7%	0					
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Pelvis	12	13	14	3%	9%	3	3	3	3%	9%	OR	12	13	14	0.03	0.09
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Radius/Ulna	883	881	909	0%	3%	309	291	284	-6%	-8%	0					
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Shoulder	122	125	133	3%	9%	41	40	40	-3%	-3%	OR	122	125	133	0.03	0.09
Orthopedics	Fracture/Dislocation Treatment	Fracture Treatment - Tail Bone	3	3	3	-1%	1%	1	1	1	-1%	1%	0					
Orthopedics	Fracture/Dislocation Treatment	Splint Application - Arm	793	783	790	-1%	0%	365	360	363	-1%	0%	0					
Orthopedics	Fracture/Dislocation Treatment	Splint Application - Foot	28	28	28	0%	1%	1	1	1	0%	1%	0					
Orthopedics	Fracture/Dislocation Treatment	Splint Application - Hand	227	221	221	-2%	-3%	88	86	86	-2%	-3%	0					
Orthopedics	Fracture/Dislocation Treatment	Splint Application - Leg	510	503	503	-1%	-1%	286	282	282	-1%	-1%	0					
Orthopedics	Fracture/Dislocation Treatment	Strapping Application - Elbow/Wrist	54	54	54	-1%	0%	11	11	11	-1%	0%	0					
Orthopedics	Fracture/Dislocation Treatment	Strapping Application - Foot	1,506	1,546	1,610	3%	7%	105	108	113	3%	7%	0					
Orthopedics	Fracture/Dislocation Treatment	Strapping Application - Hand	18	18	18	-2%	-1%	6	6	6	-2%	-1%	0					
Orthopedics	Fracture/Dislocation Treatment	Strapping Application - Knee	65	64	64	-2%	-2%	24	24	23	-2%	-2%	0					
Orthopedics	Fracture/Dislocation Treatment	Strapping Application - Other	20	20	20	1%	2%	1	1	1	1%	2%	0					
Orthopedics	Fracture/Dislocation Treatment	Strapping Application - Shoulder	34	33	33	-1%	0%	16	16	16	-1%	0%	0					
Orthopedics	Fracture/Dislocation Treatment	Strapping Application - Toe	159	164	171	3%	7%	6	7	7	3%	7%	0					
Orthopedics	General Surgical Orthopedics	Apiration/Injection - Bone	7	7	8	4%	11%	1	1	1	4%	11%	0					
Orthopedics	General Surgical Orthopedics	Apiration/Injection - Tendon	48	49	51	2%	6%	1	1	2	2%	6%	0					
Orthopedics	General Surgical Orthopedics	Aspiration/Injection - Joint	15,370	18,400	22,672	20%	48%	461	552	680	20%	48%	0					
Orthopedics	General Surgical Orthopedics	Biopsy - Bone	35	37	41	6%	16%	25	27	29	6%	16%	OR	35	37	41	0.06	0.16
Orthopedics	General Surgical Orthopedics	Biopsy - Joint	1	1	1	7%	17%	0	1	1	7%	17%	OR	1	1	1	0.07	0.17
Orthopedics	General Surgical Orthopedics	Biopsy - Muscle	34	35	37	3%	10%	20	21	22	3%	10%	OR	34	35	37	0.03	0.1
Orthopedics	General Surgical Orthopedics	Bone Excision - Other	1	1	1	2%	9%	1	1	1	-8%	-12%	OR	1	1	1	0.02	0.09
Orthopedics	General Surgical Orthopedics	Bone Excision - Tibia/Fibula	6	6	6	2%	7%	4	4	4	-6%	-8%	OR	6	6	6	0.02	0.07
Orthopedics	General Surgical Orthopedics	Bone Graft	2	2	2	-3%	-1%	1	1	1	-10%	-15%	OR	2	2	2	-0.03	-0.01
Orthopedics	General Surgical Orthopedics	Bone Removal - Arm/Wrist	8	9	9	3%	9%	5	5	4	-6%	-9%	OR	8	9	9	0.03	0.09
Orthopedics	General Surgical Orthopedics	Bone Removal - Leg/Ankle	1	1	1	2%	11%	0	0	0	-6%	-7%	OR	1	1	1	0.02	0.11
Orthopedics	General Surgical Orthopedics	Bone Removal - Shoulder	31	32	34	3%	8%	20	19	19	-5%	-8%	OR	31	32	34	0.03	0.08
Orthopedics	General Surgical Orthopedics	Bone Repair/Revision - Tibia/Fibula	2	2	2	3%	9%	1	1	2	3%	9%	OR	2	2	2	0.03	0.09
Orthopedics	General Surgical Orthopedics	Bone Stimulation	22	27	34	22%	54%	1	1	1	22%	54%	0					
Orthopedics	General Surgical Orthopedics	Bone Tumor Ablation - Radiofrequency	3	3	3	1%	5%	2	2	2	-5%	-8%	0					
Orthopedics	General Surgical Orthopedics	Decompression - Lower Leg	3	3	3	2%	8%	2	2	2	0%	3%	0					

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	OR Case Volumes: Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Orthopedics	General Surgical Orthopedics	Exploratory Surgery - Elbow	3	3	3	2%	8%	2	2	2	-1%	3%	OR	3	3	3	0.02	0.08
Orthopedics	General Surgical Orthopedics	Exploratory Surgery - Knee	5	5	5	5%	14%	3	3	3	2%	7%	OR	5	5	5	0.05	0.14
Orthopedics	General Surgical Orthopedics	Extracororeal Shock Wave Therapy (ESWT) - Other	3	3	4	12%	35%	0	0	0	12%	35%	0					
Orthopedics	General Surgical Orthopedics	Foreign Body Removal - Arm/Wrist	4	4	4	1%	5%	1	1	2	1%	5%	OR	4	4	4	0.01	0.05
Orthopedics	General Surgical Orthopedics	Foreign Body Removal - Leg	3	3	3	2%	6%	1	1	1	2%	6%	OR	3	3	3	0.02	0.06
Orthopedics	General Surgical Orthopedics	Foreign Body Removal - Muscle	33	34	35	1%	4%	12	12	13	1%	4%	OR	33	34	35	0.01	0.04
Orthopedics	General Surgical Orthopedics	Foreign Body Removal - Shoulder	1	1	1	5%	14%	1	1	1	5%	14%	OR	1	1	1	0.05	0.14
Orthopedics	General Surgical Orthopedics	Implant Removal - Ankle	1	1	1	-1%	2%	1	1	1	-9%	-15%	OR	1	1	1	-0.01	0.02
Orthopedics	General Surgical Orthopedics	Implant Removal - Hip	0	0	1	6%	20%	0	0	0	-1%	5%	OR	0	0	1	0.06	0.2
Orthopedics	General Surgical Orthopedics	Injection - Tendon	3,281	3,364	3,545	3%	8%	66	67	71	3%	8%	0					
Orthopedics	General Surgical Orthopedics	Joint Lining Removal - Elbow	1	1	1	-3%	-2%	1	1	1	-7%	-9%	OR	1	1	1	-0.03	-0.02
Orthopedics	General Surgical Orthopedics	Joint Lining Removal - Knee	1	1	1	7%	19%	0	0	0	4%	11%	OR	1	1	1	0.07	0.19
Orthopedics	General Surgical Orthopedics	Joint/Muscle Release - Lower Leg	2	2	2	2%	4%	1	1	1	-2%	-3%	OR	2	2	2	0.02	0.04
Orthopedics	General Surgical Orthopedics	Lesion Excision/Currettage - Arm	21	22	23	4%	10%	13	13	14	0%	3%	OR	21	22	23	0.04	0.1
Orthopedics	General Surgical Orthopedics	Lesion Excision/Currettage - Femur	4	4	4	1%	6%	3	3	3	-2%	1%	OR	4	4	4	0.01	0.06
Orthopedics	General Surgical Orthopedics	Lesion Excision/Currettage - Knee	11	11	11	2%	6%	7	7	7	-1%	0%	OR	11	11	11	0.02	0.06
Orthopedics	General Surgical Orthopedics	Lesion Excision/Currettage - Lower Leg/Ankle	23	23	24	0%	4%	13	13	13	-4%	-4%	OR	23	23	24	0	0.04
Orthopedics	General Surgical Orthopedics	Lesion Excision/Currettage - Pelvis/Hip	10	11	11	2%	8%	7	7	7	-2%	1%	OR	10	11	11	0.02	0.08
Orthopedics	General Surgical Orthopedics	Lesion Excision/Currettage - Shoulder	2	2	2	0%	4%	1	1	1	-3%	-2%	OR	2	2	2	0	0.04
Orthopedics	General Surgical Orthopedics	Lesion Incision/Drainage - Arm/Wrist	10	10	11	3%	11%	4	4	4	-4%	-2%	OR	10	10	11	0.03	0.11
Orthopedics	General Surgical Orthopedics	Lesion Incision/Drainage - Hip	3	3	4	5%	16%	2	2	2	0%	7%	OR	3	3	4	0.05	0.16
Orthopedics	General Surgical Orthopedics	Lesion Incision/Drainage - Lower Leg	6	6	7	4%	13%	3	3	3	-3%	0%	OR	6	6	7	0.04	0.13
Orthopedics	General Surgical Orthopedics	Lesion Incision/Drainage - Shoulder	3	3	4	4%	12%	1	1	1	-4%	-3%	OR	3	3	4	0.04	0.12
Orthopedics	General Surgical Orthopedics	Lesion Incision/Drainage - Thigh/Knee	7	8	8	5%	14%	4	4	4	-1%	4%	OR	7	8	8	0.05	0.14
Orthopedics	General Surgical Orthopedics	Muscle Graft	3	3	4	5%	13%	2	2	2	-3%	-3%	OR	3	3	4	0.05	0.13
Orthopedics	General Surgical Orthopedics	Other Orthopedic Procedures	85	87	93	3%	9%	47	46	47	-2%	0%	0					
Orthopedics	General Surgical Orthopedics	Repair/Revision - Radius/Ulna	9	9	10	1%	7%	6	6	6	-2%	0%	OR	9	9	10	0.01	0.07
Orthopedics	General Surgical Orthopedics	Tendon/Muscle Repair/Revision - Lower Leg	9	9	9	1%	4%	9	9	9	1%	4%	OR	9	9	9	0.01	0.04
Orthopedics	General Surgical Orthopedics	Tumor Excision - Thigh/Knee	22	23	24	1%	5%	22	23	24	1%	5%	OR	22	23	24	0.01	0.05
Orthopedics	Hand	Amputation - Hand	22	23	24	4%	10%	19	20	20	2%	6%	OR	22	23	24	0.04	0.1
Orthopedics	Hand	Arthroplasty - Hand	47	50	53	6%	13%	28	29	29	2%	5%	OR	47	50	53	0.06	0.13
Orthopedics	Hand	Biopsy - Hand	3	3	3	5%	11%	2	2	2	1%	3%	OR	3	3	3	0.05	0.11
Orthopedics	Hand	Bone Excision - Hand	11	11	11	3%	8%	6	6	6	0%	1%	OR	11	11	11	0.03	0.08
Orthopedics	Hand	Capsule Repair - Hand	4	4	4	0%	2%	2	2	2	-3%	-5%	OR	4	4	4	0	0.02
Orthopedics	Hand	Carpal Tunnel Injection	136	150	171	11%	26%	4	5	5	11%	26%	0					
Orthopedics	Hand	Carpal Tunnel Release	749	837	960	12%	28%	374	378	390	1%	4%	OR	749	837	960	0.12	0.28
Orthopedics	Hand	Decompression - Hand	2	2	2	2%	8%	1	1	1	-5%	-5%	0					
Orthopedics	Hand	Exploratory Surgery - Hand	11	11	11	2%	7%	7	7	8	-1%	1%	OR	11	11	11	0.02	0.07
Orthopedics	Hand	Fasciotomy/Fasciectomy - Palm	44	47	51	7%	16%	25	25	27	2%	7%	OR	44	47	51	0.07	0.16
Orthopedics	Hand	Fusion - Hand	26	27	28	3%	8%	17	17	17	0%	2%	OR	26	27	28	0.03	0.08
Orthopedics	Hand	Ganglion Excision	173	175	179	1%	3%	87	79	73	-9%	-16%	OR	173	175	179	0.01	0.03
Orthopedics	Hand	Joint Lining Removal - Hand	19	20	21	4%	10%	11	11	11	0%	2%	OR	19	20	21	0.04	0.1
Orthopedics	Hand	Joint/Muscle Release - Hand	18	18	19	1%	5%	11	11	11	-2%	-2%	OR	18	18	19	0.01	0.05
Orthopedics	Hand	Lesion Excision/Currettage - Hand	79	81	84	2%	6%	41	39	40	-3%	-3%	OR	79	81	84	0.02	0.06
Orthopedics	Hand	Lesion Incision/Drainage - Hand	25	26	27	2%	7%	10	9	9	-5%	-6%	0					
Orthopedics	Hand	Other Procedures - Hand	31	31	33	1%	5%	18	17	17	-4%	-3%	0					
Orthopedics	Hand	Repair/Revision - Hand	5	4	4	-3%	-4%	4	3	3	-5%	-9%	OR	5	4	4	-0.03	-0.04
Orthopedics	Hand	Tendon/Muscle Repair/Revision/Incision - Hand	115	115	118	0%	3%	68	65	64	-4%	-5%	OR	115	115	118	0	0.03
Orthopedics	Hand	Trigger Finger Release	204	223	248	10%	22%	102	101	101	-1%	-1%	0					
Orthopedics	Joint Replacement	Arthroplasty - Ankle	5	10	22	109%	347%	4	9	18	102%	318%	OR	5	10	22	1.09	3.47
Orthopedics	Joint Replacement	Arthroplasty - Elbow	5	10	21	107%	341%	4	8	17	100%	313%	OR	5	10	21	1.07	3.41
Orthopedics	Joint Replacement	Arthroplasty - Hip - Total (THA)	5	16	51	224%	958%	5	15	50	224%	955%	OR	5	16	51	2.24	9.58
Orthopedics	Joint Replacement	Arthroplasty - Knee - Other	2	3	8	115%	382%	2	3	8	115%	381%	OR	2	3	8	1.15	3.82
Orthopedics	Joint Replacement	Arthroplasty - Knee - Revision	1	1	1	9%	25%	1	1	1	8%	25%	OR	1	1	1	0.09	0.25
Orthopedics	Joint Replacement	Arthroplasty - Knee - Total (TKA)	22	51	118	132%	441%	21	50	116	132%	439%	OR	22	51	118	1.32	4.41
Orthopedics	Joint Replacement	Arthroplasty - Knee - Unicompartmental (UKA)	10	33	113	240%	1057%	8	26	86	224%	951%	OR	10	33	113	2.4	10.57
Orthopedics	Joint Replacement	Arthroplasty - Shoulder	12	23	43	86%	251%	11	19	35	80%	228%	OR	12	23	43	0.86	2.51
Orthopedics	Sports Medicine	Ankle/Heel Procedures - Arthroscopy	30	31	32	2%	6%	20	19	19	-3%	-3%	OR	30	31	32	0.02	0.06
Orthopedics	Sports Medicine	Arm/Hand Procedures - Arthroscopy	30	30	32	3%	8%	18	17	17	-2%	-2%	OR	30	30	32	0.03	0.08
Orthopedics	Sports Medicine	Arm/Hand Procedures - Other	51	52	55	2%	8%	34	34	34	-2%	-1%	OR	51	52	55	0.02	0.08
Orthopedics	Sports Medicine	Hip Procedures - Arthroscopy	22	50	108	129%	398%	16	35	73	120%	359%	OR	22	50	108	1.29	3.98
Orthopedics	Sports Medicine	Knee Procedures - Articular Cartilage Procedures - Carticel	1	2	2	17%	47%	1	1	2	17%	47%	OR	1	2	2	0.17	0.47
Orthopedics	Sports Medicine	Knee Procedures - Articular Cartilage Procedures - Other	172	168	168	-3%	-2%	98	87	80	-11%	-18%	OR	172	168	168	-0.03	-0.02
Orthopedics	Sports Medicine	Knee Procedures - Ligament Procedures - ACL Reconstruction	147	146	150	0%	2%	84	76	71	-9%	-15%	OR	147	146	150	0	0.02
Orthopedics	Sports Medicine	Knee Procedures - Ligament Procedures - Other	7	7	7	-2%	-1%	5	5	5	-5%	-6%	OR	7	7	7	-0.02	-0.01
Orthopedics	Sports Medicine	Knee Procedures - Meniscus Procedures - Repair/Meniscectomy	1,063	1,159	1,289	9%	21%	606	604	613	0%	1%	OR	1063	1159	1289	0.09	0.21
Orthopedics	Sports Medicine	Knee Procedures - Meniscus Procedures - Transplant	5	5	6	2%	6%	3	3	3	-7%	-11%	OR	5	5	6	0.02	0.06
Orthopedics	Sports Medicine	Knee Procedures - Other	117	121	129	4%	10%	79	80	83	1%	4%	OR	117	121	129	0.04	0.1
Orthopedics	Sports Medicine	Other Sports Medicine Procedures	10	11	12	6%	17%	6	6	6	3%	9%	OR	10	11	12	0.06	0.17
Orthopedics	Sports Medicine	Other Sports Medicine Procedures - Arthroscopy	5	5	6	7%	16%	3	3	3	3%	10%	OR	5	5	6	0.07	0.16
Orthopedics	Sports Medicine	Shoulder Procedures - Arthroscopy	321	347	385	8%	20%	208	209	214	0%	2%	OR	321	347	385	0.08	0.2
Orthopedics	Sports Medicine	Shoulder Procedures - Other	14	13	12	-10%	-17%	10	9	8	-12%	-22%	OR	14	13	12	-0.1	-0.17
Orthopedics	Sports Medicine	Shoulder Procedures - Rotator Cuff Repair	313	359	420	15%	34%	194	202	213	4%	10%	OR	313	359	420	0.15	0.34
Pain Management	Destructions (Neurolysis & Adhesiolysis)	Adhesiolysis	54	62	75	15%	38%	19	16	13	-17%	-31%	OR	54	62	75	0.15	0.38
Pain Management	Destructions (Neurolysis & Adhesiolysis)	Neurolysis	593	671	780	13%	31%	146	98	62	-33%	-57%	OR	593	671	780	0.13	0.31
Pain Management	Injections/Blocks	Injection - Epidural	4,409	4,900	5,647	11%	28%	1,531	1,220	972	-20%	-37%	0					
Pain Management	Injections/Blocks	Injection - Facet Joint	1,031	1,137	1,295	10%	26%	358	283	223	-21%	-38%	0					
Pain Management	Injections/Blocks	Injection - Other	82	93	110	14%	35%	28	23	19	-19%	-33%	0					
Pain Management	Injections/Blocks	Injection - Somatic Nerve	1,088	1,196	1,356	10%	25%	171	143	119	-16%	-30%	0					

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
														OR Case Volumes				
Pain Management	Injections/Blocks	Injection - Sympathetic Nerve	97	98	103	1%	6%	34	24	18	-27%	-47%	0					
Pain Management	Injections/Blocks	Sacroiliac Joint Injection	6	7	8	12%	30%	2	2	1	-20%	-35%	0					
Pain Management	Injections/Blocks	Trigger Point Injection	1,205	1,285	1,419	7%	18%	96	77	62	-20%	-35%	0					
Pain Management	Intradiscal Electrothermal Therapy (IDET)	Intradiscal Electrothermal Therapy (IDET)	4	5	5	4%	11%	4	4	4	4%	11%	OR	4	5	5	0.04	0.11
Pain Management	Other Pain Management Procedures	Other Pain Management Procedures	1	1	1	-2%	-1%	0	0	0	-30%	-51%	0					
Pain Management	Other Pain Management Procedures	Prolotherapy	3	4	4	8%	19%	0	0	0	8%	19%	0					
Physical Therapy/Re	Attended Physical Therapy Application	Contrast Bath	7	7	8	3%	8%	0	0	0	3%	8%	0					
Physical Therapy/Re	Attended Physical Therapy Application	Electrical Stimulation - Attended	1,494	1,757	2,135	18%	43%	60	70	85	18%	43%	0					
Physical Therapy/Re	Attended Physical Therapy Application	Hubbard Tank	8	7	7	-5%	-9%	0	0	0	-5%	-9%	0					
Physical Therapy/Re	Attended Physical Therapy Application	Iontophoresis	390	407	435	4%	12%	51	53	57	4%	12%	0					
Physical Therapy/Re	Attended Physical Therapy Application	Other Application	117	119	123	1%	5%	5	5	5	1%	5%	0					
Physical Therapy/Re	Attended Physical Therapy Application	Ultrasound	1,612	1,630	1,691	1%	5%	113	114	118	1%	5%	0					
Physical Therapy/Re	Evaluations/Tests	Athletic Training Evaluation	2	2	2	-2%	-2%	0	0	0	-2%	-2%	0					
Physical Therapy/Re	Evaluations/Tests	Occupational Therapy Evaluation	388	386	393	0%	1%	50	50	51	0%	1%	0					
Physical Therapy/Re	Evaluations/Tests	Orthotic/Prosthetic Checkout	89	88	89	-1%	0%	9	9	9	-1%	0%	0					
Physical Therapy/Re	Evaluations/Tests	Physical Performance Test	126	125	128	0%	2%	9	9	9	0%	2%	0					
Physical Therapy/Re	Evaluations/Tests	Physical Therapy Evaluation	4,582	4,511	4,528	-2%	-1%	1,054	1,038	1,041	-2%	-1%	0					
Physical Therapy/Re	Therapeutic Procedures	Acupuncture	2,240	2,208	2,234	-1%	0%	45	44	45	-1%	0%	0					
Physical Therapy/Re	Therapeutic Procedures	Aquatic Exercise	1,632	2,002	2,523	23%	55%	114	140	177	23%	55%	0					
Physical Therapy/Re	Therapeutic Procedures	Biofeedback Training (non-Incontinence)	112	111	115	-1%	2%	4	4	5	-1%	2%	0					
Physical Therapy/Re	Therapeutic Procedures	Chiropractic Manipulation	93,264	93,708	97,176	0%	4%	933	937	972	0%	4%	0					
Physical Therapy/Re	Therapeutic Procedures	Cognitive Skills Development	77	86	100	11%	29%	14	15	18	11%	29%	0					
Physical Therapy/Re	Therapeutic Procedures	Gait Training Therapy	1,240	1,284	1,384	4%	12%	99	103	111	4%	12%	0					
Physical Therapy/Re	Therapeutic Procedures	Group Therapeutic Procedures	606	651	718	7%	18%	121	130	144	7%	18%	0					
Physical Therapy/Re	Therapeutic Procedures	Home Health Services	306	400	526	31%	72%	0	0	0	0%	0%	0					
Physical Therapy/Re	Therapeutic Procedures	Manual Therapy	40,630	47,162	56,235	16%	38%	1,625	1,886	2,249	16%	38%	0					
Physical Therapy/Re	Therapeutic Procedures	Massage Therapy	5,645	6,019	6,641	7%	18%	169	181	199	7%	18%	0					
Physical Therapy/Re	Therapeutic Procedures	Neuromuscular Reeducation	5,856	6,788	8,137	16%	39%	176	204	244	16%	39%	0					
Physical Therapy/Re	Therapeutic Procedures	Occupational Therapy	4	4	4	-1%	-1%	1	1	1	-1%	-1%	0					
Physical Therapy/Re	Therapeutic Procedures	Orthotic Training	232	231	237	0%	2%	28	28	28	0%	2%	0					
Physical Therapy/Re	Therapeutic Procedures	Osteopathic Manipulation	1,577	1,598	1,675	1%	6%	16	16	17	1%	6%	0					
Physical Therapy/Re	Therapeutic Procedures	Other Therapeutic Procedures	1,321	1,301	1,308	-1%	-1%	238	234	235	-1%	-1%	0					
Physical Therapy/Re	Therapeutic Procedures	Self Care Training	501	504	524	1%	5%	45	45	47	1%	5%	0					
Physical Therapy/Re	Therapeutic Procedures	Therapeutic Activities	8,850	10,769	13,538	22%	53%	442	538	677	22%	53%	0					
Physical Therapy/Re	Therapeutic Procedures	Therapeutic Exercises	28,390	34,348	42,610	21%	50%	2,839	3,435	4,261	21%	50%	0					
Physical Therapy/Re	Therapeutic Procedures	Work Conditioning	65	76	92	17%	43%	1	2	2	17%	43%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Diathermy	70	64	60	-9%	-14%	1	1	1	-9%	-14%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Electrical Stimulation - Unattended	1,235	1,112	1,027	-10%	-17%	49	44	41	-10%	-17%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Hot/Cold Pack Application	601	608	635	1%	6%	42	43	44	1%	6%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Infrared	54	54	57	1%	6%	1	1	1	1%	6%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Microwave	1	1	1	5%	12%	0	0	0	5%	12%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Paraffin Bath	27	28	30	4%	14%	2	2	2	4%	14%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Traction	595	591	605	-1%	2%	18	18	18	-1%	2%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Ultraviolet	8	8	8	2%	4%	1	1	1	2%	4%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Vasopneumatic Device Application	27	28	30	3%	10%	1	1	1	3%	10%	0					
Physical Therapy/Re	Unattended Physical Therapy Application	Whirlpool	122	126	134	3%	10%	4	4	4	3%	10%	0					
Podiatry	General Podiatry	Avulsion - Nail Plate	1,371	1,420	1,528	4%	11%	27	28	31	4%	11%	0					
Podiatry	General Podiatry	Biopsy - Nail	76	89	109	18%	45%	2	2	2	18%	45%	0					
Podiatry	General Podiatry	Clot Drainage - Nail	85	86	91	2%	7%	22	22	24	2%	7%	0					
Podiatry	General Podiatry	Corn/Callus Procedures	3,196	3,525	4,086	10%	28%	64	71	82	10%	28%	0					
Podiatry	General Podiatry	Debridement - Nail	7,662	8,084	8,976	6%	17%	153	162	180	6%	17%	0					
Podiatry	General Podiatry	Excision - Nail Fold	116	120	129	3%	11%	6	6	6	3%	11%	0					
Podiatry	General Podiatry	Loss of Protective Sensation (LOPS) Evaluation/Services	40	48	60	20%	49%	1	1	2	20%	49%	0					
Podiatry	General Podiatry	Nail Trimming	809	895	1,040	11%	29%	24	27	31	11%	29%	0					
Podiatry	General Podiatry	Removal - Nail	1,075	1,085	1,128	1%	5%	32	33	34	1%	5%	0					
Podiatry	General Podiatry	Repair - Nail	26	26	27	1%	5%	16	16	17	1%	5%	0					
Psychiatry	Psychiatry	Diagnostic Interview	6,943	6,817	6,938	-2%	0%	486	477	486	-2%	0%	0					
Psychiatry	Psychiatry	Electroconvulsive Therapy	138	141	150	2%	9%	119	122	129	2%	9%	0					
Psychiatry	Psychiatry	Environmental Intervention	48	47	47	-2%	-2%	5	5	5	-2%	-2%	0					
Psychiatry	Psychiatry	Family Psychotherapy	5,809	5,607	5,648	-3%	-3%	232	224	226	-3%	-3%	0					
Psychiatry	Psychiatry	Group Psychotherapy	3,614	3,529	3,544	-2%	-2%	398	388	390	-2%	-2%	0					
Psychiatry	Psychiatry	Hypnotherapy	12	12	12	2%	6%	0	0	0	2%	6%	0					
Psychiatry	Psychiatry	Medication Management	14,118	13,956	14,223	-1%	1%	1,129	1,116	1,138	-1%	1%	0					
Psychiatry	Psychiatry	Narcosynthesis	1	1	1	-1%	1%	0	0	0	0%	0%	0					
Psychiatry	Psychiatry	Other Psychiatric Services	316	311	317	-2%	0%	44	44	44	-2%	0%	0					
Psychiatry	Psychiatry	Psychoanalysis	12	11	11	-3%	-3%	1	1	1	-4%	-3%	0					
Psychiatry	Psychiatry	Psychophysiological Therapy	41	39	39	-3%	-3%	0	0	0	-3%	-3%	0					
Psychiatry	Psychiatry	Psychotherapy - Office/Outpatient	81,601	79,545	79,904	-3%	-2%	2,448	2,386	2,397	-3%	-2%	0					
Pulmonology	Bronchoscopy	Bronchoscopy - Diagnostic	113	150	204	32%	81%	99	130	178	31%	79%	0					
Pulmonology	Bronchoscopy	Bronchoscopy - Procedural	259	344	472	33%	83%	227	300	411	32%	81%	0					
Pulmonology	Bronchoscopy	Tracheobronchoscopy	18	28	47	61%	166%	3	4	7	61%	166%	0					
Pulmonology	Pulmonary Function/Diagnostic Testing	Airway Closing Volume	72	79	89	10%	23%	11	12	13	10%	23%	0					
Pulmonology	Pulmonary Function/Diagnostic Testing	Carbon Monoxide Diffusion	158	183	215	16%	37%	24	27	32	16%	37%	0					
Pulmonology	Pulmonary Function/Diagnostic Testing	CO2 Expiration	4	5	5	13%	35%	1	1	1	13%	35%	0					
Pulmonology	Pulmonary Function/Diagnostic Testing	Compliance Study	21	24	29	15%	34%	3	4	4	15%	34%	0					
Pulmonology	Pulmonary Function/Diagnostic Testing	Expired Gas Analysis	27	31	35	13%	30%	4	5	5	13%	30%	0					
Pulmonology	Pulmonary Function/Diagnostic Testing	Flow Volume Loop	339	381	438	12%	29%	51	57	66	12%	29%	0					
Pulmonology	Pulmonary Function/Diagnostic Testing	Function Test	260	284	315	9%	21%	39	43	47	9%	21%	0					
Pulmonology	Pulmonary Function/Diagnostic Testing	Maldistribution Analysis	4	4	5	17%	40%	1	1	1	17%	40%	0					

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth
Pulmonology	Pulmonary Function/Diagnostic Testing	Membrane Diffusion	1	1	2	16%	38%	0	0	0	16%	38%
Pulmonology	Pulmonary Function/Diagnostic Testing	Other Pulmonary Diagnostic Testing	32	36	41	13%	29%	5	5	6	13%	29%
Pulmonology	Pulmonary Function/Diagnostic Testing	Oxygen Saturation	4,955	5,569	6,386	12%	29%	743	835	958	12%	29%
Pulmonology	Pulmonary Function/Diagnostic Testing	Plethysmography	329	340	359	3%	9%	63	65	68	3%	9%
Pulmonology	Pulmonary Function/Diagnostic Testing	Resistance Test	16	18	21	13%	30%	2	3	3	13%	30%
Pulmonology	Pulmonary Function/Diagnostic Testing	Spirometry (Breathing Capacity)	8,785	9,857	11,256	12%	28%	1,318	1,479	1,688	12%	28%
Pulmonology	Pulmonary Function/Diagnostic Testing	Stress Test	94	109	128	16%	36%	14	16	19	16%	36%
Pulmonology	Pulmonary Function/Diagnostic Testing	Thoracic Gas Volume	5	5	7	19%	44%	1	1	1	19%	44%
Pulmonology	Pulmonary Function/Diagnostic Testing	Vital Capacity Test	580	630	696	9%	20%	87	94	104	9%	20%
Pulmonology	Respiratory Rehabilitation/Assistance	Chest Wall Manipulation for Lung Function	161	211	286	31%	77%	3	4	6	31%	77%
Pulmonology	Respiratory Rehabilitation/Assistance	Chest/Lung Drainage - Needle	113	120	133	7%	18%	81	87	95	7%	18%
Pulmonology	Respiratory Rehabilitation/Assistance	Inhalation Treatment/Sputum Induction	2,826	3,707	5,000	31%	77%	113	148	200	31%	77%
Pulmonology	Respiratory Rehabilitation/Assistance	NETT Pulmonary Rehabilitation	0	1	1	4%	12%	0	0	0	3%	12%
Pulmonology	Respiratory Rehabilitation/Assistance	Oxygenator/Heat Exchanger Assembly/Operation	2	2	2	4%	9%	0	0	0	3%	9%
Pulmonology	Respiratory Rehabilitation/Assistance	Pneumonia Inhalation Treatment	21	22	24	7%	17%	3	3	3	7%	17%
Pulmonology	Respiratory Rehabilitation/Assistance	Respiratory Strength Therapy	43	58	78	36%	82%	14	15	16	3%	14%
Pulmonology	Respiratory Rehabilitation/Assistance	Ventilation Assistance	1,955	1,991	2,082	2%	6%	98	100	104	2%	6%
Pulmonology	Respiratory Rehabilitation/Assistance	Ventilation Assistance - CNAP	1	1	1	2%	6%	0	0	0	2%	6%
Pulmonology	Respiratory Rehabilitation/Assistance	Ventilation Assistance - CPAP	112	160	228	42%	103%	21	24	28	16%	37%
Radiology	CT	Abdominal/Pelvic CT	16,414	16,731	17,640	2%	7%	11,526	12,050	13,226	5%	15%
Radiology	CT	Abdominal/Pelvic CT Angiography	323	456	567	41%	76%	225	325	421	45%	87%
Radiology	CT	Bone Density CT	223	203	195	-9%	-12%	128	119	119	-7%	-7%
Radiology	CT	Cardiac CT	33	39	44	15%	31%	26	31	37	19%	42%
Radiology	CT	Cardiac CT Angiography	164	222	259	35%	58%	111	153	186	38%	68%
Radiology	CT	Chest CT	6,193	6,427	6,919	4%	12%	4,184	4,446	4,978	6%	19%
Radiology	CT	Chest CT Angiography	246	264	290	8%	18%	191	212	244	11%	28%
Radiology	CT	CT Colonography (Virtual Colonoscopy)	59	76	84	27%	42%	53	69	77	29%	45%
Radiology	CT	Extremity CT	608	616	637	1%	5%	382	397	428	4%	12%
Radiology	CT	Extremity CT Angiography	7	10	12	40%	72%	4	6	8	44%	86%
Radiology	CT	Head/Neck/Brain CT	13,838	13,776	14,416	0%	4%	10,362	10,587	11,543	2%	11%
Radiology	CT	Head/Neck/Brain CT Angiography	379	466	540	23%	42%	263	332	401	26%	52%
Radiology	CT	Other CT	533	532	558	0%	5%	279	288	315	3%	13%
Radiology	CT	Other CT Angiography	1	1	1	4%	13%	1	1	1	7%	21%
Radiology	CT	Spine CT	1,346	1,312	1,351	-3%	0%	918	918	984	0%	7%
Radiology	Mammography	Mammography Diagnostic	7,632	7,852	8,570	3%	12%	4,324	4,561	5,103	5%	18%
Radiology	Mammography	Mammography Screening	21,752	22,379	24,424	3%	12%	12,296	13,034	14,657	6%	19%
Radiology	MRI	Abdominal/Pelvic MR Angiography	290	337	383	16%	32%	155	199	256	29%	65%
Radiology	MRI	Abdominal/Pelvic MRI	916	986	1,054	8%	15%	457	542	648	19%	42%
Radiology	MRI	Bone/Joint MRI	7,308	7,885	8,272	8%	13%	2,721	3,257	3,853	20%	42%
Radiology	MRI	Brain MR Angiography	1,614	1,595	1,580	-1%	-2%	663	730	820	10%	24%
Radiology	MRI	Brain MRI	4,046	4,331	4,589	7%	13%	1,964	2,324	2,773	18%	41%
Radiology	MRI	Breast MRI	707	768	788	9%	11%	255	315	372	23%	46%
Radiology	MRI	Cardiac MRI	48	55	61	16%	28%	29	37	46	28%	58%
Radiology	MRI	Chest MR Angiography	24	26	29	10%	21%	13	16	19	21%	50%
Radiology	MRI	Chest MRI	48	49	49	1%	2%	18	20	23	14%	31%
Radiology	MRI	Extremity MR Angiography	212	260	318	23%	50%	115	155	212	35%	85%
Radiology	MRI	Head/Neck MR Angiography	542	618	709	14%	31%	271	340	437	26%	61%
Radiology	MRI	Head/Neck MRI	206	218	229	6%	11%	85	100	118	18%	39%
Radiology	MRI	MR Spectroscopy	3	3	3	3%	7%	2	2	2	13%	32%
Radiology	MRI	MRI Guided Procedure	3	4	6	49%	120%	2	3	5	64%	171%
Radiology	MRI	Other MRI	4	4	4	0%	0%	1	1	1	12%	28%
Radiology	MRI	Spine MR Angiography	1	1	1	0%	2%	0	0	0	11%	28%
Radiology	MRI	Spine MRI	8,761	8,996	9,114	3%	4%	3,519	4,010	4,581	14%	30%
Radiology	Nuclear Medicine	Bone Nuclear Imaging	1,944	1,997	2,116	3%	9%	1,458	1,589	1,769	9%	21%
Radiology	Nuclear Medicine	Brain Nuclear Imaging	15	14	12	-6%	-18%	9	9	8	0%	-8%
Radiology	Nuclear Medicine	Cardiology Nuclear Imaging	2,489	2,405	2,506	-3%	1%	1,171	1,218	1,349	4%	15%
Radiology	Nuclear Medicine	Cerebrospinal Nuclear Imaging	12	13	14	4%	16%	9	9	11	11%	31%
Radiology	Nuclear Medicine	Gastrointestinal Nuclear Imaging	840	875	946	4%	13%	638	705	802	11%	26%
Radiology	Nuclear Medicine	Genitourinary Nuclear Imaging	37	37	36	0%	-3%	9	10	10	6%	9%
Radiology	Nuclear Medicine	Hematological/Lymphatic Nuclear Imaging	66	71	83	7%	26%	56	63	74	13%	32%
Radiology	Nuclear Medicine	Inflammatory Nuclear Imaging	37	39	44	5%	18%	31	34	38	10%	24%
Radiology	Nuclear Medicine	Kidney Nuclear Imaging	172	179	199	4%	16%	134	148	173	11%	29%
Radiology	Nuclear Medicine	Liver/Spleen Nuclear Imaging	38	35	27	-9%	-30%	29	28	23	-3%	-22%
Radiology	Nuclear Medicine	Lung Nuclear Imaging	152	136	104	-10%	-31%	132	125	96	-5%	-27%
Radiology	Nuclear Medicine	Other Nuclear Medicine	50	53	58	5%	15%	9	11	13	14%	33%
Radiology	Nuclear Medicine	Radiopharmaceutical Therapy	94	95	96	1%	2%	63	67	72	8%	15%
Radiology	Nuclear Medicine	Thyroid Nuclear Imaging	591	601	617	2%	4%	448	485	525	8%	17%
Radiology	Nuclear Medicine	Tumor Nuclear Imaging	34	28	17	-17%	-51%	26	23	15	-11%	-44%
Radiology	Nuclear Medicine	Vascular Nuclear Imaging	4	4	4	5%	19%	3	3	4	21%	62%
Radiology	PET	Brain PET	54	82	110	52%	105%	26	45	68	70%	157%
Radiology	PET	Myocardial PET	22	32	44	44%	100%	11	17	27	61%	152%
Radiology	PET	Tumor PET	2,061	2,395	2,887	16%	40%	1,012	1,313	1,783	30%	76%
Radiology	Ultrasound	AAA Screen	87	127	198	45%	127%	45	65	102	46%	128%
Radiology	Ultrasound	Abdominal Ultrasound	11,078	12,555	14,479	13%	31%	5,668	6,456	7,446	14%	31%
Radiology	Ultrasound	Bone Density Ultrasound	107	107	97	1%	-10%	2	2	2	1%	-10%
Radiology	Ultrasound	Breast Ultrasound	5,305	5,823	6,309	10%	19%	2,710	2,982	3,231	10%	19%
Radiology	Ultrasound	Extracranial Ultrasound	3,971	4,709	5,877	19%	48%	1,450	1,753	2,221	21%	53%
Radiology	Ultrasound	Head/Neck Ultrasound	2,170	2,437	2,752	12%	27%	923	1,046	1,188	13%	29%
Radiology	Ultrasound	Obstetrical Ultrasound	12,946	14,011	15,571	8%	20%	3,506	3,813	4,237	9%	21%

OR Case Volumes

Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
0					

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
														OR Case Volumes				
Radiology	Ultrasound	Ophthalmic Ultrasound	2,059	2,256	2,453	10%	19%	41	45	49	10%	19%	0					
Radiology	Ultrasound	Other Ultrasound	5,536	5,876	6,098	6%	10%	1,278	1,364	1,416	7%	11%	0					
Radiology	Ultrasound	Pelvic Ultrasound	6,551	6,656	6,427	2%	-2%	2,065	2,124	2,068	3%	0%	0					
Radiology	Ultrasound	Ultrasound Guided Procedure	361	416	480	15%	33%	172	198	228	15%	33%	0					
Radiology	X-Ray	Abdominal X-Ray	6,113	6,261	6,436	2%	5%	4,157	4,258	4,376	2%	5%	0					
Radiology	X-Ray	Arthrography	102	101	95	-1%	-7%	55	55	52	-1%	-6%	0					
Radiology	X-Ray	Bone Density X-Ray	8,162	8,829	9,812	8%	20%	2,449	2,649	2,943	8%	20%	0					
Radiology	X-Ray	Chest X-Ray	40,048	40,936	41,765	2%	4%	25,033	25,519	25,977	2%	4%	0					
Radiology	X-Ray	Diskography	39	40	41	3%	6%	23	24	25	3%	6%	0					
Radiology	X-Ray	Gastrointestinal X-Ray	2,862	2,830	2,702	-1%	-6%	2,075	2,047	1,951	-1%	-6%	0					
Radiology	X-Ray	Genitourinary X-Ray	421	415	408	-1%	-3%	297	292	286	-2%	-4%	0					
Radiology	X-Ray	Head/Skull X-Ray	2,347	2,275	2,122	-3%	-10%	892	865	806	-3%	-10%	0					
Radiology	X-Ray	Joint X-Ray	308	320	338	4%	10%	111	115	122	4%	10%	0					
Radiology	X-Ray	Musculoskeletal X-Ray	50,994	50,780	49,412	0%	-3%	16,828	16,757	16,306	0%	-3%	0					
Radiology	X-Ray	Myelography	76	82	93	8%	23%	49	53	61	8%	23%	0					
Radiology	X-Ray	Neck/Spine X-Ray	10,984	10,979	10,758	0%	-2%	4,286	4,248	4,133	-1%	-4%	0					
Radiology	X-Ray	Other X-Ray	1,217	1,282	1,388	5%	14%	456	483	525	6%	15%	0					
Radiology	X-Ray	Pyelography	1,062	1,049	998	-1%	-6%	738	727	691	-1%	-6%	0					
Radiology	X-Ray	X-Ray Angiography	54	56	58	3%	7%	51	53	55	3%	7%	0					
Radiology	X-Ray	X-Ray Fluoroscopy	234	232	224	-1%	-4%	126	125	121	-1%	-4%	0					
Spine	Decompression	Discectomy - Conventional	154	247	385	60%	149%	127	173	227	37%	79%	OR	154	247	385	0.6	1.49
Spine	Decompression	Discectomy - Percutaneous	17	16	14	-7%	-16%	7	6	4	-24%	-43%	OR	17	16	14	-0.07	-0.16
Spine	Decompression	Laminectomy	46	72	113	57%	145%	42	62	89	46%	112%	OR	46	72	113	0.57	1.45
Spine	Decompression	Other Decompression Procedures - Spine	7	6	5	-10%	-19%	4	4	4	-10%	-19%	OR	7	6	5	-0.1	-0.19
Spine	Excision/Osteotomy	Vertebral Osteotomy - Anterior (Includes Discectomy)	1	1	1	1%	1%	1	1	1	-3%	-8%	OR	1	1	1	0.01	0.01
Spine	Fusion	Spinal Fusion - Cervical	30	47	71	58%	139%	28	42	61	51%	116%	OR	30	47	71	0.58	1.39
Spine	Fusion	Spinal Fusion - Exploration	1	1	2	55%	144%	1	1	2	54%	139%	OR	1	1	2	0.55	1.44
Spine	Fusion	Spinal Fusion - Lumbar/Thoracic	1	2	3	58%	150%	1	2	3	57%	145%	OR	1	2	3	0.58	1.5
Spine	Other Spine Procedures	Biopsy - Bone - Spine	3	3	3	1%	4%	2	2	2	-3%	-4%	OR	3	3	3	0.01	0.04
Spine	Other Spine Procedures	Biopsy - Spinal Cord	1	1	1	6%	13%	0	0	1	6%	13%	OR	1	1	1	0.06	0.13
Spine	Other Spine Procedures	Bone Graft - Spine	1	2	2	8%	19%	1	1	2	5%	11%	OR	1	2	2	0.08	0.19
Spine	Other Spine Procedures	Fracture Treatment - Spine	15	16	17	4%	12%	5	5	6	4%	12%	OR	15	16	17	0.04	0.12
Spine	Other Spine Procedures	Other Procedures - Spine	46	46	47	-1%	1%	34	34	34	-1%	1%	OR	46	46	47	-0.01	0.01
Spine	Other Spine Procedures	Spinal Component Excision	2	2	2	1%	3%	1	1	1	-6%	-11%	OR	2	2	2	0.01	0.03
Spine	Other Spine Procedures	Spinal Instrumentation Application/Removal	3	3	3	8%	19%	2	2	3	6%	14%	OR	3	3	3	0.08	0.19
Spine	Other Spine Procedures	Spinal Puncture	254	254	258	0%	2%	216	216	220	0%	2%	OR	254	254	258	0	0.02
Spine	Pain Pumps & Stimulators	Drug Infusion Pump - Analysis	141	151	166	7%	18%	38	36	35	-4%	-7%	0					
Spine	Pain Pumps & Stimulators	Drug Infusion Pump - Catheter Implantation/Removal	12	13	15	8%	22%	10	10	11	5%	13%	0					
Spine	Pain Pumps & Stimulators	Drug Infusion Pump - Pump Implantation/Removal	4	5	5	8%	21%	3	4	4	4%	12%	0					
Spine	Pain Pumps & Stimulators	Drug Infusion Pump - Refilling and Maintenance	140	150	165	8%	18%	12	9	6	-28%	-50%	0					
Spine	Pain Pumps & Stimulators	Spinal Cord Stimulator Lead/Pulse Generator Implant/Removal	66	91	128	37%	94%	47	63	86	34%	84%	0					
Spine	Vertebral Compression Fracture Treatment	Kyphoplasty	34	36	39	6%	13%	33	34	36	4%	9%	OR	34	36	39	0.06	0.13
Spine	Vertebral Compression Fracture Treatment	Vertebroplasty	99	105	112	6%	13%	92	95	100	3%	8%	OR	99	105	112	0.06	0.13
Thoracic Surgery	Mediastinoscopy	Mediastinoscopy - Diagnostic/Biopsy	16	19	22	13%	31%	15	17	19	13%	31%	OR	16	19	22	0.13	0.31
Thoracic Surgery	Other Thoracic Surgery	Collapsed Lung Treatment	37	46	58	24%	57%	32	39	50	24%	57%	OR	37	46	58	0.24	0.57
Thoracic Surgery	Other Thoracic Surgery	Fracture Treatment - Rib/Sternum	41	44	49	8%	19%	29	31	34	8%	19%	OR	41	44	49	0.08	0.19
Thoracic Surgery	Other Thoracic Surgery	Other Thoracic Procedures	5	6	6	3%	8%	4	4	4	3%	8%	OR	5	6	6	0.03	0.08
Thoracic Surgery	Other Thoracic Surgery	Rib Removal	1	1	1	5%	12%	1	1	1	5%	12%	OR	1	1	1	0.05	0.12
Thoracic Surgery	Other Thoracic Surgery	Thoracostomy - Chest Tube Insertion	11	12	13	8%	20%	9	10	11	8%	20%	OR	11	12	13	0.08	0.2
Thoracic Surgery	Other Thoracic Surgery	Tumor Removal - Chest Wall	2	2	2	2%	8%	1	1	1	2%	8%	OR	2	2	2	0.02	0.08
Thoracic Surgery	Percutaneous Lung Biopsy	Biopsy - Percutaneous - Lung	90	108	133	19%	48%	81	97	120	19%	48%	OR	90	108	133	0.19	0.48
Thoracic Surgery	Thoracoscopy	Thoracoscopy - Biopsy	1	1	1	28%	72%	1	1	1	28%	72%	OR	1	1	1	0.28	0.72
Thoracic Surgery	Thoracoscopy	Thoracoscopy - Diagnostic	0	0	1	25%	66%	0	0	1	25%	66%	OR	0	0	1	0.25	0.66
Trauma	Burn Treatment	Burn Dressing/Debridement	224	224	225	0%	0%	63	63	63	0%	0%	0					
Trauma	Other Trauma	Induction of Vomiting	2	2	2	0%	-1%	1	1	1	0%	-1%	0					
Trauma	Wound Care	Active Wound Care Management	338	407	482	20%	43%	84	102	121	20%	43%	0					
Trauma	Wound Care	Debridement - Muscle/Bone	194	213	237	10%	22%	101	111	123	10%	22%	OR	194	213	237	0.1	0.22
Trauma	Wound Care	Debridement - Skin	3,563	3,721	3,922	4%	10%	784	819	863	4%	10%	0					
Trauma	Wound Care	Electrostimulation - Wound	64	88	119	38%	87%	1	2	2	38%	87%	0					
Trauma	Wound Care	Hyperbaric Oxygen Therapy	473	618	791	30%	67%	350	427	510	22%	46%	0					
Trauma	Wound Care	Penetrating Wound Exploration	9	9	9	-1%	0%	7	7	7	-1%	0%	0					
Trauma	Wound Care	Superficial Wound Repair	3,827	3,820	3,867	0%	1%	1,646	1,643	1,663	0%	1%	0					
Trauma	Wound Care	Suture Removal	46	46	47	0%	2%	3	3	3	0%	2%	0					
Trauma	Wound Care	Wound Closure - Complex	214	218	225	2%	5%	167	170	175	2%	5%	OR	214	218	225	0.02	0.05
Trauma	Wound Care	Wound Closure - Intermediate	421	422	428	0%	2%	278	278	282	0%	2%	0					
Trauma	Wound Care	Wound Closure - Simple	71	73	76	3%	6%	42	43	45	3%	6%	0					
Trauma	Wound Care	Wound Drainage	25	26	27	3%	7%	6	7	7	3%	7%	0					
Urology	General Urology	Anticarcinogenic Agent Injection - Bladder	419	497	613	19%	46%	13	15	18	19%	46%	OR	419	497	613	0.19	0.46
Urology	General Urology	Aspiration - Bladder	19	20	22	5%	15%	10	11	12	5%	15%	0					
Urology	General Urology	Biopsy - Urethra	2	3	3	21%	52%	1	1	2	14%	38%	0					
Urology	General Urology	Bladder Irrigation	348	415	511	19%	47%	21	25	31	19%	47%	0					
Urology	General Urology	Catheter Implantation - Bladder	841	965	1,155	15%	37%	76	87	104	15%	37%	0					
Urology	General Urology	Cystoscopy - Biopsy	81	88	99	9%	23%	8	9	10	9%	23%	Cysto Rm					
Urology	General Urology	Cystoscopy - Bladder Dilation	44	45	48	3%	9%	4	5	5	3%	9%	Cysto Rm					
Urology	General Urology	Cystoscopy - Diagnostic	2,334	2,530	2,830	8%	21%	233	253	283	8%	21%	Cysto Rm					
Urology	General Urology	Cystoscopy - Female Urethral Syndrome Treatment	34	36	39	6%	15%	3	4	4	6%	15%	Cysto Rm					
Urology	General Urology	Cystoscopy - Other Lesion Resection/Fulguration	65	71	81	9%	25%	7	7	8	9%	25%	Cysto Rm					
Urology	General Urology	Cystoscopy - Other Procedures	18	19	22	8%	21%	2	2	2	8%	21%	Cysto Rm					
Urology	General Urology	Cystoscopy - Stent Implantation	119	127	141	7%	19%	12	13	14	7%	19%	Cysto Rm					

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	Procedure Location	OR Case Volumes 2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Urology	General Urology	Cystoscopy - Stricture Repair	7	7	8	7%	16%	1	1	1	7%	16%	Cysto Rm					
Urology	General Urology	Cystoscopy - Tumor Resection/Fulguration - Bladder	146	160	183	10%	26%	15	16	18	10%	26%	OR	146	160	183	0.1	0.26
Urology	General Urology	Cystoscopy - Ureter Catheterization	125	134	148	7%	18%	13	13	15	7%	18%	Cysto Rm					
Urology	General Urology	Cystoscopy - Urethra Dilation	338	365	407	8%	20%	34	37	41	8%	20%	Cysto Rm					
Urology	General Urology	Cystoscopy - Urethra Incision	38	40	44	6%	17%	4	4	4	6%	17%	Cysto Rm					
Urology	General Urology	Cystostomy Tube Change	129	176	253	37%	97%	10	14	20	37%	97%	Cysto Rm					
Urology	General Urology	Lesion Drainage - Urethra	1	1	1	3%	11%	0	1	1	3%	11%	OR	1	1	1	0.03	0.11
Urology	General Urology	Lesion Excision - Urethra	4	5	5	3%	10%	3	3	3	3%	10%	OR	4	5	5	0.03	0.1
Urology	General Urology	Meatotomy - Urethra	10	10	11	1%	8%	7	7	7	0%	6%	OR	10	10	11	0.01	0.08
Urology	General Urology	Other Procedures - Bladder	9	9	10	6%	17%	6	7	7	6%	17%	OR	9	9	10	0.06	0.17
Urology	General Urology	Other Procedures - Ureter	2	2	2	7%	20%	1	1	2	7%	20%	OR	2	2	2	0.07	0.2
Urology	General Urology	Other Procedures - Urethra	4	4	4	2%	7%	3	3	3	2%	7%	OR	4	4	4	0.02	0.07
Urology	General Urology	Other Procedures - Urinary Tract	24	24	25	2%	7%	9	9	9	2%	7%	OR	24	24	25	0.02	0.07
Urology	General Urology	Revision/Repair - Urethra	26	30	36	15%	37%	20	22	25	9%	24%	OR	26	30	36	0.15	0.37
Urology	General Urology	Stricture Dilation - Urethra	279	264	260	-5%	-7%	262	248	244	-5%	-7%	OR	279	264	260	-0.05	-0.07
Urology	General Urology	Transurethral Resection - Bladder	23	28	34	19%	46%	17	19	22	13%	31%	OR	23	28	34	0.19	0.46
Urology	General Urology	Urethra Removal	2	2	2	-2%	-1%	2	1	1	-2%	-1%	OR	2	2	2	-0.02	-0.01
Urology	Incontinence	Biofeedback Training	121	181	292	50%	141%	8	13	20	50%	141%	0					
Urology	Incontinence	Bladder Reconstruction	1	0	0	-9%	-13%	1	0	0	-9%	-13%	OR	1	0	0	-0.09	-0.13
Urology	Incontinence	Implant Material Injection	29	25	24	-14%	-17%	18	13	11	-25%	-37%	OR	29	25	24	-0.14	-0.17
Urology	Incontinence	Implant Material Injection - Cystoscopy	3	2	2	-18%	-26%	2	1	1	-35%	-55%	OR	3	2	2	-0.18	-0.26
Urology	Incontinence	Inflatable Urethral Sphincter Procedures	6	7	8	19%	47%	5	6	7	17%	43%	OR	6	7	8	0.19	0.47
Urology	Incontinence	Pessary Implantation	208	196	202	-6%	-3%	10	10	10	-6%	-3%	OR	208	196	202	-0.06	-0.03
Urology	Incontinence	Pulsed Magnetic Neuromodulation	9	12	18	41%	104%	0	0	0	0%	0%	OR	9	12	18	0.41	1.04
Urology	Incontinence	Sling Procedure	168	257	415	53%	148%	137	200	307	46%	125%	OR	168	257	415	0.53	1.48
Urology	Incontinence	Sling Procedure - Laparoscopic	2	3	5	48%	134%	2	2	3	41%	113%	OR	2	3	5	0.48	1.34
Urology	Incontinence	Urethra Reconstruction	0	1	1	42%	119%	0	0	1	38%	105%	OR	0	1	1	0.42	1.19
Urology	Incontinence	Urethral Suspension - Laparoscopic	2	2	4	51%	139%	1	2	4	51%	139%	OR	2	2	4	0.51	1.39
Urology	Male Genital System	Biopsy - Male Genital System	17	18	20	6%	16%	5	5	5	3%	13%	OR	17	18	20	0.06	0.16
Urology	Male Genital System	Circumcision	211	221	238	5%	13%	99	104	112	5%	13%	OR	211	221	238	0.05	0.13
Urology	Male Genital System	Hydrocele Procedures	56	59	64	6%	15%	33	35	36	3%	9%	OR	56	59	64	0.06	0.15
Urology	Male Genital System	Lesion Destruction - Laser - Penis	5	5	5	-1%	1%	3	3	3	-2%	-1%	0					
Urology	Male Genital System	Lesion Destruction - Penis	118	123	132	4%	11%	6	6	7	4%	11%	0					
Urology	Male Genital System	Lesion Drainage - Testis/Scrotum	6	6	6	3%	8%	2	2	2	3%	8%	0					
Urology	Male Genital System	Lesion Excision - Epididymis	10	11	11	3%	6%	8	8	8	3%	6%	OR	10	11	11	0.03	0.06
Urology	Male Genital System	Lesion Excision - Penis	9	9	9	0%	3%	2	2	3	0%	3%	OR	9	9	9	0	0.03
Urology	Male Genital System	Lesion Excision - Scrotum	1	1	1	-1%	1%	0	0	0	-1%	1%	OR	1	1	1	-0.01	0.01
Urology	Male Genital System	Lesion Excision - Spermatic Cord	18	18	19	-1%	2%	14	13	14	-1%	2%	OR	18	18	19	-0.01	0.02
Urology	Male Genital System	Lesion Excision - Testis	1	1	1	0%	5%	0	0	0	0%	5%	OR	1	1	1	0	0.05
Urology	Male Genital System	Other Procedures - Male Genital System	75	78	82	4%	10%	19	20	21	4%	10%	OR	75	78	82	0.04	0.1
Urology	Male Genital System	Penile Prosthesis/Pump Procedures	12	11	9	-12%	-24%	11	10	8	-12%	-24%	OR	12	11	9	-0.12	-0.24
Urology	Male Genital System	Pharmacologic Injection - Penis	45	38	32	-16%	-29%	2	2	1	-16%	-29%	OR	45	38	32	-0.16	-0.29
Urology	Male Genital System	Removal - Epididymis	5	5	5	1%	4%	3	3	3	-6%	-10%	OR	5	5	5	0.01	0.04
Urology	Male Genital System	Removal - Scrotum	1	1	1	3%	8%	1	1	1	-4%	-7%	OR	1	1	1	0.03	0.08
Urology	Male Genital System	Revision/Repair - Penis	23	32	48	44%	112%	18	24	34	35%	87%	OR	23	32	48	0.44	1.12
Urology	Male Genital System	Testis Removal (Orchiectomy)	23	25	28	9%	23%	17	19	21	9%	23%	OR	23	25	28	0.09	0.23
Urology	Male Genital System	Testis Removal (Orchiectomy) - Laparoscopic	1	1	1	6%	15%	0	0	0	6%	15%	OR	1	1	1	0.06	0.15
Urology	Male Genital System	Testis Transplantation/Prosthesis Implantation	1	1	2	18%	42%	1	1	1	13%	31%	OR	1	1	2	0.18	0.42
Urology	Male Genital System	Undescended Testis Procedures	24	24	26	0%	5%	20	19	20	0%	5%	OR	24	24	26	0	0.05
Urology	Male Genital System	Undescended Testis Procedures - Laparoscopic	1	1	1	1%	7%	1	1	1	1%	7%	OR	1	1	1	0.01	0.07
Urology	Male Genital System	Vasectomy	446	437	449	-2%	1%	36	35	36	-2%	1%	OR	446	437	449	-0.02	0.01
Urology	Male Genital System	Vasectomy Reversal	2	2	2	-2%	0%	0	0	0	-3%	0%	OR	2	2	2	-0.02	0
Urology	Other Urological Diagnostic Testing	Male Genital Function Studies	12	13	15	5%	18%	1	1	1	5%	18%	0					
Urology	Prostate	Biopsy - Needle - Prostate	603	564	529	-6%	-12%	121	113	106	-6%	-12%	PROC RM					
Urology	Prostate	Biopsy - Open - Prostate	2	2	2	-8%	-17%	2	2	2	-8%	-17%	OR	2	2	2	-0.08	-0.17
Urology	Prostate	Brachytherapy Placement - Prostate	25	25	24	-2%	-6%	21	19	16	-11%	-22%	OR	25	25	24	-0.02	-0.06
Urology	Prostate	Cryosurgical Ablation - Prostate	4	6	9	41%	102%	3	4	5	30%	72%	OR	4	6	9	0.41	1.02
Urology	Prostate	Digital Rectal Exam	194	257	343	32%	77%	8	10	14	32%	77%	OR	194	257	343	0.32	0.77
Urology	Prostate	Incision - Prostate	4	5	5	7%	18%	3	3	3	7%	18%	OR	4	5	5	0.07	0.18
Urology	Prostate	Laser Coagulation - Prostate	47	78	124	67%	164%	15	20	27	41%	85%	OR	47	78	124	0.67	1.64
Urology	Prostate	Laser Vaporization - Prostate	13	22	34	66%	159%	4	6	7	39%	82%	OR	13	22	34	0.66	1.59
Urology	Prostate	Other Procedures - Prostate	1	1	1	6%	22%	1	1	1	6%	22%	0					
Urology	Prostate	Transurethral Microwave Therapy (TUMT)	69	97	133	40%	92%	2	2	2	-12%	-24%	OR	69	97	133	0.4	0.92
Urology	Prostate	Transurethral Needle Ablation (TUNA)	30	40	51	31%	71%	3	4	5	18%	53%	0					
Urology	Prostate	Transurethral Resection of the Prostate (TURP)	26	23	22	-11%	-17%	23	20	19	-12%	-19%	OR	26	23	22	-0.11	-0.17
Urology	Prostate	Water-Induced Thermotherapy (WIT)	1	1	1	37%	90%	0	0	0	39%	92%	0					
Urology	Renal Procedures	Abscess Drainage - Kidney	2	2	2	0%	1%	2	2	2	0%	1%	OR	2	2	2	0	0.01
Urology	Renal Procedures	Abscess Drainage - Kidney - Percutaneous	1	1	1	5%	11%	1	1	1	5%	11%	OR	1	1	1	0.05	0.11
Urology	Renal Procedures	Biopsy - Kidney - Percutaneous	48	55	62	13%	29%	42	44	47	6%	12%	OR	48	55	62	0.13	0.29
Urology	Renal Procedures	Catheter-Based Drainage/Injection - Kidney - Percutaneous	20	22	25	12%	30%	17	18	19	4%	11%	OR	20	22	25	0.12	0.3
Urology	Renal Procedures	Kidney Stone Removal - Percutaneous	3	3	4	11%	24%	3	3	4	11%	24%	OR	3	3	4	0.11	0.24
Urology	Renal Procedures	Lesion Aspiration/Injection - Kidney - Percutaneous	9	10	12	16%	37%	7	8	8	7%	19%	OR	9	10	12	0.16	0.37
Urology	Renal Procedures	Nephrostomy Implantation/Replacement	28	32	36	12%	28%	24	27	30	9%	23%	OR	28	32	36	0.12	0.28
Urology	Renal Procedures	Removal - Kidney - Laparoscopic	0	0	1	88%	261%	0	0	1	88%	261%	OR	0	0	1	0.88	2.61
Urology	Renal Procedures	Renal Endoscopy - Other Procedures	3	4	4	15%	34%	3	3	4	9%	20%	OR	3	4	4	0.15	0.34
Urology	Urodynamics	Cystometrogram	74	86	103	16%	39%	7	9	10	16%	39%	0					
Urology	Urodynamics	Kidney Function Study	8	8	9	3%	8%	3	3	3	3%	8%	0					
Urology	Urodynamics	Muscle Study (Electromyography) - Urethral/Anal Sphincter	214	253	311	18%	46%	21	25	31	18%	46%	0					
Urology	Urodynamics	Residual Urine Study - Ultrasound	219	265	338	21%	54%	22	26	34	21%	54%	0					

Service Line	Sub Service Line	OPG Description	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 HOPD Volume	2017 HOPD Volume	2022 HOPD Volume	5YR Growth	10YR Growth	Procedure Location	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
														OR Case Volumes				
Urology	Urodynamics	Urethral Pressure Profile (Upp)	12	13	16	14%	36%	1	1	2	14%	36%	0					
Urology	Urodynamics	Urinary Reflex Study	3	4	4	19%	44%	0	0	0	19%	44%	0					
Urology	Urodynamics	Urine Capacity Study - Ultrasound	1,645	1,960	2,444	19%	49%	164	196	244	19%	49%	0					
Urology	Urodynamics	Uroflowmetry	1,117	1,319	1,613	18%	44%	112	132	161	18%	44%	0					
Urology	Urodynamics	Voiding Pressure Studies	105	122	146	16%	39%	11	12	15	16%	39%	0					
Urology	Urolithiasis	Extracorporeal Shock Wave Lithotripsy (ESWL)	339	355	376	5%	11%	302	312	331	3%	10%	OR	339	355	376	0.05	0.11
Urology	Urolithiasis	Stone Destruction/Removal (Litholapaxy) - Cystoscopy	505	572	663	13%	31%	212	240	279	13%	31%	OR	505	572	663	0.13	0.31
Urology	Urolithiasis	Stone Removal - Open	2	2	2	-4%	-4%	2	2	2	-4%	-4%	OR	2	2	2	-0.04	-0.04
Vascular	Medical Vascular	Dynamic Infrared Perfusion Imaging (DIRI)	0	1	1	20%	51%	0	0	0	20%	51%	0					
Vascular	Medical Vascular	Other Non-Invasive Vascular Study	45	50	56	9%	23%	3	3	4	9%	23%	0					
Vascular	Medical Vascular	Peripheral Arterial Disease Rehabilitation	11	13	14	16%	22%	0	0	0	16%	22%	0					
Vascular	Medical Vascular	Sclerotherapy	208	223	226	7%	9%	6	7	7	7%	9%	0					
Vascular	Medical Vascular	Thermography	0	1	1	9%	20%	0	0	0	9%	20%	0					
Vascular	Medical Vascular	Vascular Ultrasound Study	7,736	8,520	9,599	10%	24%	3,636	3,839	4,145	6%	14%	0					
Vascular	Vascular Cath	Arterial Vascular Catheterization	344	290	266	-16%	-23%	295	247	224	-16%	-24%	0					
Vascular	Vascular Cath	Central Venous Access Procedures	809	946	1,138	17%	41%	704	823	990	17%	41%	0					
Vascular	Vascular Cath	Endovenous Laser Ablation	128	222	286	74%	125%	9	11	10	29%	15%	0					
Vascular	Vascular Cath	Endovenous Radiofrequency Ablation	124	223	300	80%	141%	8	11	10	33%	24%	0					
Vascular	Vascular Cath	Inferior Vena Cava Filter Placement	14	16	18	11%	26%	14	16	18	11%	26%	0					
Vascular	Vascular Cath	Intravascular Peripheral Ultrasound	1	2	3	61%	152%	1	2	2	61%	152%	0					
Vascular	Vascular Cath	Other Diagnostic Vascular Catheterization	17	19	21	11%	21%	14	15	17	11%	21%	0					
Vascular	Vascular Cath	Other Transcatheter Vascular Procedure	15	17	20	17%	40%	11	12	13	9%	22%	0					
Vascular	Vascular Cath	Percutaneous Transluminal Carotid Artery Stent Placement	0	1	1	67%	150%	0	1	1	67%	150%	Cath Lab					
Vascular	Vascular Cath	Percutaneous Transluminal Peripheral Artery Atherectomy	10	11	11	2%	4%	10	11	11	2%	4%	Cath Lab					
Vascular	Vascular Cath	Percutaneous Transluminal Peripheral Artery Balloon Angioplasty	90	101	113	12%	25%	87	94	100	7%	14%	Cath Lab					
Vascular	Vascular Cath	Percutaneous Transluminal Peripheral Artery Stent Placement	108	121	136	13%	27%	105	113	121	8%	15%	Cath Lab					
Vascular	Vascular Cath	Percutaneous Transluminal Peripheral Venous Balloon Angioplasty	222	275	315	24%	42%	186	228	262	23%	41%	Cath Lab					
Vascular	Vascular Cath	Transcatheter Biopsy	7	9	12	27%	60%	6	8	10	27%	60%	Cath Lab					
Vascular	Vascular Cath	Transcatheter Embolization	75	94	115	25%	53%	43	50	57	16%	32%	Cath Lab					
Vascular	Vascular Cath	Transcatheter Peripheral Thrombolysis	28	30	32	7%	14%	15	14	14	-1%	-2%	Cath Lab					
Vascular	Vascular Cath	Vascular Sealing Device Implant	25	30	35	19%	41%	25	30	35	19%	41%	0					
Vascular	Vascular Cath	Venous Catheterization	1,096	951	821	-13%	-25%	227	190	157	-16%	-31%	0					
Vascular	Vascular Surgery	Arterial Embolectomy/Thrombectomy	2	3	3	11%	29%	2	3	3	11%	29%	OR	2	3	3	0.11	0.29
Vascular	Vascular Surgery	Endovascular Abdominal Aortic Aneurysm Stent Graft Implant	1	1	1	20%	54%	1	1	1	20%	54%	OR	1	1	1	0.2	0.54
Vascular	Vascular Surgery	Hemodialysis Access/Shunt Procedures	209	228	256	9%	23%	178	191	213	8%	20%	OR	209	228	256	0.09	0.23
Vascular	Vascular Surgery	Intra-Arterial Infusion Pump Procedure	3	3	4	22%	51%	2	3	4	22%	51%	OR	3	3	4	0.22	0.51
Vascular	Vascular Surgery	Other Blood Vessel Repair	4	4	4	7%	21%	4	4	4	7%	21%	OR	4	4	4	0.07	0.21
Vascular	Vascular Surgery	Other Vascular Surgery	62	68	78	10%	26%	49	54	62	10%	26%	OR	62	68	78	0.1	0.26
Vascular	Vascular Surgery	Phlebectomy/Vein Stripping	18	16	16	-9%	-12%	10	9	9	-10%	-12%	OR	18	16	16	-0.09	-0.12
Vascular	Vascular Surgery	Portal Decompression Procedures	11	13	15	16%	35%	11	13	15	16%	35%	OR	11	13	15	0.16	0.35
Vascular	Vascular Surgery	Thromboendarterectomy	1	1	1	4%	13%	1	1	1	4%	13%	OR	1	1	1	0.04	0.13
Vascular	Vascular Surgery	Vascular Exploration/Revision	12	13	15	7%	20%	12	12	14	7%	20%	OR	12	13	15	0.07	0.2
Vascular	Vascular Surgery	Vascular Ligation	64	67	72	4%	13%	40	42	45	4%	13%	OR	64	67	72	0.04	0.13
Vascular	Vascular Surgery	Venous Thrombectomy	1	1	1	12%	32%	1	1	1	12%	32%	OR	1	1	1	0.12	0.32
Total			2422278	2534394	2727931			372943	386946	412807				39417	42642	48141	8%	22%

Health Care Advisory Board
Inpatient Market Estimator

Brief Description

Welcome to the Inpatient Market Estimator. Developed by the Advisory Board's Data and Analytics Group, this easy-to-use online tool generates population-based estimates of current and forecasted inpatient volumes, length of stay, and bed days for any geography within the US and may be useful for market-sizing and strategic planning purposes. Employing market-specific population figures adjusted for local age and gender characteristics, the tool applies national use rates to estimate likely inpatient utilization for a specific market by service lines, sub-service lines or individual DRGs. For more information please contact the Data and Analytics Group at Analytics@advisory.com

› select which level you would like to view your customized service esti

Service Line | Sub Service Line | MSDRG | ermar and Conditio

Service Name

Southington PSA

Service Description

LOCALES SELECTED

06450(Connecticut)
06023(Connecticut)
06037(Connecticut)
06052(Connecticut)
06492(Connecticut)
06111(Connecticut)
06053(Connecticut)
06479(Connecticut)
06410(Connecticut)
06062(Connecticut)
06451(Connecticut)
06051(Connecticut)
06489(Connecticut)

DEMOGRAPHICS SELECTED

0 - 4 years old
5 - 9 years old
10 - 14 years old
15 - 19 years old
20 - 24 years old
25 - 29 years old
30 - 34 years old
35 - 39 years old
40 - 44 years old
45 - 49 years old
50 - 54 years old
55 - 59 years old
60 - 64 years old
65 - 69 years old
70 - 74 years old
75 - 79 years old
80 - 84 years old
85+ years old
Female
Male

Service Line	2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth	2012 ALOS	2017 ALOS	2022 ALOS	2012 Days	2017 Days	2022 Days	5YR Growth	10YR Growth	Surgical	Surgical Cases 2012 Volume	2017 Volume	2022 Volume	5YR Growth	10YR Growth
Cardiac Services	5,549	4,751	4,417	-14%	-20%	4.0	4.1	4.2	22,078	19,703	18,691	-11%	-15%		0	0	0	0	0
ENT	509	497	499	-2%	-2%	2.9	2.9	2.7	1,501	1,421	1,371	-5%	-9%	Y	509	497	499	-0.02	-0.02
General Medicine	14,664	15,060	15,242	3%	4%	5.0	4.8	4.7	73,104	72,854	71,844	0%	-2%		0	0	0	0	0
General Surgery	2,851	2,870	2,897	1%	2%	8.2	8.1	7.9	23,373	23,164	22,982	-1%	-2%	Y	2851	2870	2897	0.01	0.02
Gynecology	702	640	595	-9%	-15%	2.6	2.5	2.5	1,803	1,631	1,510	-10%	-16%	Y	702	640	595	-0.09	-0.15
Invalid	357	365	376	2%	5%	9.0	9.0	9.0	3,199	3,270	3,369	2%	5%		0	0	0	0	0
Neonatology	3,457	3,500	3,528	1%	2%	3.8	3.7	3.5	13,111	12,833	12,359	-2%	-6%		0	0	0	0	0
Neurology	1,857	1,789	1,808	-4%	-3%	4.5	4.4	4.4	8,291	7,948	8,044	-4%	-3%		0	0	0	0	0
Neurosurgery	294	322	355	10%	21%	7.6	7.6	7.5	2,242	2,438	2,664	9%	19%	Y	294	322	355	0.1	0.21
Obstetrics	4,170	4,060	3,963	-3%	-5%	2.7	2.6	2.5	11,244	10,615	10,051	-6%	-11%		0	0	0	0	0
Oncology/Hematology (Medical)	1,339	1,316	1,300	-2%	-3%	5.3	5.1	5.0	7,089	6,762	6,501	-5%	-8%		0	0	0	0	0
Ophthalmology	58	52	47	-10%	-19%	3.2	3.2	3.2	188	168	151	-11%	-20%	Y	58	52	47	-0.1	-0.19
Orthopedics	2,741	2,756	2,880	1%	5%	4.3	4.1	4.0	11,785	11,427	11,509	-3%	-2%	Y	2741	2756	2880	0.01	0.05
Other Trauma	415	399	387	-4%	-7%	3.9	3.8	3.8	1,598	1,517	1,458	-5%	-9%		0	0	0	0	0
Rehabilitation	468	478	526	2%	12%	13.2	13.8	14.3	6,194	6,578	7,520	6%	21%		0	0	0	0	0
Spine	1,013	976	963	-4%	-5%	3.5	3.5	3.6	3,579	3,452	3,427	-4%	-4%	Y	1013	976	963	-0.04	-0.05
Thoracic Surgery	243	256	267	5%	10%	8.7	8.3	7.9	2,116	2,121	2,109	0%	0%	Y	243	256	267	0.05	0.1
Urology	640	638	644	0%	1%	3.9	3.8	3.7	2,492	2,421	2,381	-3%	-4%	Y	640	638	644	0	0.01
Vascular Services	895	823	793	-8%	-11%	5.5	5.3	5.1	4,924	4,390	4,079	-11%	-17%	Y	895	823	793	-0.08	-0.11
Total															**9946**	**9830**	**9940**	**-1%**	**0%**

000190

The Advisory Board Company

Marketing and Planning Leadership Council

Ambulatory Surgery Investment: 2013 Outlook

November 27, 2012

000191

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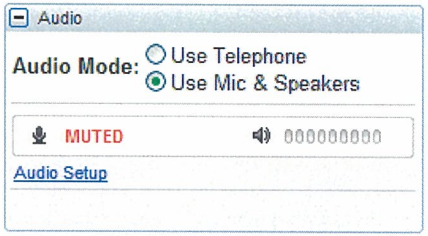

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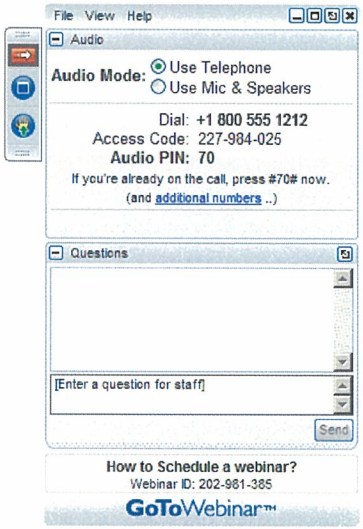

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Use the orange and white arrow to minimize and maximize the GoTo panel.

Use the blue and white square to maximize the presentation area.

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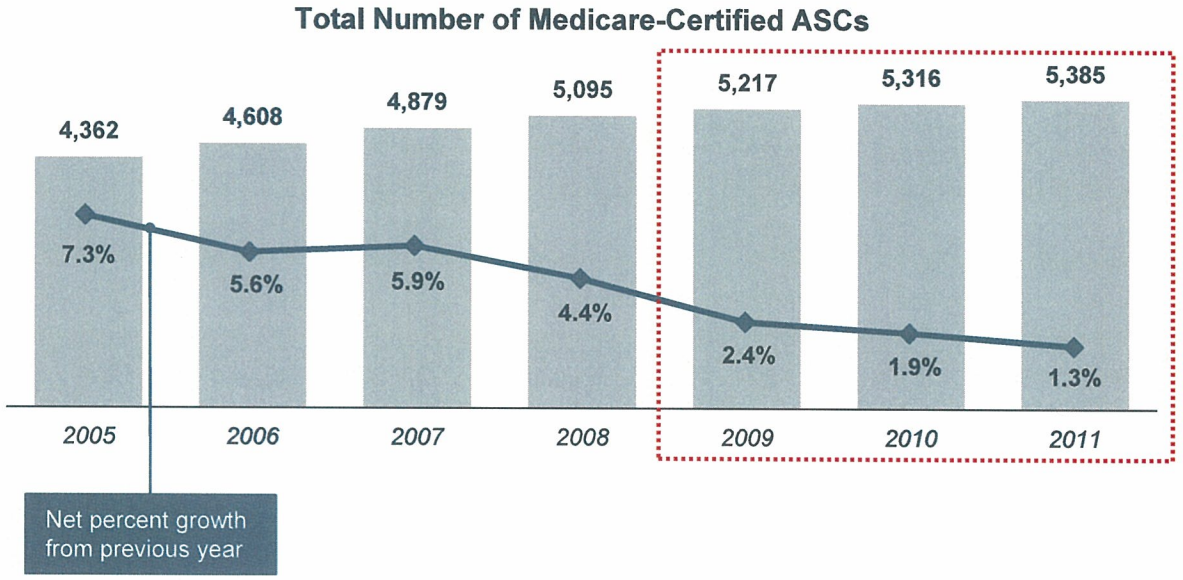
Historic ASC Growth Past the Tipping Point



Source: "Report to the Congress: Medicare Payment Policy," MedPAC, March 2012; Marketing and Planning Leadership Council interviews and analysis.

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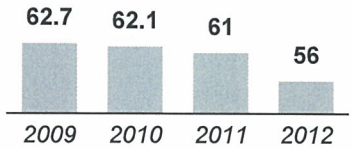
Physician Investors Deterred by Market Headwinds

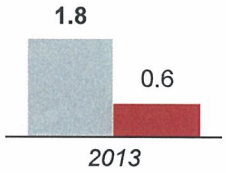
1

Increased Reimbursement Pressure

ASC Reimbursement, % of HOPD



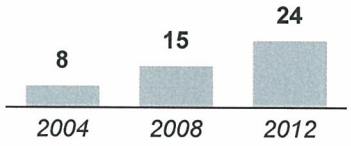
2013 Payment Update



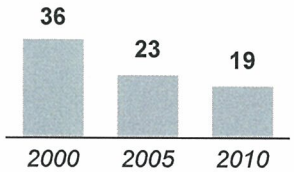
2

Shrinking Physician Supply

Specialists Employed



Eligible Physicians per ASC



3

Uncertainty Under Value-Based Payment

Quality Reporting

Payer Network Access

Increased Competition

Source: Marketing and Planning Leadership Council interviews and analysis

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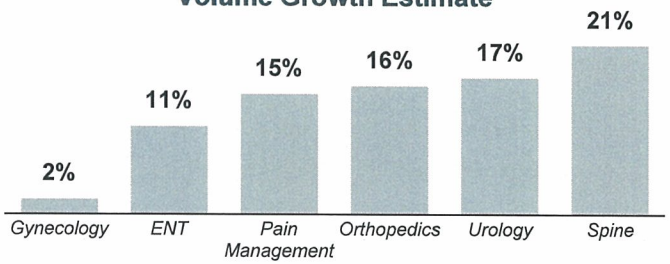
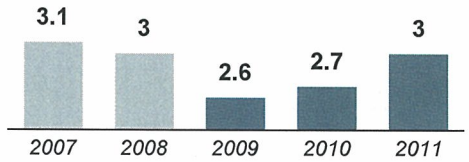
Demand Outlook Still Favorable for Key Specialties

5-Year Total Outpatient Volume Growth Estimate



Median Cases/OR Recovering from 2009-2011[1]



Drivers of Growth

Aging Population

Technology Pushing Procedures to Outpatient Setting

CMS Approvals for Outpatient Procedures

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1) VMG 2011 Intellimarketer Multi-specialty ASC Study

Source: Marketing and Planning Leadership Council interviews and analysis

Saturation Draws New Players to Market

Hospitals and Management Companies Picking Up the Slack

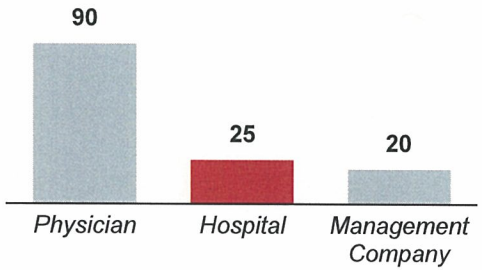
Management Companies Seeking Growth

- Consolidate at the Top
- Turnaround Low Performers
- Limited DeNovo ASCs

Hospitals & Health Systems Seeking Outpatient Foothold

- Build Outpatient Centers
- Acquire and Convert
- JV and Manage

Involvement In ASC Ownership[1]



63%

Of ASC operators expect acquisition activity to increase

1) Approximation; ASCA's 2011 ASC Employee Salary & Benefits Survey

Source: VMG Intelimarker 2011 Multi-speciality ASC Study; Marketing and Planning Leadership Council interviews and analysis

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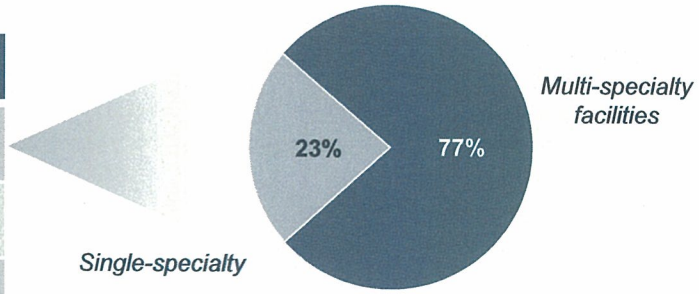
Multi-Specialty ASCs in High Demand

Growth Among Top Management Firms

	June 2011	Q3 2012
AmSurg	208	228
USPI	191	202
Surgery Partners	11	50

ASCs acquired by AmSurg, 2011



> We substantially diversified our revenues through **strong growth in the number of our multi-specialty facilities**, with multi-specialty revenues accounting for 31% of fourth-quarter 2011 total revenues versus 12% for fourth-quarter 2007.
>
> *AmSurg 2011 Annual Report*

Source: AmSurg 2011 Annual Report, available at: http://phx.corporate-ir.net/phoenix.zhtml?c=83089&p=irol-reportsannual, accessed October 26, 2012; *Multi-Specialty ASC Intellimarker 2011*, VMG Health LLC, 2011, available at: http://www.vmghealth.com/Downloads/VMG_Intellimarker11.pdf, accessed October 26 2012.; Marketing and Planning Leadership Council interviews and analysis

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ASCs, Management Firms Seek Stability in Hospitals

Hospital Presence Threatens ASC Development

Threats to ASC Industry

Greatest Challenges to ASC Over Next 5 Years[1]

1. Limited Physician Pool
2. Hospital Employment
3. CMS Reimbursement
4. Economic Recovery

Benefits of Hospital Partnership

- ✓ **Health System Brand**
- ✓ **Access to Physicians**
- ✓ **Payer Network Opportunity**
- ✓ **Bargaining Power for Supplies**
- ✓ **Reduced Competition**
- ✓ **Need for CON[2]**

> ASCs and management companies view the hospital as a safe-haven; they have staying power and strength in the market...
>
> *Senior Vice President, Management Company*

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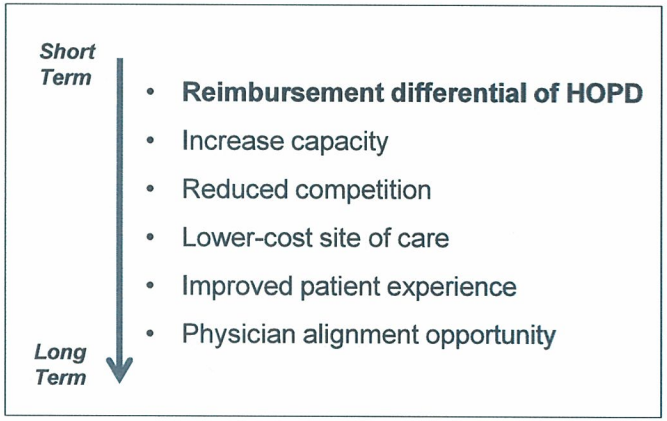
1) VMG 2011 ValueDriver ASC Survey
2) Certificate of Need

Source: Marketing and Planning Leadership Council interviews and analysis

Deprioritize Payment Advantage in Decision Criteria

Benefits of ASC to Hospital



Attention On Payments

- Medpac evaluates opportunity to equalize payments for set of comparable procedures
- OIG adds review of ASC payment system to 2013 agenda

> If not equal, [payments] will move to be a lot closer…At least some hospitals are being progressive in their thinking and looking it as: no matter what there is going to be pressure on reimbursement, higher level of accountability/ So if we can do this procedure cost-effectively in an ASC, that is the right long-term strategy…
>
> *Industry Leader*

Source: Marketing and Planning Leadership Council interviews and analysis

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Evaluating ASC Opportunities for Hospitals

Strategic Considerations

- Fit with long-term goals/strategy of hospital
- Capacity need (e.g. multispecialty vs. single specialty)
- Market dynamics (number and quality of competing facilities)
- Financial benefit to both parties
- Cultural fit between physician group and hospital

Feasibility Considerations

Physicians

- Age of physicians
- Dynamic between physicians
- Physician recruitment & retention history

Facility

- Location relative to hospital and competitors
- Age and condition of facility
- Demand sustainability

Quality

- Operational efficiency
- Quality and satisfaction performance
- Brand / reputation of ASC

Source: Marketing and Planning Leadership Council research and analysis

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Risks & Opportunities in Hospital Acquisitions

100% Hospital Owned

BUILD

- Hospitals or health system builds and operates an outpatient department
- Requires significant capital and appropriate market demand to meet capacity

BUY

- Hospitals or health system acquires an existing ASC facility from physicians
- Requires significant capital, management capacity, physician relationships, aligned incentives

Joint Venture

MAJORITY (>51%)

- Hospitals or health system has majority ownership and operates ASC
- Requires capital, management capacity, joint-leadership, aligned incentives

MINORITY (<49%)

- Hospitals or health system builds and operates an outpatient department
- Requires less capital, physician relationships, need for capacity in specific specialty

Risks

- Operational learning curve for hospital managers
- Physician performance
- Conflict with employed physicians
- Not enough demand to fill capacity

Source: Marketing and Planning Leadership Council interviews and analysis

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Role of the Management Firm in the ASC JV

Typical Joint Venture Model with 3rd Party Contracting

ASC Board

- Responsible for governance of ASC
- Includes representatives from all ownership parties (seats based on ownership level)
- Facilitates joint decision-making

Hospital

- Owns majority of ASC with management company (51%)
- Hospital has right to control ASC (e.g. budget, capital, issuance of shares)
- Hospital can obtain hospital contract rates

Management Company

- Owns smaller portion of hospital's majority share (~10-20%)
- Contracted to perform operational management of ASC
- Responsible for quality, efficiency, customer, staff satisfaction

Physician Group

- Individual physicians collectively own minority share of ASC (49%)
- Responsible for performing clinical services and some administrative responsibilities (e.g. meeting attendance

Source: Marketing and Planning Leadership Council interviews and analysis

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Co-Management Structure, Viable Alternative

Incentive Fees Facilitate Alignment, Enable Independent Physicians

5 Steps to Structuring Incentive Fees to Mitigate Risk in ASC Investment

1. Give appropriate weight to incentive fees, 30-70%
2. Identify objective, performance-based metrics
3. Establish a baseline for benchmarking performance
4. Create incentives based on variable outcomes
5. Choose metrics for evaluation performance across functions

Performance-Based Metrics[1]

Operational
- On-time starts
- OR turn around time (wheels in/out)

Financial
- Up front cash collection
- Collection goal met

Patient Safety
- Patient burns/falls
- Wrong site/side/patient/procedure

Clinical Outcomes
- Unexpected patient care within 24 hrs
- Patients receiving incomplete discharge instructions

Satisfaction
- Patient satisfaction rates
- Staff/physician satisfaction rates

1) For more see: http://www.advisory.com/Research/Marketing-and-Planning-Leadership-Council/Service-Line-Transformation/2012/08/Incentive-fees-mitigate-risk-to-hospitals-in-co-managed-ASCs

Source: Marketing and Planning Leadership Council interviews and analysis

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ASC Role In the ACO Model

Benefits to ASC Integration into the ACO Network

Lower Cost of Care

- ASCs are designed and managed to operate cost-effectively
- ASCs operate at 30-40% of the cost of HOPDs
- ACOs can incorporate ASCs into the network rather than build additional outpatient capacity to meet future volumes to contain costs

Convenient Site of Care

- ASCs can boost ACOs ability to compete for patients
- Better access, convenience and turn around time in ASCs leads to high rates of patient satisfaction
- Offering alternative sites of care that meet patient needs can help keep patients in-network

Physician Alignment

- ASC integration into the network is an opportunity to collaborate with highly independent specialists
- Joint ventured or co-managed ASCs can help ACOs manage outcomes through shared risk with physicians

Source: Marketing and Planning Leadership Council interviews and analysis

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Key Takeaways

1. Reimbursement pressure, limited physician supply and uncertainty under value-based payment has shifted the market power from physicians to management companies and hospitals

2. Although multispecialty ASCs are potentially more attractive investments for most hospitals, highly specialized "focus-factories" for orthopedics, GI and other high volume specialties are still financially viable

3. Hospitals should base investment decisions on long-term strategic fit: need for future capacity, competency in specific specialty, efficient sites of care, and physician alignment

4. As the market shifts to value-based payment, ASCs and management firms will be seeking partnerships with hospitals to secure payer network access, patient populations and market stability.

Source: Marketing and Planning Leadership Council interviews and analysis

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Questions?

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The Role of Knee Alignment in Disease Progression and Functional Decline in Knee Osteoarthritis FREE

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ABSTRACT

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Context Knee osteoarthritis (OA) is a leading cause of disability in older persons. Few risk factors for disease progression or functional decline have been identified. Hip-knee-ankle alignment influences load distribution at the knee; varus and valgus alignment increase medial and lateral load, respectively.

Objective To test the hypotheses that (1) varus alignment increases risk of medial knee OA progression during the subsequent 18 months, (2) valgus alignment increases risk of subsequent lateral knee OA progression, (3) greater severity of malalignment is associated with greater subsequent loss of joint space, and (4) greater burden of malalignment is associated with greater subsequent decline in physical function.

Design and Setting Prospective longitudinal cohort study conducted March 1997 to March 2000 at an academic medical center in Chicago, Ill.

Participants A total of 237 persons recruited from the community with primary knee OA, defined by presence of definite tibiofemoral osteophytes and at least some difficulty with knee-requiring activity; 230 (97%) completed the study.

Main Outcome Measures Progression of OA, defined as a 1-grade increase in severity of joint space narrowing on semiflexed, fluoroscopically confirmed knee radiographs; change in narrowest joint space width; and change in physical function between baseline and 18 months, compared by knee alignment at baseline.

Results Varus alignment at baseline was associated with a 4-fold increase in the odds of medial progression, adjusting for age, sex, and body mass index (adjusted odds ratio [OR], 4.09; 95% confidence interval [CI], 2.20-7.62). Valgus alignment at baseline was associated with a nearly 5-fold increase in the odds of lateral progression (adjusted OR, 4.89; 95% CI, 2.13-11.20). Severity of varus correlated with greater medial joint space loss during the subsequent 18 months ($R = 0.52$; 95% CI, 0.40-0.62 in dominant knees), and severity of valgus correlated with greater subsequent lateral joint space loss ($R = 0.35$; 95% CI, 0.21-0.47 in dominant knees). Having alignment of more than 5° (in either direction) in both knees at baseline was associated with significantly greater functional deterioration during the 18 months than having alignment of 5° or less in both knees, after adjusting for age, sex, body mass index, and pain.

Conclusion This is, to our knowledge, the first demonstration that in primary knee OA varus alignment increases risk of medial OA progression, that valgus alignment increases risk of lateral OA progression, that burden of malalignment predicts decline in physical function, and that these effects can be detected after as little as 18 months of observation.

Twelve percent of the US population aged 25 to 75 years has symptoms and signs of osteoarthritis (OA).[1] Disability due to OA is largely a result of knee or hip involvement. The risk of disability attributable to knee OA alone is as great as that due to cardiac disease and greater than that due to any other medical condition in elderly persons.[2] Knee OA also substantially increases risk of disability due to other medical conditions.[3]

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Increased awareness of the impact of knee OA has provided impetus to accelerate development of disease-modifying agents (ie, treatments that delay OA progression).[4] At present, there are no disease-modifying drugs for OA.

Poor understanding of the natural history of OA contributes to the slow development of interventions that modify the course of the disease. This deficiency of knowledge hinders development of novel interventions to target factors responsible for disease progression and functional decline; it also clouds the ability to identify patients who are unlikely to benefit from investigational treatments.

In the investigation of a candidate risk factor in OA studies, 3 key questions arise. Does the factor contribute to (1) incidence (ie, new occurrence) of osteoarthritic disease? (2) disease progression in those who already have OA? and (3) disability in those with OA? The literature on knee OA is weighted toward the first question. However, the second and third questions are crucial to the goal of reducing the burden of knee OA. In a subset of individuals, knee OA remains in the mild state that characterizes newly developed OA; Dieppe[5] has stated that in this subset, OA should not even be considered a disease—OA that progresses beyond mild stages is responsible for the bulk of both individual and societal costs of OA. Knowledge of the factors that lead to progression and functional decline will aid development of interventions to modify disease course and patient-centered outcomes.

In the investigation of knee OA progression, the recommended primary outcome is joint space change, measured via radiographic images acquired using special protocols that maximize accuracy and reliability.[6-13] The sparse literature regarding progression is limited by its reliance on conventional, extended-knee radiography (ie, without the protocols now considered essential).

Osteoarthritis is widely believed to be the result of local mechanical factors acting within the context of systemic susceptibility.[14-16] Certain site-specific factors in the local joint environment govern how load is distributed across the articular cartilage of a given joint. However, the effect of such factors on OA progression or patient-centered outcomes is largely unexamined.

At the knee, alignment (ie, the hip-knee-ankle angle) is a key determinant of load distribution. In theory, any shift from a neutral or collinear alignment of the hip, knee, and ankle affects load distribution at the knee.[17] The load-bearing axis is represented by a line drawn from mid femoral head to mid ankle. In a varus knee, this line passes medial to the knee and a moment arm is created, which increases force across the medial compartment. In a valgus knee, the load-bearing axis passes lateral to the knee, and the resulting moment arm increases force across the lateral compartment.[17] Disproportionate medial transmission of load results from a stance-phase adduction moment.[18] This adduction moment reflects the magnitude of intrinsic compressive load on the medial compartment during gait.[19] Varus-valgus alignment is a key determinant of this moment.

These mechanical effects of alignment on load distribution make it biologically plausible that both varus and valgus alignment contribute to OA progression. Further support comes from animal studies[17] as well as surgical studies, which identify knee alignment as a predictor of knee procedure outcomes. The question that has not been answered is, does knee alignment influence risk of structural progression and functional decline in knee OA?

In this study, we tested whether (1) varus alignment at baseline increases risk of subsequent medial tibiofemoral compartment OA progression, (2) valgus alignment at baseline increases risk of subsequent lateral compartment OA progression, (3) severity of varus or valgus malalignment at baseline is correlated with subsequent change in medial or lateral joint space width, respectively, and (4) greater burden of malalignment at baseline is associated with greater subsequent deterioration in physical function.

METHODS

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Participants

The Mechanical Factors in Arthritis of the Knee (MAK) study is a longitudinal study of the contribution of mechanical factors to disease progression and functional decline in knee OA. Participants were recruited from the community through advertising in periodicals targeting elderly persons, 67 neighborhood organizations, letters to members of the registry of the Buehler Center on Aging at Northwestern University, Chicago, Ill, and local referrals.

Inclusion and exclusion criteria were based on National Institute of Arthritis and Musculoskeletal and Skin Diseases/National Institute on Aging–sponsored multidisciplinary workshop recommendations for knee OA progression studies.[6] Inclusion criteria were definite tibiofemoral osteophyte presence (Kellgren/Lawrence [K/L] radiographic grade ≥2) of 1 or both knees and at least some difficulty with knee-requiring activity. Exclusion criteria were corticosteroid injection within the previous 3 months or history of avascular necrosis, rheumatoid or other inflammatory arthritis, periarticular fracture, Paget disease, villonodular synovitis, joint infection, ochronosis, neuropathic arthropathy, acromegaly, hemochromatosis, Wilson disease, osteochondromatosis, gout, pseudogout, or osteopetrosis. Approval was obtained from the Office for

guinea pigs with spontaneous osteoarthritis. *Clin Orthop Relat Res* 2011;;469 (10):2796-805.
Scientific and clinical advances leading to improved treatment of knee osteoarthritis. *Med Sci Sports Exerc* 2008;;40 (2):191-2.

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the Protection of Research Subjects–Institutional Review Board of Northwestern University. Written informed consent was obtained from all participants.

Alignment

To assess alignment, a single anteroposterior radiograph of the lower extremity was obtained. A 130 × 36-cm graduated grid cassette was used to include the full limb of tall participants.[20] By filtering the x-ray beam in a graduated fashion, this cassette accounts for the unique soft tissue characteristics of the hip and ankle. Participants stood without footwear, with tibial tubercles facing forward. The tibial tubercle, a knee-adjacent site not distorted by OA, was used as positioning landmark.[21] The patella is often used to position normal knees,[20] but the possibility of patellofemoral OA precluded this approach. The x-ray beam was centered at the knee at a distance of 2.4 m. A setting of 100 to 300 mA/s and 80-90 kV was used, depending on limb size and tissue characteristics.

Alignment was measured as the angle formed by the intersection of the mechanical axes of the femur (the line from femoral head center to femoral intercondylar notch center) and the tibia (the line from ankle talus center to the center of the tibial spine tips).[17,21-22] A knee was defined as varus when alignment was more than 0° in the varus direction, valgus when it was more than 0° in the valgus direction, and neutral when alignment was 0°.[20,22-24] The angle made by the femur and tibia on a knee x-ray was not used because it does not consider the proximal femur, femoral or tibial shafts, or ankle[25]; is highly variable as opposed to full-limb measurements[22]; and is not typically used in orthopedic clinical or biomechanical studies.

One experienced reader made all measurements. Reliability was high for measurements of varus (intraclass correlation coefficient [ICC], 0.99) and valgus (ICC, 0.98) alignment.

Varus-Valgus Laxity

Because physical examination laxity tests are unreliable,[26-27] a device to measure varus-valgus laxity was designed by Thomas Buchanan, PhD.[28-29] This device and the measurement protocol address sources of variation in knee laxity tests, ie, inadequate thigh and ankle immobilization, incomplete muscle relaxation, variation of the knee flexion angle, variation of load applied, and imprecise measurement of rotation.[26-27,30]

The system consists of a bench with an arc-shaped, low-friction track running medially and laterally. The distal shank is attached to a sled, which travels within the track. A handheld dynamometer fits into the sled and is used to apply load. Participants assumed a seated position, with the thigh and ankle immobilized and the study knee at 20° flexion.[31] An auditory signal indicates when a load of 40 newtons (12 newtons/m) has been applied.[32]

Laxity was measured as the angular deviation at the sled after varus and valgus load. Total rotation, the sum of varus and valgus rotation for each knee, was examined as previously described.[32-34] All laxity measurements were performed by the same examiner and assistant. Our reliability with this device was very good (within-session ICC, 0.85-0.96; between-session ICC, 0.84-0.90).

Knee Radiographs

For knee radiographs at baseline and 18 months, the Buckland-Wright protocol[35] was followed. This protocol meets recommendations for knee OA studies provided by multidisciplinary workshops[6] and the Task Force of the Osteoarthritis Research Society International.[9] Per this protocol, knee position, criteria for beam alignment relative to knee center, radiopaque markers to account for magnification, and measurement landmarks were specified. All radiographs were obtained in the same unit by 2 trained technicians.

The standing semiflexed view of the knee in this protocol is optimal for joint space assessment because it achieves superimposition of the anterior and posterior joint margins.[12,36-37] The knee was flexed until the tibial plateau was horizontal, parallel to the beam and perpendicular to the film. To control for rotation, the heel was fixed and the foot rotated until the tibial spines were central within the femoral notch. Knee position was confirmed by fluoroscopy before films were taken. Foot maps made at baseline were used to standardize repositioning at 18 months. These protocol elements enhance accuracy and precision of joint space assessment.[12,37] Even without fluoroscopic confirmation, the semiflexed view was superior to the extended or schuss views[38]; the fluoroscopic approach, by confirming the same position in all radiographs, further reduces variability.

Radiographic Progression

Joint space assessment is the widely recommended primary outcome for knee OA progression studies[9,11,39] and provides a compartment-specific measure, which was required in this study.

Medial and lateral progression were defined as a 1-grade or greater increase in severity of joint space narrowing in the medial and lateral compartments, respectively. We used the 4-grade scale (ie, 0 = none; 1 = possible; 2 = definite; and 3 = severe) with atlas representations from Altman et al.[8]

Joint space was also measured at the narrowest point in each compartment. The femoral boundary was the distal convex margin of the condyles. The tibial boundary was the line extending from tibial spine to outer margin, across the center of the articular fossa, defined by the superior margin of the bright radiodense band of the subchondral cortex.[35,40] The narrowest interbone distance of each compartment was measured using

calipers with electronic readout.[6,40-41] Joint space area and midcompartment width are less sensitive to change than narrowest joint space width.[35]

Other approaches (ie, osteophyte grade, K/L grade) had limitations. Although osteophytes can be graded per compartment, they are often more prominent in the uninvolved compartment. The K/L grade provides a global score without separate information for the medial and lateral compartments (ie, 0 = normal; 1 = possible osteophytes; 2 = definite osteophytes and possible joint space narrowing; 3 = moderate/multiple osteophytes, definite narrowing, some sclerosis, and possible attrition; and 4 = large osteophytes, marked narrowing, severe sclerosis, and definite attrition).

One experienced reader assessed radiographs using an atlas.[8] Reliability for joint space grading (κ coefficient, 0.80-0.86) and measurement (ICC, 0.95-0.98) was very good. Reading of knee and full-limb radiographs occurred in separate sessions. The reader was blinded to knee data when assessing alignment and to alignment data when assessing knee radiographs.

Physical Function and Pain

Physical function was assessed using an observed measure, chair-stand performance (rate of chair stands per minute, based on the time required to complete 5 repetitions of rising from a chair and sitting down), using the protocol of Guralnik et al[42] and Seeman et al.[43] The sit-stand transfer is closely linked to knee status.[44] Of the lower-extremity joints, the knee often exhibits the greatest peak torques during this task.[45-47] Average pain during the past week was recorded on separate 0- to 100-mm visual analog scales (VASs) for each knee.

Statistical Analysis

For analyses of OA progression, knees not at risk of progressing (ie, those with the highest grade of joint space narrowing at baseline) were excluded. Descriptive data (proportions) and correlations were provided separately for dominant and nondominant knees, with dominance ascertained using the question, "In order to kick a ball, which leg would you use?" All statistical tests were conducted using a nominal α level of .05. The risk of progression was analyzed from logistic regression, using generalized estimating equations (GEEs) to include data from 1 or both knees of each participant. Odds ratios (ORs) were calculated for medial and lateral progression, first entering alignment (unadjusted OR), then adding age, sex, and body mass index (BMI) (adjusted OR). Odds ratios were recalculated after additional adjustment for laxity. The associated 95% confidence intervals (CIs) were calculated; a 95% CI of more than 1.00 indicates that alignment is significantly associated with progression. The same approach was taken to explore the relationship between alignment and progression assessed using K/L grade.

Next, the relationship between baseline varus alignment (in degrees; varus as a positive value, neutral as 0, and valgus as a negative value) and change in medial joint space width from baseline to 18 months, each as a continuous variable, was examined in dominant knees using linear regression analysis. A decrease in joint space was analyzed as a positive value. Similarly, the relationship between baseline valgus alignment (valgus as a positive value, neutral as 0, and varus as a negative value) and change in lateral joint space width from baseline to 18 months was examined.

For analyses of physical function, participants whose chair-stand performance could not further decline (ie, those who could not perform the test at baseline) were excluded. Participants were divided into 3 alignment groups based on having 0, 1, or 2 knees with baseline alignment of more than 5° from neutral (in either direction). Change from baseline to 18 months in chair-stand rate was regressed on alignment group status to evaluate unadjusted and age-, sex-,and BMI-adjusted differences between groups. To explore the mediating role of pain, further analyses additionally adjusted for pain.

We also explored the relationship between baseline alignment group and functional decline, designated as at least 20% worsening in chair-stand rate. Logistic regression analysis was used to evaluate the unadjusted and adjusted odds of performance decline related to alignment group status.

RESULTS

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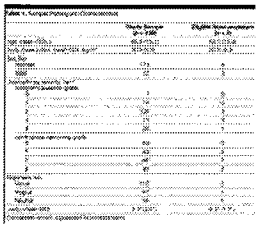
Of 237 participants at risk for progression in at least 1 knee, 7 (3%) did not return at 18 months; 5 died and 2 could not be reached. Selected characteristics of these participants are presented in Table 1. No participant received therapy that might have affected the progression rate.

Table 1. Sample Participant Characteristics



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Radiographic Progression

In dominant knees, medial OA progression occurred in 28 (31%) of 89 varus vs 9 (9%) of 102 nonvarus knees. Of the 37 dominant knees with medial progression, 28 (76%) were varus at baseline. Mean varus alignment was 3.34° at baseline and 3.82° at 18 months. Results were similar in nondominant knees.

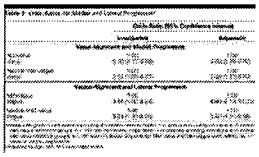
Lateral OA progression occurred in 19 (22%) of 88 valgus vs 5 (5%) of 103 nonvalgus knees. Of 24 dominant knees with lateral progression, 19 (79%) were valgus. Mean valgus alignment was 3.21° at baseline and 3.24° at 18 months. Results were similar in nondominant knees.

The average change in the compartment that was narrower at baseline was a loss of 0.45 mm over 18 months. Definite joint space narrowing (grade ≥2) was present in either the medial or the lateral compartment but never in both. In no knee did both medial and lateral progression occur; tibiofemoral progression was a unicompartmental event.

Medial Progression

In GEE logistic regression analyses, varus vs nonvarus (referent) alignment at baseline was associated with a 5-fold increase in the odds of medial progression during the subsequent 18 months (Table 2). After adjustment for age, sex, and BMI, varus alignment was still associated with a 4-fold increase in the odds of medial progression.

Table 2. Odds Ratios for Medial and Lateral Progression*



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In calculating risk in varus vs nonvarus knees, we recognized that medial OA may be associated with varus, valgus, or neutral alignment. Therefore, the risk associated with varus alignment was compared with the risk conferred by any other possible alignment for a given knee. To determine the progression risk associated with varus alignment when the comparison group was neutral or nearly neutral knees, we repeated the analysis with a referent group consisting of neutral (0°) or mildly valgus (≤2°) knees. Varus alignment was still associated with a 3-fold increase in risk of medial progression in adjusted analyses (Table 2).

Lateral Progression

In GEE logistic regression analyses, valgus vs nonvalgus (referent) alignment at baseline was associated with an almost 4-fold increase in the odds of lateral progression during the subsequent 18 months (Table 2). This relationship persisted after adjustment for age, sex, and BMI.

When the referent group was neutral or nearly neutral (≤2° varus) knees, valgus alignment was associated with a more than 3-fold increase in the odds of subsequent lateral OA progression in both unadjusted and adjusted analyses (Table 2).

These logistic regression analyses were repeated after additionally controlling for varus-valgus laxity, with little effect on results. The OR for the relationship between varus alignment and medial progression, adjusting for age, sex, BMI, and laxity, was 4.01 (95% CI, 2.19-7.62). The OR for the relationship between valgus alignment and lateral progression, adjusting for age, sex, BMI, and laxity, was 4.78 (95% CI, 2.08-11.02).

Results of analyses of medial progression were not affected by excluding lateral progressors from the nonprogressor group. Results of analyses of lateral progression also were not affected by excluding medial progressors from the nonprogressor group.

Malalignment Severity at Baseline and Change in Joint Space

The relationship between baseline severity of varus alignment and change in medial joint space width from baseline to 18 months, each as a continuous variable, was examined in dominant knees. Greater varus alignment correlated with greater subsequent loss of joint space (R = 0.52; 95% CI, 0.40-0.62).

Similarly, the relationship between baseline severity of valgus and change in lateral joint space width from baseline to 18 months was examined in dominant knees. Severity of valgus correlated with the magnitude of loss of lateral joint space width (R = 0.35; 95% CI, 0.21-0.47). These relationships persisted after adjustment for age, sex, BMI, and laxity.

Alignment at Baseline and Progression of K/L Grade

Given the historical role of the K/L grading system in knee OA studies, we also examined the relationship between baseline alignment and K/L grade progression (≥1-grade increase). However, knees that progress by K/L grade include some knees with medial progression and other knees with lateral progression. Therefore, this analysis tests a different hypothesis—does varus alignment increase risk of progression in either the medial (mechanically stressed by varus alignment) or the lateral (not stressed) compartment, and does valgus alignment increase risk of progression in either the medial (not stressed) or the lateral (stressed by valgus alignment) compartment? Notably, there is no rationale to support a link between varus alignment and lateral progression or between valgus alignment and medial progression.

Even with this limitation of the K/L grading system, valgus alignment was associated with an increase in risk of K/L grade progression (OR, 2.51; 95% CI, 0.91-6.89), and varus alignment was associated with a significant increase in risk of K/L grade progression (OR, 3.61; 95% CI, 1.33-9.85), further attesting to the strength of their effects. Finally, absolute severity of malalignment as a continuous variable was significantly associated with K/L grade progression.

Burden of Knee Malalignment at Baseline and Change in Physical Function

Burden of malalignment at baseline predicted deterioration in physical function between baseline and 18 months. Participants were classified into 1 of 3 groups at baseline: those who had alignment of 5° or less in both knees (n = 126), 1 knee with alignment of more than 5° (n = 52), or both knees with alignment of more than 5° (n = 37). Physical functional outcome was analyzed as a continuous variable, ie, change in chair-stand rate from baseline to 18 months. Change did not differ between the first 2 groups, but significantly greater deterioration in chair-stand performance was found in participants who had alignment of more than 5° in both knees vs participants who had alignment of 5° or less in both knees (Table 3). The difference between these groups persisted after adjusting for age, sex, and BMI.

Table 3. Alignment Group Differences in Change in Chair-Stand Rate, Baseline to 18 Months

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We also explored the relationship between burden of malalignment and functional decline, designating decline as at least 20% worsening in chair-stand rate. Thirty-four (16%) of the 215 participants able to perform the test at baseline had functional decline by this definition, including 10% of the 126 with alignment in both knees of 5° or less, 21% of the 52 with alignment of more than 5° in 1 knee, and 27% of the 37 with alignment of more than 5° in both knees. The odds of functional decline were doubled (OR, 2.33; 95% CI, 0.97-5.62) by having 1 knee with alignment of more than 5° vs both knees with alignment of 5° or less and were tripled by having alignment of more than 5° in both knees vs alignment of 5° or less in both knees (OR, 3.22; 95% CI, 1.28-8.12). This association persisted after adjusting for age, sex, and BMI.

Burden of Malalignment, Functional Deterioration, and Pain

To explore whether pain is an intervening variable in the relationship between knee alignment and functional deterioration, first we examined the relationship between alignment and pain at baseline, then we examined whether the relationship between alignment and functional deterioration was lost after accounting for pain. Average pain increased as malalignment increased (alignment< 4° = pain score of 25.2 mm on the VAS; alignment >4° but <8° = pain score of 37.7 mm; and alignment ≥8° = pain score of 41.2 mm). Pain severity was significantly associated with malalignment severity. Specifically, the GEE logistic regression analysis of alignment and pain showed an average VAS increase of 10 mm in knee pain with each 5° of malalignment. This relationship persisted after adjustment for age, sex, and BMI. Next, we repeated the analysis of the relationship between alignment group and change in chair-stand rate after additionally accounting for pain. As shown in Table 3, the burden of malalignment at baseline (ie, 2 vs 0 knees) continued to be significantly associated with subsequent functional deterioration.

COMMENT

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Varus alignment at baseline increased risk of medial knee OA progression over the 18 months of our study, and valgus alignment increased risk of subsequent lateral knee OA progression. The severity of varus malalignment at baseline correlated with the magnitude of medial joint space loss, and the baseline severity of valgus malalignment correlated with the magnitude of lateral joint space loss. A greater burden of malalignment at baseline was linked to greater decline in an observed measure of physical function. To our knowledge, this is the first demonstration that alignment influences risk of subsequent primary OA disease progression and decline in functional status and that these effects can be detected after as little as 18 months of observation.

In theory, varus and valgus alignment may each be a cause or result of progressive knee OA; therefore, it was essential to examine alignment at the beginning of the period during which progression was evaluated. Varus or valgus alignment that predates knee OA may be due to genetic, developmental, or posttraumatic factors. Animal model data support a link between preexisting varus or valgus alignment and OA development.[17]Knee alignment that results from knee OA may be due to loss of cartilage and bone height. However, even as a consequence of osteoarthritic disease, varus or valgus alignment may contribute to subsequent progression. The results of the current study, especially given the influence of alignment on load distribution, support this concept.

The presence of a relationship between alignment and progression by 18 months underscores the importance of alignment as a risk factor. In knee OA progression studies, 18 months is a relatively early follow-up point, at which an effect may not as yet be detectable. The importance of alignment was further demonstrated by the finding of a strong relationship with progression even when the referent group included only neutral or nearly neutral knees. The alignment-associated odds of progression may be even greater at longer follow-up. The odds may be substantially greater if malalignment and knee OA are in a vicious cycle.

Varus or valgus alignment may stretch the capsule and collateral ligaments, increasing varus-valgus laxity, a potential mechanism of the alignment effect. If laxity were playing this role, then controlling for laxity should lead to a reduction in the alignment-progression relationship. In our study, this did not occur, suggesting that an increase in laxity is not a major mechanism for the alignment effect. Our study had more women than men; this sex distribution matches that of knee OA in the general population. The effects of alignment were independent of sex.

Burden of malalignment influenced patient-centered outcome, physical function assessed by chair-stand performance. In knee OA, risk factor profiles for structural disease progression and for disability overlap but are not identical. It was necessary to specifically examine the relationship between alignment and functional status. Longitudinal studies of patient-centered outcomes in knee OA have been rare; knowledge about risk factors has been derived chiefly from cross-sectional studies. We explored whether pain was an intervening factor in the alignment effect on function. While the strength of the alignment-function relationship was reduced slightly after accounting for pain, a significant relationship persisted, suggesting that at least some portion of the alignment effect is independent of pain.

The results of this study are consistent with biomechanical studies that have revealed that varus and valgus alignment increase medial and lateral load, respectively.[17,48-49]During gait, the impact of valgus on load distribution may not be comparable with that of varus alignment. In the normally aligned ambulating knee, load is disproportionately transmitted to the medial compartment.[50]Varus alignment further increases medial load during gait.[22]Valgus alignment is associated with an increase in lateral compartment peak pressures[49]; however, more load is still borne medially until more severe valgus is present.[51-52]Therefore, we expected to find that varus alignment had a stronger effect on medial progression risk than valgus on lateral progression risk, but the effects of varus and valgus were similar in magnitude. The severity of varus was similar to that of valgus; the lack of difference in potency could not be attributed to more severe valgus malalignment. Certainly, alignment in either direction increases compartmental load, giving credence to the concept that varus and valgus alignment each may contribute to subsequent progression. Differences between the magnitude of the effects of varus and valgus alignment may emerge with further follow-up.

A relationship between varus or valgus alignment and the natural progression of primary knee OA has not previously been demonstrated. Beliefs regarding this relationship have rested on biomechanical models and studies that are cross-sectional or of short duration and surgical outcome studies. Testing the immediate or short-term mechanical impact of a factor is not equivalent to testing its impact on a long-term structural outcome in a patient. The stage of investigation represented by the current study was necessary, both to demonstrate and to quantify the long-term effects of knee alignment on patient outcomes. Several orthopedic studies have demonstrated that knee alignment is associated with surgical outcome (eg, arthroplasty,[53]osteotomy,[54] meniscectomy,[55-57]and meniscal debridement[58]). While extremely important, these data do not address the role played by knee alignment in the nonsurgical, natural evolution of knee OA. In the operated knee, the development or progression of OA is linked to several factors not at play in natural progression (eg, nature of surgery and stage of OA at time of surgery).

Investigation of the influence of alignment on natural structural or patient-centered outcomes in unselected populations has been rare. Schouten et al[59] found that patient recollection of "bow-legs or knock-knees in childhood" was associated with a 5-fold increase in risk of OA progression. Others found that presence of "varus/valgus deformity," not further defined, did not differ between those who progressed and those who

did not.[60] In another study involving patients who were selected from a hospital practice on the basis of not having undergone surgery, and in whom alignment was considered only at the end of follow-up, 50% of 35 varus knees had progressive joint space narrowing.[61]

The proportion of participants whose OA progressed in the current study is comparable with studies using similar recruitment methods.[11,62]Also, an average joint space loss of 0.45 mm was detected over 18 months, or 0.30 mm over 12 months. This rate falls within the range of annual joint space loss in the literature (0.12 to 0.62 mm/y). Comparison with population-based studies, which have tended to use conventional, extended-knee radiography, is not possible. In previous progression studies, medial and lateral knee OA have been treated as a single condition, despite a belief that they differ in rate of progression and risk factor profile. Our results provide evidence that tibiofemoral OA progresses asymmetrically and illustrate that local risk factors are not only specific to joint but also to compartment.

The goal of this study was to examine the influence of alignment on structural and functional outcomes in patients with established OA. There is growing awareness that risk factors for incident OA differ from risk factors for OA progression. It is likely that knee alignment has a different effect on risk of incident OA from that shown here on risk of progression. The former effect may be smaller, given the less vulnerable state of the healthy knee. However, the effect on risk of incident OA cannot be inferred from these results and should be specifically examined.

These results suggest the need to develop and test, in patients with knee OA, the effect of interventions that reduce the stresses imposed by a given alignment. Interventions that reduce load in the stressed compartment on an ongoing basis may have a disease-modifying effect. Interventions that may hold promise (eg, "unloading" orthoses) have been examined in short-term studies; their long-term tolerability and effect on symptoms have been minimally evaluated, and their effect on progression and long-term functional outcomes is unknown.

In summary, varus alignment at baseline increased risk of subsequent medial OA progression and valgus alignment at baseline increased risk of subsequent lateral OA progression. Baseline severity of malalignment was correlated with the magnitude of subsequent joint space loss. Burden of malalignment at baseline was linked to greater decline in physical function.

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ABSTRACT | METHODS | RESULTS | COMMENT | REFERENCES

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Obesity and osteoarthritis: more complex than predicted!

P Pottie, N Presle, B Terlain, P Netter, D Mainard, and F Berenbaum

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Short abstract

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Dysregulation of lipid homeostasis is one of the mechanisms leading to osteoarthritis

Osteoarthritis is usually considered to be a joint disorder the central pathological feature of which is cartilage destruction. However, this concept has evolved, and today osteoarthritis is generally regarded as a disease that may affect the whole joint (bone, muscles, ligaments and synovium). Although the aetiology of osteoarthritis is not established, the main risk factors are well known and commonly include mechanical, biochemical and genetic factors. Of these risk factors, obesity is beyond doubt considered a prominent one.

Mechanobiology in obesity-induced osteoarthritis

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The overload effect on joint cartilage may explain part of the increased risk of osteoarthritis, at least for osteoarthritis of the knee, in overweight people. A recent discovery in the discipline of cartilage biology is the presence of mechanoreceptors at the surface of chondrocytes, which are sensitive to pressure and link extracellular environment to intracellular signalling cascades. Three types of mechanoreceptors have been described on chondrocytes: the stretch-activated channels, the α-5β1 integrin and CD44. Compression and stretch stimulate integrins and stretch-activated channels leading to the activation of signalling pathways (mitogen-activated protein kinase, NF-κB), as well as the release of second messengers (calcium, Inositol triphosphate and Adenosine monophosphate cyclic).[1] After mechanoreceptor activation, cytokines, growth factors and metalloproteinases may be expressed, and mediators such as prostaglandins or nitric oxide may be produced.[2] As experimental studies have shown that under specific conditions overload may trigger both inhibition of matrix synthesis and cartilage degradation, we can speculate that obesity may induce cartilage damage through activation of these mechanoreceptors. In the same manner, the mechanoreceptors expressed on osteoblasts[3,4] may also be involved in the impaired response of chondrocytes to the obesity-induced overload.

Adipokines: the metabolic link between obesity and osteoarthritis?

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Even if it is usually accepted that mechanical loading contributes to joint cartilage destruction in overweight patients, recent advances in the physiology of adipose tissue add further insights in understanding the relationship between obesity and osteoarthritis. Indeed, the positive association between overweight or obesity and osteoarthritis is observed not only for knee joints but also for non-weight bearing joints, such as hands.[5] Furthermore, if weight loss may prevent the onset of osteoarthritis, the loss of body fat is more closely related to symptomatic benefit than is the loss of body weight.[6] These patterns of joint involvement suggest that joint damage may be caused by systemic factors such as adipose factors, so called adipokines, which may provide a metabolic link between obesity and osteoarthritis. Today, adipose tissue, traditionally viewed as a passive store

of energy, is considered to be a real endocrine organ that releases a large number of factors, including cytokines, such as interleukin 1 and tumour necrosis factor α, as well as adipokines, such as leptin, adiponectin, resistin, visfatin, and so on, and new ones that are yet to be discovered. These adipokines exhibit pleiotropic functions mediated through both central and peripheral systems, including haemostasis, lipid and glucose metabolism, reproductive functions, blood pressure regulation, insulin sensitivity, bone formation and angiogenesis.[7] So, recent data strengthen the hypothesis that osteoarthritis is a systemic disorder in which dysregulation of lipid homeostasis can be one of the pathophysiological mechanisms leading to osteoarthritis.[8]

Recent studies provide evidence for a key role of leptin in cartilage homoeostasis. Leptin and its functional receptor have been identified in human chondrocytes and trigger intracellular signal transduction through the activation of STATs 1 and 5, but not STAT 3.[9] Leptin may have important biological effects in chondrocytes, on both growth factor synthesis and anabolism, and also on catabolism. Leptin expression is strongly upregulated in various articular tissues that undergo strong structural and biochemical changes during osteoarthritis—for example, cartilage, osteophytes and subchondral bone—when compared with normal tissues.[10,11] Interestingly, the pattern and level of leptin expression are related to the grade of cartilage destruction, and parallel those of growth factors (insulin-like growth factor I and transforming growth factor β-1). The intra-articular injection of leptin into the rat knee joint has a stimulatory effect on proteoglycan synthesis and is associated with increased expression of insulin-like growth factor I and TGFβ-1. In addition to mature cartilage, leptin is also produced in resting and prehypertrophic chondrocytes in the growth plate of mice.[12] In cultured human chondrocytes, leptin increases both the proliferation and the extracellular matrix synthesis, but in a biphasic manner, with a reduced stimulating effect at the highest concentrations. Leptin may thus have a beneficial effect on cartilage synthesis either directly or through the upregulation of growth factors. However, an excess of leptin may account for decreased extracellular matrix synthesis and may lead to lesions similar to those found in osteoarthritis with a high intra-articular level of growth factors.[13] The increased expression of leptin in markedly damaged cartilage suggests that leptin may trigger cartilage destruction, especially when associated with some local factors. The adipokine synergises with proinflammatory cytokines, such as interleukin 1, to increase nitric oxide production, which is known to interfere with chondrocytes function resulting, in the loss of cartilage matrix through induction of apoptosis, activation of metalloproteinases, and inhibition of proteoglycan and type II collagen synthesis.[14]

Little is known about the contribution of adiponectin and resistin in osteoarthritis-affected joints. Available data related to the potential effects of these adipokines in joint disorders indicated that they may have an active role in the pathogenesis of chronic inflammatory joint diseases such as rheumatoid arthritis.[15,16] The inducing effect of adiponectin on metalloproteinase 1 expression in synovial fibroblasts from patients with osteoarthritis suggests that this adipokine may also be associated with key pathways of cartilage matrix degradation.[15]

In patients with osteoarthritis, leptin, adiponectin and resistin are detected in both the synovial fluid and in the plasma.[17,18] The adipokines exhibit different patterns of distribution between the joint and the circulating compartment: plasma levels of resistin and adiponectin exceed those in the paired synovial fluid, whereas leptin concentrations in synovial fluid are higher than their plasma counterparts.[18] As was found in plasma from obese people when compared with normal subjects, the leptin to adiponectin ratio was shown to be higher in the synovial fluid of patients with osteoarthritis than in plasma. The resulting imbalance between two adipokines known to have opposite biological effects in various diseases such as diabetes or inflammation may contribute to the initiation and/or progression of osteoarthritis. Interestingly, this high level of leptin is associated with a decline in the soluble leptin receptor level, leading to a large rise in free leptin in synovial fluid, the presumed biologically active form of this adipokine. Moreover, a larger amount of free leptin is found in the synovial fluid from female patients with osteoarthritis than in that from male patients, and may explain why obesity and female sex are both risk factors for the development of osteoarthritis.

To date, no clear mechanism could explain the changes in the adipokine levels in the synovial fluid compared with plasma. Various tissues obtained from human osteoarthritis-affected joints release leptin and

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adiponectin. Among these tissues, the synovium and infrapatellar fat pad produce the highest amounts of adipokines.[18] Until recently, the fat pad, which is an extrasynovial but an intra-articular tissue, had been neglected. However, this adipose tissue is able to release growth factors, cytokines and adipokines.[19] Cross talk between the adipocytes and other cells located in the fat pad (macrophages), or in its vicinity (synoviocytes), may also regulate the production of various factors in the joint. Interestingly, osteophytes, which are osteocartilaginous metaplastic tissues, represent the major source of leptin but not of adiponectin. Altogether, these findings indicate that further investigations on the effect of the infrapatellar fat pad and its derived adipokines on chondrocyte metabolism would be helpful to better understand the pathogenesis of (knee) osteoarthritis.

Is there a role for obesity-induced atherosclerosis?

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In addition to osteoarthritis, obesity is commonly associated with vascular disease. An interesting hypothesis about the role of atherosclerosis in the progression of osteoarthritis has recently been proposed.[20] Microvascular changes predominantly affecting the venous circulation are early events occurring in subchondral bone during osteoarthritis. This vascular disease in subchondral bone may accelerate the osteoarthritis process either by altering cartilage nutrition or through direct ischaemic effects on bone. The vascular obstruction and the resulting intraosseous hypertension may also alter the mechanical properties of the bone, which exhibits thereafter a reduced ability to absorb shocks, leading to increased susceptibility of the cartilage to breakdown. Whether the use of statins as a specific treatment for the atheromatous vascular disease would be beneficial for osteoarthritis remains to be established.

Is there any role for obesity-induced diabetes mellitus?

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Obesity-associated diabetes mellitus may represent an additional factor in the pathophysiology of osteoarthritis through the formation of advanced glycation end products (AGEs). The accumulation of AGEs found in articular cartilage during osteoarthritis progression leads to increased stiffness of collagen due to AGE cross-linking.[21] This damage to the collagen network may alter the mechanical properties of the extracellular matrix, and may lead to cartilage changes associated with osteoarthritis. In addition, articular chondrocytes express the functional receptor for AGEs, which induces mitogen-activated protein kinase, NF-κB activity and metalloproteinase 13 production when stimulated with ligands.[22] Modifications of normal cartilage by AGEs also increase matrix degradation and decrease proteoglycan synthesis by chondrocytes.[23] Further studies are required to determine whether diabetes-induced accumulation of AGEs occurs in cartilage from obese patients, providing thereby a molecular mechanism by which obesity is a risk factor for the development of osteoarthritis.

In conclusion, many recent studies allow us to better understand the relationships between osteoarthritis and obesity. Although it is evident that mechanical components contribute to joint destruction in overweight people, osteoarthritis is considered not only a disease of articular cartilage but also a systemic disorder in which circulating factors linked to altered lipid and glucose metabolism may explain the diversity of pathophysiological changes found in generalised osteoarthritis. However, the potential contribution of adipose-derived cytokines in osteoarthritis would not preclude the involvement of other mechanisms, including activation of mechanoreceptors, vascular dysfunction in subchondral bone and accumulation of AGEs in cartilage. Further investigations are thus needed to find new pharmacological tools and new orientations in the treatment and prevention of this joint disease.

Footnotes

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ISSUE BRIEF

Bending the Obesity Cost Curve in Connecticut:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $2 BILLION IN 10 YEARS AND $7 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Connecticut over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Connecticut could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America's Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Connecticut could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.[1]

Body mass index (BMI) is a calculation based on an individual's weight and height:

$$\text{BMI} = \frac{\text{(Weight in pounds)}}{\text{(Height in inches) x (Height in inches)}} \times 703$$

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH

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Obesity-Related Health Care Costs in Connecticut	
Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)	Potential Savings by 2030 if BMI is Reduced by 5% (cumulative)
$2,626,000,000	$7,370,000,000

Potential Health and Cost Savings by Top Obesity-Related Health Problems					
	2010 Number of Cases	Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*	Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)	Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)
Type 2 Diabetes	267,944	42,682	$887,000,000	83,932	$2,824,000,000
Obesity-Related Cancers^	58,115	2,900	$37,000,000	6,374	$118,000,000
Coronary Heart Disease & Stroke	214,986	37,776	$1,296,000,000	79,528	$3,316,000,000
Hypertension	708,945	43,219	$184,000,000	75,911	$506,000,000
Arthritis	710,198	20,911	$220,000,000	38,564	$608,000,000

2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state's 2011 census data to translate to the full population-based estimates.
^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

Adult Obesity Rates in Connecticut			
Obesity Rate in 1995	Obesity Rate in 2011	Projected Obesity Rate in 2030 based on current trajectory*	Projected Obesity Rate in 2030 if BMI Decreased by 5%*
11.8%	24.5%	46.5%	40.5%

*All ages, all genders, adjusted for self-reporting bias.

PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, "Health and Economic Burden of the Projected Obesity Trends in the USA and UK," published in 2011 in *The Lancet*.[2] The full methodology is available in Appendix C of the *2012 F as in Fat* report (available at www.healthyamericans.org).

All models have limitations in forecasting the future, but they help predict the trajectory of trends based on past data. Trends can, of course, change significantly over time for a

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:[3]

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke

EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.[4]

A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

- CDC's Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.[5]
- The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs.[6] NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.
- In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.[7] Some of the key findings included:[8]
  - ▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
  - ▲ For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
  - ▲ Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
  - ▲ Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

ENDNOTES

1 **The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:**
BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
BMI = (200/(72 x 72)) x 703
BMI = 27.12

A 5% reduction in BMI for this individual would be:
5% of Original BMI = Original BMI * 5%
5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

The individual's BMI after the 5% reduction would be:

2 Wang YC et al. Health and Economic Burden of the Projected Obesity Trends in the USA and the UK. *The Lancet*. 378, 2011.

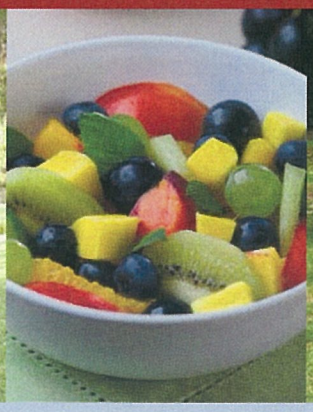
3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.

4 Kung HC, Hoyert DL, Xu JQ, and Murphy SL. *Deaths: final data for 2005. National Vital Statistics Reports*

ISSUE REPORT

F as in Fat:

HOW OBESITY THREATENS AMERICA'S FUTURE 2012



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Introduction

The following is a letter from Risa Lavizzo-Mourey, MD, MBA, president and CEO of the Robert Wood Johnson Foundation, and Jeff Levi, PhD, executive director of Trust for America's Health.

The future health of the United States is at a crossroads, due in large part to the obesity epidemic. Each year, the Trust for America's Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) issue *F as in Fat: How Obesity Threatens America's Future* to examine strategies for addressing the obesity crisis. In this ninth edition of the report, TFAH and RWJF also commissioned a new study to look at how obesity could impact the future health and wealth of our nation.

This new analysis provides a picture of two possible futures for the health of Americans over the next 20 years:

- If obesity rates continue on their current trajectory, it's estimated that:
  - Obesity rates for adults could reach or exceed 44 percent in every state and exceed 60 percent in 13 states;
  - The number of new cases of type 2 diabetes, coronary heart disease and stroke, hypertension and arthritis could increase 10 times between 2010 and 2020 — and then double again by 2030; and
  - Obesity-related health care costs could increase by more than 10 percent in 43 states and by more than 20 percent in nine states.
- But, if we could lower obesity trends by reducing the average adult BMI (body mass index) by only 5 percent in each state, we could spare millions of Americans from serious health problems and save billions of dollars in health spending — between 6.5 percent and 7.8 percent in costs in almost every state.[1]

As this year's report details, we have seen important inroads made toward preventing and reducing obesity around the country, especially among children. We know that real changes are possible. But we also have found that efforts will need to be intensified if we are going to achieve a major reduction in obesity and related health problems.

The promising results we see in some cities and states pave the way for more intensive efforts. Multiple studies and reports have demonstrated that the cities and states that took an early and comprehensive approach to preventing obesity have demonstrated progress toward reversing the epidemic. For instance, in California, overall rates of overweight and obesity among fifth-, seventh- and ninth-graders decreased by 1.1 percent from 2005 to 2010, and, in New York City, obesity in grades K-8 decreased 5.5 percent from 2006-07 to 2010-11.[2,3] In Mississippi, combined rates of overweight and obesity among all public elementary school students dropped from 43 percent in 2005 to 37.3 percent in 2011.[4]

While these cases showed that pockets of progress are possible, they also showed that children who face the biggest obstacles to healthy choices and are at greatest risk for obesity, such as children in lower-income families and Black and Hispanic children, did not share equally in progress. That's why a study released just this month tells the best story of all.

New data from Philadelphia show the city reduced obesity rates in ways that also helped to close the disparities gap. In addition to achieving an overall decline in obesity rates among public school students (from 21.5 percent of all public school students in the 2006-2007 school year to 20.5 percent in the 2009-2010 school year), the city made the largest improvements among Black male and Hispanic female students. For Black male students, rates declined from 20.66 percent to 19.08 percent, and rates for Hispanic female students declined from 22.26 percent to 20.61 percent within the same timeframe. We need to learn from the City of Brotherly Love and spread the actions and policies that work so all children can enjoy the benefits of better health.

These pockets of progress around the country are showing the positive impact that many policies and programs are having — but they need to be taken to scale. Fortunately, we know a lot about what it will take to bend the obesity curve in America.

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- Stepping up the investment in evidence-based, locally implemented prevention programs could help achieve results. The U.S. Centers for Disease Control and Prevention (CDC), The New York Academy of Medicine (NYAM) and others have identified a range of programs that have proved effective in reducing obesity and obesity-related disease levels by 5 percent or — in some cases — more. For example, a study of the Diabetes Prevention Program found that randomly selected participants reduced their diabetes risk by 16 percent for every kilogram (a little more than 2 pounds, 3 ounces) of weight they lost over a follow-up period of approximately three years. Another study reported the effects of an educational and mass media campaign developed by the Heart Health Program in Pawtucket, R.I. Five years into the intervention, the risks for cardiovascular disease and coronary heart disease also had decreased by 16 percent for randomly selected participants.[5]

- Recalibrating our goals could help us dramatically slow the national growth in obesity rates by preventing adults from gaining additional weight (including individuals who are currently obese, overweight and at a healthy weight), and by preventing kids from becoming overweight or obese in the first place. The research shows that a strategy of primary prevention that focuses on avoiding further gain can help improve health and reduce costs, and is a realistic and achievable goal. For example, in 2010, researchers reviewed 36 studies of corporate wellness programs, including those with successful weight-loss elements, and calculated that employers saved an average of $6 for every $1 spent. Researchers also noted that other benefits of such programs likely would include improved health.[6]

F as in Fat is an annual reminder of how critical it is to provide everyone living in our country, particularly our nation's children, with the opportunity to be as healthy as they can be. The forecasting study in this year's report demonstrates what's at stake.

If we take action, the number of Americans, particularly children, we could spare from type 2 diabetes, heart disease, cancer and other health problems is striking, and the savings in health care costs and increased productivity would have a real and positive impact on the economy. Investing in prevention today means a healthier, more productive and brighter future for our country and our children.

BACKGROUND ON OBESITY AND BODY MASS INDEX (BMI)

Currently, more than 35 percent of adults are obese.[7] Obesity is defined as an excessively high amount of body fat or adipose tissue in relation to lean tissue. An adult is considered obese if his or her body mass index (BMI) is 30 or higher.

The new modeling study in this year's report projects what obesity rates and the consequences for disease rates and health care costs could be if the average state BMI continued to grow based on current trends for each state's population over the next 20 years.

The study also forecasts what would happen if average BMI in the state was reduced by 5 percent, which could translate to a 9 percent to 14 percent reduction in the states' obesity rates by 2030 depending on the state.

For example, on an individual level, reducing the BMI of an average adult by 1 percent would be equivalent to a weight loss of approximately 2.2 pounds.[8] According to the CDC, the average American male over age 20 weighs 194.7 pounds and the average American woman over age 20 weighs 164.7 pounds.[9]

CHILDHOOD OBESITY: WHAT'S AT STAKE

Childhood obesity rates have climbed dramatically in the past 30 years. In 1980, the obesity rate for children ages 6 to 11 was 6.5 percent. By 2008, the rate grew to 19.6 percent. And, in 1980, 5 percent of teens ages 12 to 19 were obese. That rate climbed to 17 percent (approximately 12.5 million children and teens) by 2010.[10]

This change is having a major impact on the health of children and youths. If we don't reverse the epidemic, the current generation of young people could be the first in U.S. history to live sicker and die younger than their parents' generation. Nearly one-third of children and teens are currently obese or overweight, which is putting them at higher risks for developing a range of diseases and developing them earlier in life.[11]

Children who are obese are more than twice as likely to die before the age of 55 as children whose BMI is in the healthy range.[12] Around 70 percent of obese youths have at least one additional risk factor for cardiovascular disease, such as elevated total cholesterol, triglycerides, insulin or blood pressure.[13] Overweight and obese children and teens also are at higher risk for other health conditions, including asthma and sleep-disordered breathing.[14, 15] Children who are obese after the age of 6 are 50 percent more likely to be obese as adults, and among overweight tweens and teens ages 10 to 15, 80 percent were obese at age 25.[16, 17]

Being obese or overweight also can have a major social and emotional impact on children and youths. For instance, studies have found that overweight and obese children and teens face a higher risk for more severe and frequent bullying, are rejected by their peers more often, are chosen less as friends and are generally not as well-liked as healthy-weight children. Studies also have found that weight-based teasing is related to increased susceptibility to depression.[18, 19, 20]

Reducing and preventing childhood obesity is critical to improving the future health of the country, and consequently would help to lower health care costs and improve productivity. What's more, research supports the concept that focusing on children and getting them on a healthy path early in life is one of the areas where the greatest successes can be achieved.

For instance, a recent study from the *American Journal of Preventive Medicine* found that eliminating just 41 calories a day per person could halt rising body weight trends in children and teens ages 2 to 19, and eliminating 161 calories per day per person could reduce childhood obesity to 5 percent by 2020.[21] Researchers have created a tool to help estimate the impact of nutrition or physical activity interventions on specific populations. The tool is available at http://caloriccalculator.org.

Programs around the country are helping to change our culture to encourage healthier nutrition and increased physical activity. Some areas where there have been concerted efforts to prevent and reduce childhood obesity are demonstrating promising results. Initiatives ranging from Let's Move to the Alliance for a Healthier Generation to the Y are all having an impact and leading to positive change.

Reversing the childhood obesity crisis is at the core of the future health and wealth of the country. The evidence shows that the goal is achievable, but only if there is a sufficient investment in effective programs and policies.

Drive Thru

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F AS IN FAT 2012 MAJOR FINDINGS

In August 2012, the Centers for Disease Control and Prevention released the latest rates of adult obesity in the United States. In 2011:

- Twelve states had an adult obesity rate above 30 percent.
- Mississippi had the highest rate of obesity at 34.9 percent, while Colorado had the lowest rate at 20.7 percent.
- Twenty-six of the 30 states with the highest obesity rates are in the Midwest and South.
- All 10 of the states with the highest rates of type 2 diabetes and hypertension are in the South.

TWO FUTURES FOR AMERICA'S HEALTH: PROJECTIONS FOR OBESITY, DISEASES AND COSTS

The new analysis commissioned by TFAH and RWJF, and conducted by the National Heart Forum (NHF) was based on a peer-reviewed model published in *The Lancet*. The analysis includes projections for potential rates of obesity, health problems and health care costs in the year 2030 if current trends continued, and it examined how reducing the average body mass index (BMI) in the state by 5 percent could lower obesity rates and decrease costs. [22]

	2030: Obesity on Current Track	2030: BMI Reduced by 5 Percent
Obesity Rates	■ More than 60 percent of people could be obese in 13 states; ■ More than half of people could be obese in 39 states; ■ In all 50 states, more than 44 percent of people could be obese.	■ No state would have an obesity rate above 60 percent; ■ More than half of people would be obese in 24 states; ■ Two states would have obesity rates under 40 percent.
Obesity-Related Disease Rates	By 2030, for every 100,000 people, the number of new Americans who could develop the five top diseases associated with obesity could range from: ■ Between 8,658 in Utah to 15,208 in West Virginia (average for all states: 12,127) for new cases of type 2 diabetes ■ Between 16,730 in Utah to 35,519 in West Virginia (average for all states: 26,573) for new cases of coronary heart disease and stroke ■ Between 17,790 in Utah to 30,508 in Maine (average for all states: 24,923) for new cases of hypertension ■ Between 12,504 in Utah to 18,725 in Maine (average for all states: 16,152) for new cases of arthritis ■ Between 2,468 in Utah to 4,897 in Maine (average for all states: 3,781) for new cases of obesity-related cancer	Thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension and arthritis could be avoided in all states; More than 100 cases of obesity-related cancer per 100,000 people could be prevented in all states; States could avoid — per 100,000 people: ■ Between 1,810 and 3,213 new cases of type 2 diabetes ■ Between 1,427 and 2,512 new cases of hypertension ■ Between 1,339 and 2,898 new cases of coronary heart disease and stroke ■ Between 849 and 1,382 new cases of arthritis ■ Between 101 and 277 new cases of cancer.
Obesity-Related Health Care Costs	■ Nine states could see increases of more than 20 percent; ■ 16 states and Washington, D.C., could expect increases between 15-20 percent; ■ 18 states could expect increases between 10-15 percent; ■ Only seven states could have increases lower than 10 percent.	■ Every state except Florida would save between 6.5 and 7.8 percent on obesity-related health costs compared with 2030 projected costs if rates continue to increase at their current pace. (Florida would save 2.1 percent).

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SECTION 1

Obesity Rates and Related Trends

More than two-thirds (68 percent) of American adults are either overweight or obese.[23] Adult obesity rates have more than doubled — from 15 percent in 1980 to 35 percent in 2010, based on a national survey. [24, 25]

Rates of obesity among children ages 2–19 have more than tripled since 1980.[26,27] According to the most recent National Health and Nutrition Examination Survey (NHANES), 16.9 percent of children ages 2–19 are obese, and 31.7 percent are overweight or obese.[28] This translates to more than 12 million children and adolescents who are obese and more than 23 million who are either obese or overweight. Researchers at the U.S. Centers for Disease Control and Prevention (CDC) report that, during the period between 1999 and 2008, there was no statistically significant change in the number of children and adolescents with high BMI-for-age, except among the very heaviest boys ages 6–19.[29]

A. ADULT OBESITY AND OVERWEIGHT RATES

In August 2012, CDC released the latest rates of obesity in the states. Twelve states currently have an adult obesity rate over 30 percent. Mississippi had the highest rate of obesity at 34.9 percent, while Colorado had the lowest rate at 20.7 percent. Twenty-six of the 30 states with the highest rates of obesity are in the South and Midwest. Northeastern and Western states comprise most of the states with the lowest rates of obesity.

The U.S. Department of Health and Human Services (HHS) set a national goal to reduce adult obesity rates to 30 percent in every state by the year 2020. Healthy People 2020 also sets a goal of increasing the percentage of people at a healthy weight (BMI <25) from 30.8 percent to 33.9 percent by 2020.

2011 Obesity Rates

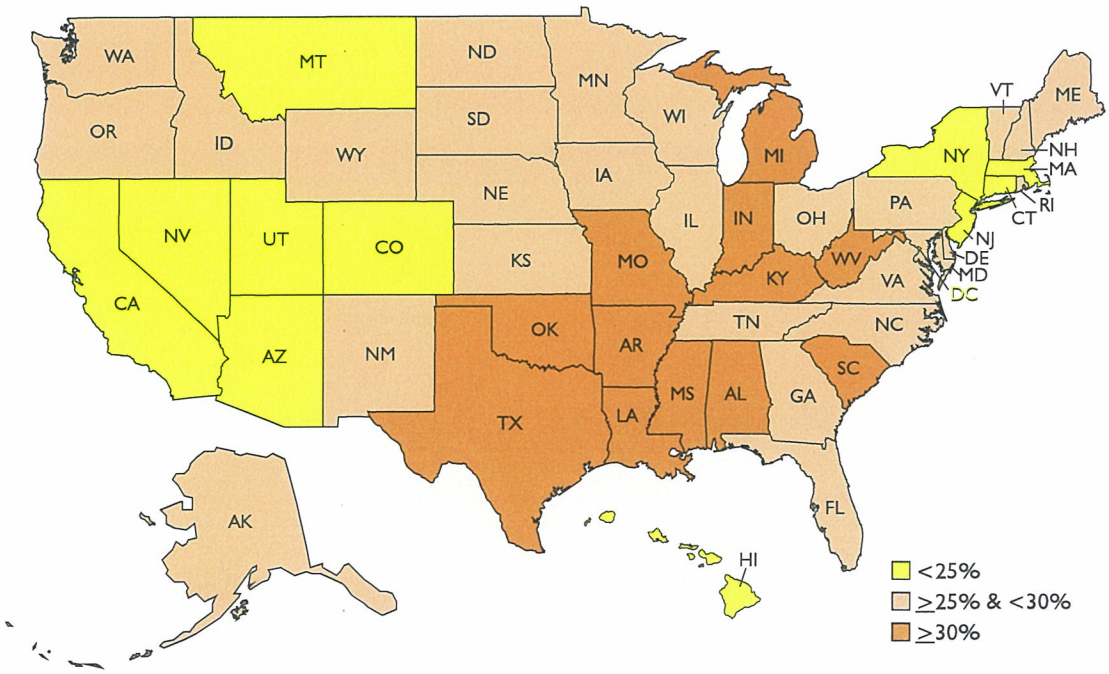

CHART ON OBESITY AND OVERWEIGHT RATES

ADULTS

States	Obesity		Overweight & Obese	Diabetes		Physical Inactivity		Hypertension	
	2011 Percentage (95% Conf Interval)	Ranking	2011 Percentage (95% Conf Interval)	2011 Percentage (95% Conf Interval)	Ranking	2011 Percentage (95% Conf Interval)	Ranking	2011 Percentage (95% Conf Interval)	Ranking
Alabama	32.0% (+/- 1.5)	4	66.8% (+/- 1.6)	11.8% (+/- 0.9)	4	32.6% (+/- 1.6)	5	40.0% (+/- 1.6)	1
Alaska	27.4% (+/- 2.2)	28	66.5% (+/- 2.4)	7.9% (+/- 1.4)	46	22.0% (+/- 2.0)	41	29.4% (+/- 2.1)	37
Arizona	24.7% (+/- 2.1)	40	62.5% (+/- 2.4)	9.5% (+/- 1.3)	25	24.2% (+/- 2.2)	34	28.0% (+/- 2.0)	47
Arkansas	30.9% (+/- 2.2)	7	65.0% (+/- 2.3)	11.2% (+/- 1.2)	6	30.9% (+/- 2.1)	7	35.7% (+/- 2.1)	8
California	23.8% (+/- 0.9)	46	60.2% (+/- 1.1)	8.9% (+/- 0.6)	34	19.1% (+/- 0.9)	49	27.8% (+/- 0.9)	48
Colorado	20.7% (+/- 1.1)	51	56.1% (+/- 1.3)	6.7% (+/- 0.6)	50	16.5% (+/- 1.0)	51	24.9% (+/- 1.0)	50
Connecticut	24.5% (+/- 1.5)	42	59.6% (+/- 1.8)	9.3% (+/- 0.9)	31	25.3% (+/- 1.6)	28	29.7% (+/- 1.5)	36
Delaware	28.8% (+/- 1.9)	19	63.9% (+/- 2.2)	9.7% (+/- 1.1)	22	27.0% (+/- 1.9)	13	34.6% (+/- 1.9)	10
D.C.	23.7% (+/- 1.9)	47	52.8% (+/- 2.4)	9.1% (+/- 1.1)	33	19.8% (+/- 1.8)	47	29.9% (+/- 2.0)	33
Florida	26.6% (+/- 1.3)	32	63.4% (+/- 1.4)	10.4% (+/- 0.8)	11	26.9% (+/- 1.3)	16	34.2% (+/- 1.3)	12
Georgia	28.0% (+/- 1.4)	24	62.7% (+/- 1.6)	10.1% (+/- 0.7)	18	26.8% (+/- 1.4)	18	32.3% (+/- 1.3)	18
Hawaii	21.8% (+/- 1.5)	50	55.8% (+/- 1.8)	8.4% (+/- 0.8)	38	21.3% (+/- 1.5)	45	28.7% (+/- 1.5)	43
Idaho	27.0% (+/- 1.8)	30	62.3% (+/- 2.1)	9.4% (+/- 1.0)	29	21.4% (+/- 1.7)	44	29.4% (+/- 1.7)	37
Illinois	27.1% (+/- 1.8)	29	64.1% (+/- 2.0)	9.7% (+/- 1.1)	22	25.2% (+/- 1.7)	31	31.0% (+/- 1.8)	24
Indiana	30.8% (+/- 1.4)	8	65.7% (+/- 1.5)	10.2% (+/- 0.8)	15	29.3% (+/- 1.4)	9	32.7% (+/- 1.3)	15
Iowa	29.0% (+/- 1.4)	18	64.8% (+/- 1.5)	8.2% (+/- 0.7)	43	25.9% (+/- 1.3)	27	29.9% (+/- 1.3)	33
Kansas	29.6% (+/- 0.9)	13	64.4% (+/- 0.9)	9.5% (+/- 0.5)	25	26.8% (+/- 0.8)	18	30.8% (+/- 0.8)	27
Kentucky	30.4% (+/- 1.5)	10	66.6% (+/- 1.6)	10.8% (+/- 0.8)	9	29.4% (+/- 1.5)	8	37.9% (+/- 1.5)	5
Louisiana	33.4% (+/- 1.5)	2	67.6% (+/- 1.5)	11.8% (+/- 0.9)	4	33.8% (+/- 1.5)	4	38.3% (+/- 1.4)	4
Maine	27.8% (+/- 1.1)	25	65.0% (+/- 1.2)	9.6% (+/- 0.6)	24	23.0% (+/- 1.0)	38	32.2% (+/- 1.0)	19
Maryland	28.3% (+/- 1.4)	22	64.4% (+/- 1.6)	9.4% (+/- 0.8)	29	26.1% (+/- 1.4)	26	31.3% (+/- 1.4)	21
Massachusetts	22.7% (+/- 1.0)	49	59.4% (+/- 1.2)	8.0% (+/- 0.5)	45	23.5% (+/- 1.0)	37	29.2% (+/- 1.0)	40
Michigan	31.3% (+/- 1.3)	5	65.5% (+/- 1.4)	10.0% (+/- 0.8)	19	23.6% (+/- 1.2)	36	34.2% (+/- 1.3)	12
Minnesota	25.7% (+/- 1.1)	36	62.5% (+/- 1.2)	7.3% (+/- 0.6)	49	21.8% (+/- 1.0)	43	26.3% (+/- 1.0)	49
Mississippi	34.9% (+/- 1.4)	1	68.9% (+/- 1.5)	12.3% (+/- 0.8)	1	36.0% (+/- 1.5)	1	39.2% (+/- 1.4)	2
Missouri	30.3% (+/- 1.7)	12	64.8% (+/- 1.8)	10.2% (+/- 1.0)	15	28.5% (+/- 1.6)	10	34.3% (+/- 1.6)	11
Montana	24.6% (+/- 1.4)	41	60.3% (+/- 1.5)	7.9% (+/- 0.7)	46	24.4% (+/- 1.3)	33	30.1% (+/- 1.3)	31
Nebraska	28.4% (+/- 0.8)	21	64.9% (+/- 0.9)	8.4% (+/- 0.5)	38	26.3% (+/- 0.8)	22	28.5% (+/- 0.8)	45
Nevada	24.5% (+/- 2.1)	42	60.3% (+/- 2.4)	10.4% (+/- 1.6)	11	24.1% (+/- 2.2)	35	30.9% (+/- 2.2)	25
New Hampshire	26.2% (+/- 1.5)	35	61.6% (+/- 1.8)	8.7% (+/- 0.8)	37	22.5% (+/- 1.5)	40	30.6% (+/- 1.5)	28
New Jersey	23.7% (+/- 1.1)	47	61.5% (+/- 1.3)	8.8% (+/- 0.6)	36	26.4% (+/- 1.1)	21	30.6% (+/- 1.1)	28
New Mexico	26.3% (+/- 1.3)	34	62.3% (+/- 1.4)	10.0% (+/- 0.8)	19	25.3% (+/- 1.3)	28	28.5% (+/- 1.2)	45
New York	24.5% (+/- 1.4)	42	60.5% (+/- 1.6)	10.4% (+/- 0.9)	11	26.2% (+/- 1.4)	24	30.6% (+/- 1.4)	28
North Carolina	29.1% (+/- 1.5)	17	65.2% (+/- 1.5)	10.8% (+/- 0.8)	9	26.7% (+/- 1.4)	20	32.4% (+/- 1.3)	17
North Dakota	27.8% (+/- 1.6)	25	63.8% (+/- 1.9)	8.3% (+/- 0.8)	42	27.0% (+/- 1.6)	13	28.9% (+/- 1.5)	41
Ohio	29.6% (+/- 1.4)	13	65.8% (+/- 1.4)	10.0% (+/- 0.8)	19	27.0% (+/- 1.3)	13	32.7% (+/- 1.3)	15
Oklahoma	31.1% (+/- 1.4)	6	65.4% (+/- 1.5)	11.1% (+/- 0.8)	8	31.2% (+/- 1.4)	6	35.5% (+/- 1.4)	9
Oregon	26.7% (+/- 1.6)	31	61.6% (+/- 1.7)	9.3% (+/- 0.9)	31	19.7% (+/- 1.5)	48	29.8% (+/- 1.5)	35
Pennsylvania	28.6% (+/- 1.3)	20	64.5% (+/- 1.4)	9.5% (+/- 0.7)	25	26.3% (+/- 1.2)	22	31.4% (+/- 1.2)	20
Rhode Island	25.4% (+/- 1.6)	37	62.5% (+/- 1.8)	8.4% (+/- 0.8)	38	26.2% (+/- 1.5)	24	33.0% (+/- 1.5)	14
South Carolina	30.8% (+/- 1.3)	8	65.9% (+/- 1.4)	12.0% (+/- 0.8)	3	27.2% (+/- 1.3)	11	36.4% (+/- 1.3)	7
South Dakota	28.1% (+/- 1.9)	23	64.5% (+/- 2.2)	9.5% (+/- 1.1)	25	26.9% (+/- 2.0)	16	30.9% (+/- 1.9)	25
Tennessee	29.2% (+/- 2.5)	15	66.5% (+/- 2.8)	11.2% (+/- 1.5)	6	35.2% (+/- 2.7)	2	38.6% (+/- 2.6)	3
Texas	30.4% (+/- 1.4)	10	65.9% (+/- 1.5)	10.2% (+/- 0.8)	15	27.2% (+/- 1.3)	11	31.3% (+/- 1.3)	21
Utah	24.4% (+/- 1.1)	45	58.9% (+/- 1.3)	6.7% (+/- 0.5)	50	18.9% (+/- 1.0)	50	22.9% (+/- 0.9)	51
Vermont	25.4% (+/- 1.4)	37	59.8% (+/- 1.6)	7.7% (+/- 0.7)	48	21.0% (+/- 1.3)	46	29.3% (+/- 1.4)	39
Virginia	29.2% (+/- 1.7)	15	63.4% (+/- 1.9)	10.4% (+/- 1.1)	11	25.0% (+/- 1.0)	32	31.2% (+/- 1.6)	23
Washington	26.5% (+/- 1.2)	33	61.0% (+/- 1.4)	8.9% (+/- 0.7)	34	21.9% (+/- 1.2)	42	30.1% (+/- 1.2)	31
West Virginia	32.4% (+/- 1.6)	3	69.0% (+/- 1.7)	12.1% (+/- 1.0)	2	35.1% (+/- 1.6)	3	37.1% (+/- 1.6)	6
Wisconsin	27.7% (+/- 2.0)	27	64.1% (+/- 2.2)	8.4% (+/- 1.0)	38	22.6% (+/- 1.8)	39	28.9% (+/- 1.8)	41
Wyoming	25.0% (+/- 1.6)	39	61.2% (+/- 1.8)	8.2% (+/- 1.0)	43	25.3% (+/- 1.6)	28	28.7% (+/- 1.6)	43

Source: Behavior Risk Factor Surveillance System (BRFSS), CDC.

AND RELATED HEALTH INDICATORS IN THE STATES

CHILDREN AND ADOLESCENTS

States	2011 YRBS			2010 PedNSS	2007 National Survey of Children's Health		
	Percentage of Obese High School Students (95% Conf Interval)	Percentage of Overweight High School Students (95% Conf Interval)	Percentage of High School Students Who Were Physically Active At Least 60 Minutes on All 7 Days	Percentage of Obese Low-Income Children Ages 2-5	Percentage of Overweight and Obese Children Ages 10-17	Ranking	Percentage Participating in Vigorous Physical Activity Every Day Ages 6-17
Alabama	17.0 (+/- 3.9)	15.8 (+/- 3.0)	28.4 (+/- 4.3)	14.1%	36.1% (+/- 4.6)	6	36.5%
Alaska	11.5 (+/- 2.0)	14.4 (+/- 2.1)	21.3 (+/- 2.8)	N/A	33.9% (+/- 4.4)	12	30.4%
Arizona	10.9 (+/- 1.9)	13.9 (+/- 1.8)	25.0 (+/- 2.0)	14.2%	30.6% (+/- 4.9)	26	28.5%
Arkansas	15.2 (+/- 2.1)	15.4 (+/- 2.1)	26.7 (+/- 3.3)	14.1%	37.5% (+/- 4.2)	2	30.7%
California	N/A	N/A	N/A	17.2%	30.5% (+/- 6.4)	28	30.0%
Colorado	7.3 (+/- 2.4)	10.7 (+/- 2.5)	29.2 (+/- 2.8)	9.1%	27.2% (+/- 5.1)	42	27.6%
Connecticut	12.5 (+/- 2.7)	14.1 (+/- 1.9)	26.0 (+/- 3.1)	15.8%	25.7% (+/- 3.7)	45	22.1%
Delaware	12.2 (+/- 1.5)	16.9 (+/- 2.1)	24.9 (+/- 2.1)	N/A	33.2% (+/- 4.1)	16	31.1%
D.C.	N/A	N/A	N/A	13.7%	35.4% (+/- 4.8)	9	26.3%
Florida	11.5 (+/- 2.3)	13.6 (+/- 1.1)	25.8 (+/- 1.4)	13.4%	33.1% (+/- 6.1)	17	34.1%
Georgia	15.0 (+/- 2.3)	15.8 (+/- 2.2)	25.2 (+/- 3.0)	13.5%	37.3% (+/- 5.6)	3	29.4%
Hawaii	13.2 (+/- 2.4)	13.4 (+/- 1.6)	21.0 (+/- 2.3)	9.1%	28.5% (+/- 4.1)	37	28.0%
Idaho	9.2 (+/- 1.6)	13.4 (+/- 1.8)	25.9 (+/- 3.4)	11.4%	27.5% (+/- 3.9)	41	25.0%
Illinois	11.6 (+/- 1.7)	14.5 (+/- 1.7)	23.2 (+/- 2.3)	14.6%	34.9% (+/- 4.1)	10	26.1%
Indiana	14.7 (+/- 1.8)	15.5 (+/- 2.1)	24.2 (+/- 2.7)	14.2%	29.9% (+/- 4.3)	31	31.3%
Iowa	13.2 (+/- 3.2)	14.5 (+/- 2.0)	29.1 (+/- 3.3)	14.7%	26.5% (+/- 4.3)	44	27.8%
Kansas	10.2 (+/- 1.5)	13.9 (+/- 1.8)	30.2 (+/- 2.5)	13.0%	31.1% (+/- 4.2)	22	25.2%
Kentucky	16.5 (+/- 2.5)	15.4 (+/- 1.6)	21.9 (+/- 2.5)	15.6%	37.1% (+/- 4.1)	4	25.9%
Louisiana	16.1 (+/- 2.6)	19.5 (+/- 4.5)	24.2 (+/- 3.5)	12.5%	35.9% (+/- 4.6)	7	34.0%
Maine	11.5 (+/- 1.4)	14.0 (+/- 1.1)	23.7 (+/- 1.7)	14.3%	28.2% (+/- 3.8)	39	32.7%
Maryland	12.0 (+/- 1.7)	15.4 (+/- 2.0)	21.4 (+/- 2.8)	15.7%	28.8% (+/- 4.2)	36	30.7%
Massachusetts	9.9 (+/- 1.8)	14.6 (+/- 1.4)	22.4 (+/- 2.6)	16.1%	30.0% (+/- 4.6)	30	26.6%
Michigan	12.1 (+/- 1.6)	15.3 (+/- 2.4)	27.0 (+/- 2.7)	13.3%	30.6% (+/- 4.3)	26	33.1%
Minnesota	N/A	N/A	N/A	12.7%	23.1% (+/- 4.0)	50	34.8%
Mississippi	15.8 (+/- 2.2)	16.5 (+/- 2.0)	25.9 (+/- 3.0)	13.7%	44.4% (+/- 4.3)	1	29.0%
Missouri	N/A	N/A	N/A	13.6%	31.0% (+/- 4.1)	23	29.6%
Montana	8.5 (+/- 1.1)	12.9 (+/- 1.4)	28.7 (+/- 1.9)	12.2%	25.6% (+/- 3.7)	48	31.5%
Nebraska	11.6 (+/- 1.2)	13.6 (+/- 1.3)	28.0 (+/- 1.8)	13.8%	31.5% (+/- 4.6)	21	26.2%
Nevada	N/A	N/A	N/A	13.6%	34.2% (+/- 5.4)	11	24.4%
New Hampshire	12.1 (+/- 1.7)	14.1 (+/- 2.2)	N/A	14.2%	29.4% (+/- 3.9)	35	29.0%
New Jersey	11.0 (+/- 2.0)	15.2 (+/- 1.9)	28.0 (+/- 2.8)	17.3%	31.0% (+/- 4.5)	23	29.1%
New Mexico	12.8 (+/- 2.1)	14.4 (+/- 1.2)	26.3 (+/- 1.6)	11.7%	32.7% (+/- 5.0)	19	27.0%
New York	11.0 (+/- 1.3)	14.7 (+/- 1.0)	25.1 (+/- 2.4)	14.5%	32.9% (+/- 4.4)	18	27.6%
North Carolina	12.9 (+/- 3.2)	15.9 (+/- 2.0)	26.0 (+/- 2.4)	15.5%	33.5% (+/- 4.5)	14	38.5%
North Dakota	11.0 (+/- 1.7)	14.5 (+/- 2.1)	21.8 (+/- 1.9)	14.1%	25.7% (+/- 3.3)	45	27.1%
Ohio	14.7 (+/- 3.1)	15.3 (+/- 2.3)	25.4 (+/- 3.5)	12.4%	33.3% (+/- 4.7)	15	32.1%
Oklahoma	16.7 (+/- 3.0)	16.3 (+/- 2.8)	33.1 (+/- 4.1)	N/A	29.5% (+/- 4.1)	33	29.6%
Oregon	N/A	N/A	N/A	15.1%	24.3% (+/- 3.9)	49	27.9%
Pennsylvania	N/A	N/A	N/A	12.0%	29.7% (+/- 4.8)	32	35.4%
Rhode Island	10.8 (+/- 2.3)	14.9 (+/- 2.1)	26.7 (+/- 4.0)	15.5%	30.1% (+/- 4.2)	29	27.6%
South Carolina	13.3 (+/- 3.0)	16.3 (+/- 2.6)	25.8 (+/- 2.9)	12.8%	33.7% (+/- 4.2)	13	31.2%
South Dakota	9.8 (+/- 2.0)	14.1 (+/- 1.4)	27.3 (+/- 3.5)	16.1%	28.4% (+/- 3.9)	38	25.3%
Tennessee	15.2 (+/- 1.6)	17.3 (+/- 1.9)	30.2 (+/- 2.8)	14.5%	36.5% (+/- 4.3)	5	29.8%
Texas	15.6 (+/- 2.0)	16.0 (+/- 1.4)	27.1 (+/- 2.7)	15.3%	32.2% (+/- 5.6)	20	28.9%
Utah	8.6 (+/- 1.7)	12.2 (+/- 2.0)	20.8 (+/- 2.6)	8.7%	23.1% (+/- 4.2)	50	17.6%
Vermont	9.9 (+/- 2.0)	13.0 (+/- 1.7)	24.4 (+/- 1.6)	12.2%	26.7% (+/- 4.5)	43	36.6%
Virginia	11.1 (+/- 2.5)	17.2 (+/- 2.7)	24.1 (+/- 4.0)	15.5%	31.0% (+/- 4.2)	23	26.2%
Washington	N/A	N/A	N/A	14.4%	29.5% (+/- 5.0)	33	27.6%
West Virginia	14.6 (+/- 2.4)	15.7 (+/- 2.4)	29.0 (+/- 3.2)	13.7%	35.5% (+/- 3.9)	8	33.2%
Wisconsin	10.4 (+/- 1.6)	15.0 (+/- 1.5)	27.7 (+/- 3.6)	14.1%	27.9% (+/- 3.8)	40	28.5%
Wyoming	11.1 (+/- 1.4)	12.0 (+/- 1.6)	25.8 (+/- 2.1)	N/A	25.7% (+/- 4.0)	45	29.8%

Source: Youth Risk Behavior Survey (YRBS) 2011, CDC. YRBS data are collected every 2 years. Percentages are as reported on the CDC website and can be found at <http://www.cdc.gov/HealthyYouth/yrbs/index.htm>. Note that previous YRBS reports used the term "overweight" to describe youth with a BMI at or above the 95th percentile for age and sex and "at risk for overweight" for those with a BMI at or above the 85th percentile, but below the 95th percentile. However, this report uses the terms "obese" and "overweight" based on the 2007 recommendations from the Expert Committee on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity convened by the American Medical Association. "Physically active at least 60 minutes on all 7 days" means that the student did any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of least 60 minutes per day on each of the 7 days before the survey.

Source: Pediatric Nutrition Surveillance 2010 Report, Table 6. Available at http://www.cdc.gov/pednss/pednss_tables/pdf/national_table6.pdf

Source: National Survey of Children's Health, 2007. Overweight and Physical Activity Among Children: A Portrait of States and the Nation 2009, Health Resources and Services Administration, Maternal and Child Health Bureau. * & red indicates a statistically significant increase ($p<0.05$) from 2003 to 2007. Over the same time period, AZ and IL had statistically significant increases in obesity rates, while OR saw a significant decrease. Meanwhile, NM and NV experienced significant increases in rates of overweight children between 2003 and 2007, while AZ had a decrease.

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OBESITY RATES BY SEX AND RACE — 2011

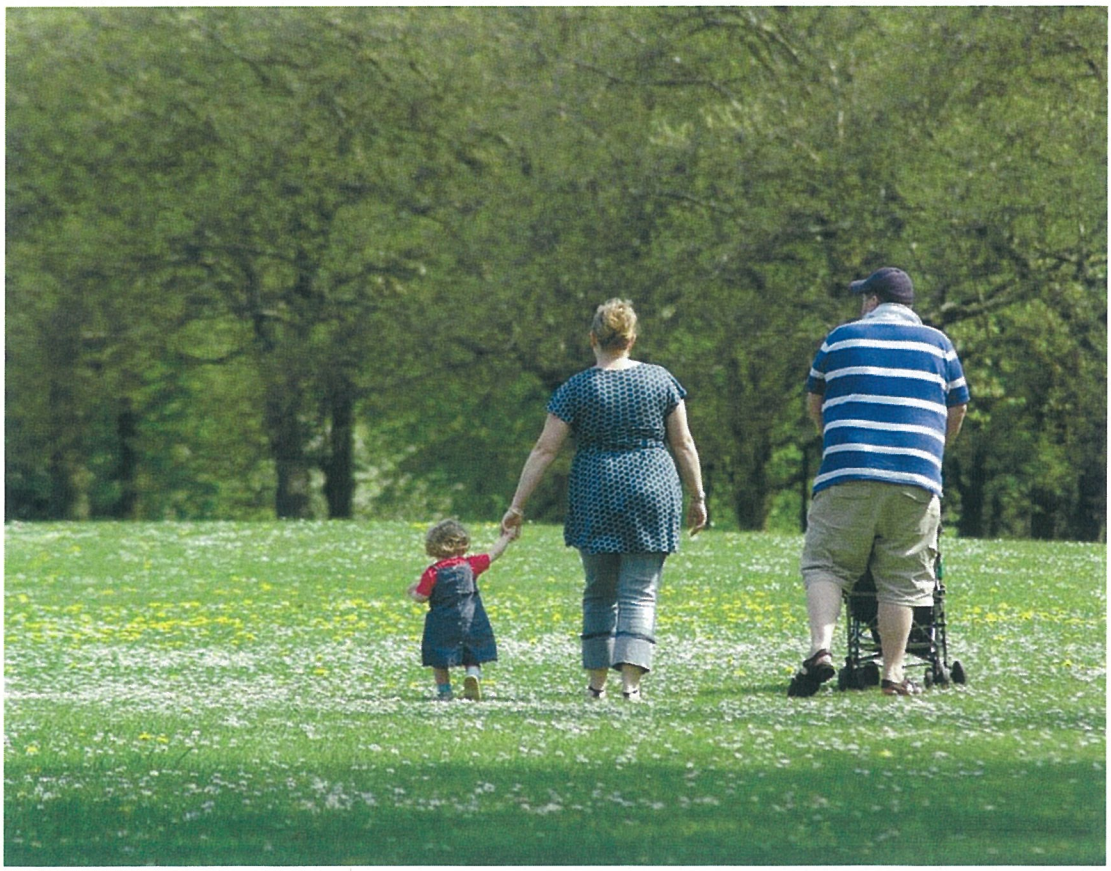
	Adult Obesity	Obesity Rates by Sex		Obesity Rates by Race/Ethnicity		
	TOTAL	MEN	WOMEN	WHITE	BLACK	LATINO
Alabama	32.0% (+/- 1.5)	32.3% (+/- 2.5)	31.8% (+/- 1.9)	29.8% (+/- 1.8)	40.1% (+/- 3.3)	28.8% (+/- 13.4)
Alaska	27.4% (+/- 2.2)	28.0% (+/- 3.3)	26.8% (+/- 3.0)	25.9% (+/- 2.3)	NA	32.3% (+/- 13.1)
Arizona	24.7% (+/- 2.1)	24.2% (+/- 3.1)	25.1% (+/- 2.9)	20.6% (+/- 2.1)	27.0% (+/- 13.3)	33.6% (+/- 5.7)
Arkansas	30.9% (+/- 2.2)	30.7% (+/- 3.4)	31.1% (+/- 2.7)	31.0% (+/- 2.4)	38.5% (+/- 7.2)	18.4% (+/- 8.9)
California	23.8% (+/- 0.9)	23.1% (+/- 1.4)	24.5% (+/- 1.2)	22.0% (+/- 1.1)	33.1% (+/- 4.9)	30.3% (+/- 1.9)
Colorado	20.7% (+/- 1.1)	21.1% (+/- 1.6)	20.4% (+/- 1.4)	18.9% (+/- 1.1)	34.9% (+/- 8.0)	26.6% (+/- 3.4)
Connecticut	24.5% (+/- 1.5)	25.6% (+/- 2.4)	23.7% (+/- 2.0)	23.1% (+/- 1.7)	32.8% (+/- 6.5)	32.6% (+/- 6.0)
Delaware	28.8% (+/- 1.9)	29.1% (+/- 2.9)	28.5% (+/- 2.5)	27.3% (+/- 2.1)	38.2% (+/- 5.3)	22.4% (+/- 9.8)
D.C.	23.7% (+/- 1.9)	18.5% (+/- 2.8)	28.4% (+/- 2.8)	10.7% (+/- 2.2)	36.7% (+/- 3.4)	13.3% (+/- 6.2)
Florida	26.6% (+/- 1.3)	27.8% (+/- 2.0)	25.6% (+/- 1.7)	25.0% (+/- 1.4)	35.6% (+/- 4.5)	27.9% (+/- 3.6)
Georgia	28.0% (+/- 1.4)	26.7% (+/- 2.2)	29.3% (+/- 1.8)	25.0% (+/- 1.6)	36.8% (+/- 3.2)	26.4% (+/- 6.6)
Hawaii	21.8% (+/- 1.5)	24.4% (+/- 2.3)	19.3% (+/- 1.9)	19.0% (+/- 2.6)	NA	26.9% (+/- 6.2)
Idaho	27.0% (+/- 1.8)	26.0% (+/- 2.6)	28.0% (+/- 2.4)	25.8% (+/- 1.8)	NA	36.1% (+/- 8.7)
Illinois	27.1% (+/- 1.8)	27.8% (+/- 2.7)	26.6% (+/- 2.2)	26.0% (+/- 1.8)	39.2% (+/- 6.2)	25.2% (+/- 6.6)
Indiana	30.8% (+/- 1.4)	30.9% (+/- 2.2)	30.9% (+/- 1.9)	29.5% (+/- 1.5)	42.3% (+/- 5.9)	35.1% (+/- 9.2)
Iowa	29.0% (+/- 1.4)	30.5% (+/- 2.0)	27.5% (+/- 1.8)	29.2% (+/- 1.4)	27.8% (+/- 10.1)	33.2% (+/- 8.5)
Kansas	29.6% (+/- 0.9)	30.0% (+/- 1.3)	29.1% (+/- 1.1)	29.1% (+/- 0.9)	41.1% (+/- 5.1)	30.5% (+/- 3.9)
Kentucky	30.4% (+/- 1.5)	29.6% (+/- 2.2)	31.1% (+/- 2.0)	29.6% (+/- 1.5)	43.1% (+/- 7.7)	22.2% (+/- 11.3)
Louisiana	33.4% (+/- 1.5)	33.1% (+/- 2.4)	33.9% (+/- 1.8)	31.1% (+/- 1.8)	39.3% (+/- 3.0)	37.5% (+/- 8.8)
Maine	27.8% (+/- 1.1)	28.1% (+/- 1.6)	27.6% (+/- 1.4)	27.9% (+/- 1.1)	15.3% (+/- 10.7)	30.3% (+/- 12.3)
Maryland	28.3% (+/- 1.4)	28.9% (+/- 2.3)	27.9% (+/- 1.8)	26.0% (+/- 1.6)	37.9% (+/- 3.2)	20.9% (+/- 7.0)
Massachusetts	22.7% (+/- 1.0)	24.2% (+/- 1.5)	21.5% (+/- 1.2)	22.2% (+/- 1.1)	32.4% (+/- 4.7)	31.0% (+/- 4.1)
Michigan	31.3% (+/- 1.3)	31.9% (+/- 2.0)	30.7% (+/- 1.8)	29.8% (+/- 1.5)	40.9% (+/- 4.2)	36.7% (+/- 8.6)
Minnesota	25.7% (+/- 1.1)	28.4% (+/- 1.6)	22.9% (+/- 1.4)	25.9% (+/- 1.1)	28.4% (+/- 5.9)	31.6% (+/- 7.8)
Mississippi	34.9% (+/- 1.4)	32.4% (+/- 2.2)	37.4% (+/- 1.9)	30.7% (+/- 1.7)	42.9% (+/- 2.7)	26.8% (+/- 10.3)
Missouri	30.3% (+/- 1.7)	29.8% (+/- 2.6)	30.8% (+/- 2.2)	29.4% (+/- 1.8)	39.3% (+/- 6.2)	27.8% (+/- 13.3)
Montana	24.6% (+/- 1.4)	25.9% (+/- 2.0)	23.4% (+/- 1.8)	24.2% (+/- 1.4)	NA	22.5% (+/- 9.6)
Nebraska	28.4% (+/- 0.8)	29.3% (+/- 1.3)	27.6% (+/- 1.2)	28.3% (+/- 0.9)	32.9% (+/- 5.4)	29.8% (+/- 4.1)
Nevada	24.5% (+/- 2.1)	25.6% (+/- 3.1)	23.5% (+/- 2.8)	22.0% (+/- 2.1)	31.2% (+/- 8.3)	29.2% (+/- 6.1)
New Hampshire	26.2% (+/- 1.5)	28.1% (+/- 2.4)	24.2% (+/- 1.9)	26.5% (+/- 1.6)	NA	22.9% (+/- 14.5)
New Jersey	23.7% (+/- 1.1)	25.5% (+/- 1.7)	21.9% (+/- 1.4)	23.1% (+/- 1.3)	31.6% (+/- 3.4)	27.2% (+/- 3.3)
New Mexico	26.3% (+/- 1.3)	26.4% (+/- 1.9)	26.4% (+/- 1.6)	22.6% (+/- 1.7)	23.9% (+/- 10.0)	30.0% (+/- 2.1)
New York	24.5% (+/- 1.4)	25.3% (+/- 2.1)	23.9% (+/- 1.7)	23.7% (+/- 1.7)	32.6% (+/- 4.2)	26.3% (+/- 3.9)
North Carolina	29.1% (+/- 1.5)	28.3% (+/- 2.2)	30.0% (+/- 1.9)	26.2% (+/- 1.6)	40.8% (+/- 3.8)	29.0% (+/- 6.8)
North Dakota	27.8% (+/- 1.6)	30.1% (+/- 2.4)	25.4% (+/- 2.1)	26.9% (+/- 1.6)	NA	NA
Ohio	29.6% (+/- 1.4)	31.7% (+/- 2.1)	27.6% (+/- 1.7)	29.2% (+/- 1.5)	34.0% (+/- 4.7)	32.2% (+/- 11.6)
Oklahoma	31.1% (+/- 1.4)	30.6% (+/- 2.2)	31.5% (+/- 1.8)	30.3% (+/- 1.6)	34.8% (+/- 6.5)	28.7% (+/- 6.3)
Oregon	26.7% (+/- 1.6)	26.3% (+/- 2.4)	27.3% (+/- 2.1)	26.1% (+/- 1.5)	NA	28.8% (+/- 8.2)
Pennsylvania	28.6% (+/- 1.3)	29.6% (+/- 1.9)	27.7% (+/- 1.6)	28.0% (+/- 1.3)	36.0% (+/- 4.7)	32.9% (+/- 7.6)
Rhode Island	25.4% (+/- 1.6)	27.7% (+/- 2.5)	23.4% (+/- 1.9)	24.9% (+/- 1.7)	35.2% (+/- 9.8)	26.5% (+/- 5.6)
South Carolina	30.8% (+/- 1.3)	28.5% (+/- 2.0)	33.1% (+/- 1.7)	27.0% (+/- 1.5)	42.4% (+/- 2.8)	25.0% (+/- 8.5)
South Dakota	28.1% (+/- 1.9)	29.9% (+/- 2.9)	26.3% (+/- 2.5)	26.7% (+/- 2.0)	NA	40.0% (+/- 15.1)
Tennessee	29.2% (+/- 2.5)	28.0% (+/- 3.8)	30.5% (+/- 3.4)	27.9% (+/- 2.7)	40.5% (+/- 8.2)	NA
Texas	30.4% (+/- 1.4)	31.0% (+/- 2.1)	30.0% (+/- 1.9)	27.1% (+/- 1.7)	39.6% (+/- 5.1)	34.5% (+/- 2.7)
Utah	24.4% (+/- 1.1)	25.8% (+/- 1.6)	22.9% (+/- 1.4)	24.4% (+/- 1.1)	29.0% (+/- 14.3)	24.2% (+/- 4.0)
Vermont	25.4% (+/- 1.4)	27.3% (+/- 2.2)	23.6% (+/- 1.8)	25.4% (+/- 1.4)	NA	23.5% (+/- 14.4)
Virginia	29.2% (+/- 1.7)	29.7% (+/- 2.6)	28.6% (+/- 2.4)	27.6% (+/- 1.9)	37.8% (+/- 4.8)	31.4% (+/- 9.4)
Washington	26.5% (+/- 1.2)	28.0% (+/- 1.9)	25.1% (+/- 1.6)	27.1% (+/- 1.4)	39.5% (+/- 10.3)	27.9% (+/- 5.0)
West Virginia	32.4% (+/- 1.6)	30.7% (+/- 2.4)	34.3% (+/- 2.1)	32.4% (+/- 1.6)	34.2% (+/- 10.8)	29.1% (+/- 14.7)
Wisconsin	27.7% (+/- 2.0)	29.4% (+/- 2.9)	26.1% (+/- 2.7)	26.8% (+/- 2.0)	44.0% (+/- 10.8)	NA
Wyoming	25.0% (+/- 1.6)	26.1% (+/- 2.3)	23.8% (+/- 2.2)	24.9% (+/- 1.7)	NA	25.9% (+/- 6.6)

States with the Highest Obesity Rates		
Rank	**State**	**Percentage of Adult Obesity** (Based on 2011 Data, Including Confidence Intervals)
1	Mississippi	34.9% (+/- 1.4)
2	Louisiana	33.4% (+/- 1.5)
3	West Virginia	32.4% (+/- 1.6)
4	Alabama	32.0% (+/- 1.5)
5	Michigan	31.3% (+/- 1.3)
6	Oklahoma	31.1% (+/- 1.4)
7	Arkansas	30.9% (+/- 2.2)
8 (tie)	Indiana	30.8% (+/- 1.4)
8 (tie)	South Carolina	30.8% (+/- 1.3)
10 (tie)	Kentucky	30.4% (+/- 1.5)
10 (tie)	Texas	30.4% (+/- 1.4)

Note: For rankings, 1 = Highest rate of obesity.

States with the Lowest Obesity Rates		
Rank	**State**	**Percentage of Adult Obesity** (Based on 2011 Data, Including Confidence Intervals)
51	Colorado	20.7% (+/- 1.1)
50	Hawaii	21.8% (+/- 1.5)
49	Massachusetts	22.7% (+/- 1.0)
47 (tie)	D.C.	23.7% (+/- 1.9)
47 (tie)	New Jersey	23.7% (+/- 1.1)
46	California	23.8% (+/- 0.9)
45	Utah	24.4% (+/- 1.1)
42 (tie)	Connecticut	24.5% (+/- 1.5)
42 (tie)	Nevada	24.5% (+/- 2.1)
42 (tie)	New York	24.5% (+/- 1.4)

Note: For rankings, 51 = Lowest rate of obesity.



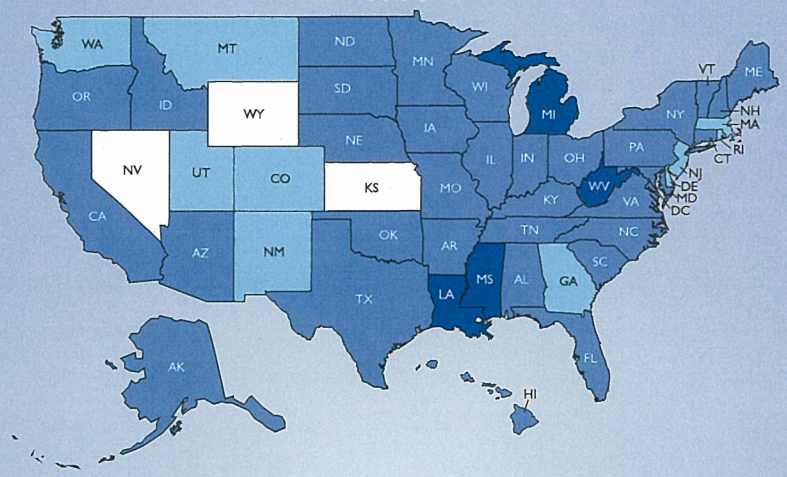
000241

PAST OBESITY TRENDS* AMONG U.S. ADULTS

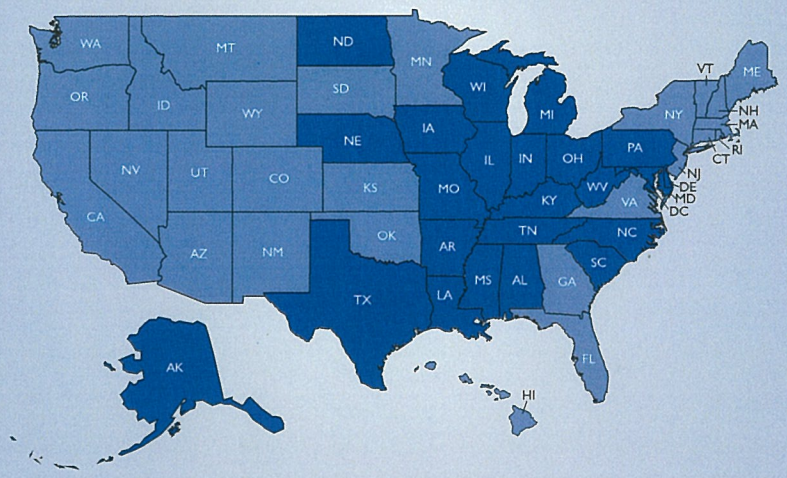
BRFSS, 1991, 1993-1995, 1998-2000, and 2008-2010 Combined Data

(*BMI ≥30, or about 30lbs overweight for 5'4" person)

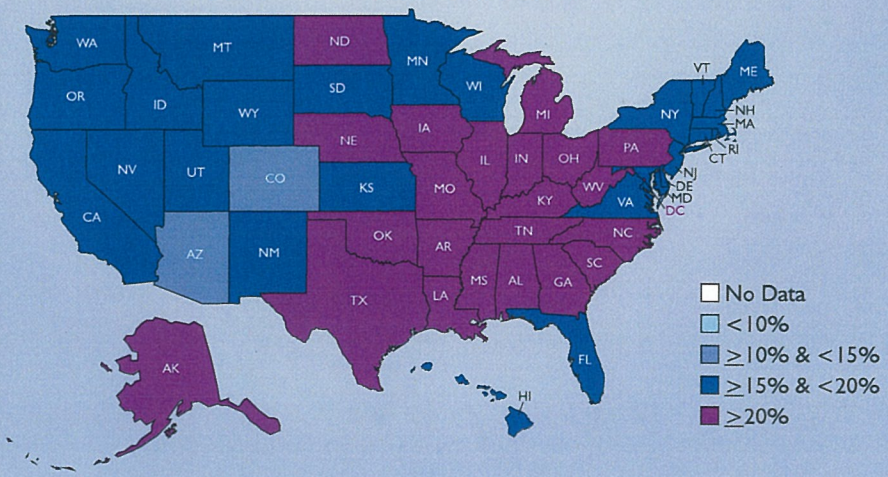
1991



1993–1995 Combined Data



1998–2000 Combined Data



RATES AND RANKINGS METHODOLOGY[30]

The analysis in *F as in Fat* compares data from the Behavioral Risk Factor Surveillance System (BRFSS), the largest phone survey in the world.

BRFSS is the largest ongoing telephone health survey in the world. It is a state-based system of health surveys established by CDC in 1984. BRFSS completes more than 400,000 adult interviews each year. For most states, BRFSS is their only source of population-based health behavior data about chronic disease prevalence and behavioral risk factors.

BRFSS surveys a sample of adults in each state to get information on health risks and behaviors, health practices for preventing disease, and healthcare access mostly linked to chronic disease and injury. The sample is representative of the population of each state.

Washington, D.C., is included in the rankings because CDC provides funds to the city to conduct a survey in an equivalent way to the states.

The data are based on telephone surveys by state health departments, with assistance from CDC. Surveys ask people to report their weight and height, which is used to calculate BMI. Experts say rates of overweight and obesity are probably slightly higher than shown by the data because people tend to underreport their weight and exaggerate their height.[31]

BRFSS made two changes in methodology for its 2011 dataset to make the data more representative of the total population. These are making survey calls to cell-phone numbers and adopting a new weighting method:

- The first change is including and then growing the number of interview calls made to cell phone numbers. Estimates today are that 3 in 10 U.S. households have only cell phones.
- The second is a statistical measurement change, which involves the way the data are weighted to better match the demographics of the population in the state.

The new methodology means the BRFSS data will better represent lower-income and racial and ethnic minorities, as well as populations with lower levels of formal education. The size and direction of the effects will vary by state, the behavior under study, and other factors. Although generalizing is difficult because of these variables, it is likely that the changes in methods will result in somewhat higher estimates for the occurrence of behaviors that are more common among younger adults and to certain racial and ethnic groups.

The change in methodology makes direct comparisons to past data difficult.

In prior years, this report has included racial, ethnic and gender breakdowns by state. However, because there is only one year of data available using the new methodology, the sample sizes for some states are too small to reliably provide these breakdowns in this year's report.

More information on the methodology is available in Appendix B.

DEFINITIONS OF OBESITY AND OVERWEIGHT

Obesity is defined as an excessively high amount of body fat or adipose tissue in relation to lean body mass.[32,33] Overweight refers to increased body weight in relation to height, which is then compared to a standard of acceptable weight.[34] An adult is considered obese if his or her body mass index (BMI), a calculation based on an individual's weight and height, is 30 or higher. The equation is:

$$\text{BMI} = \frac{(\text{Weight in pounds})}{(\text{Height in inches}) \times (\text{Height in inches})} \times 703$$

Adults with a BMI of 25 to 29.9 are considered overweight. The National Institutes of Health (NIH) adopted a lower optimal weight threshold in June 1998. Previously, the federal government defined overweight as a BMI of 28 for men and 27 for women.

On the basis of 2000 CDC growth charts, children and youth at or above the 95th percentile were defined as "overweight," while children at or above the 85th percentile but below the 95th percentile were defined as "at risk of overweight." However, in 2007, an expert committee recommended using the same cut points but changing the terminology by replacing "overweight" with "obese" and "at risk of overweight" with "overweight." The committee also added an additional cut point — BMI at or above the 99th percentile — to define "severe obesity."[35]

BMI is considered an important measure for understanding population trends. For individuals, it may be less accurate and should be used alongside other measures of risk, including waist size, waist-to-hip ratio, blood pressure, cholesterol level, and blood sugar, among others.[36]

000243

OBESITY AROUND THE WORLD

New information from the Organization for Economic Cooperation and Development (OECD) shows that, while more than half of adults are either overweight or obese in the majority of OECD countries, the rate of growth slowed or stopped in many countries over the last decade.[37] In England almost a quarter of the population is obese, up to 18 percent in Hungary are considered obese, and almost 15 percent in Spain and Ireland are obese.[38]

In England, Hungary, Italy, South Korea and Switzerland, obesity rates either stopped growing or slowed significantly, and Spain and France only increased by 2 percent to 3 percent.[39] But in Canada, Ireland and the United States, rates continued to increase, by up to 5 percent. During the last decade childhood obesity rates have leveled out in England, France, South Korea and the United States.[40]

Data also showed consistent disparities in obesity rates across many countries. Women with less education were two to three times more likely to be overweight or obese than women with higher education levels, and the trend stayed consistent throughout the decade with no improvements made to remedy the disparity.[41]

SOCIOECONOMICS AND OBESITY

An analysis of the 2008-2010 BRFSS data looking at income, level of schooling completed and obesity finds strong correlations between obesity and income and between obesity and education:

- Nearly 33 percent of adults who did not graduate high school were obese, compared with 21.5 percent of those who graduated from college or technical college.
- More than 33 percent of adults who earn less than $15,000 per year were obese, compared with 24.6 percent of those who earned at least $50,000 per year.[42]

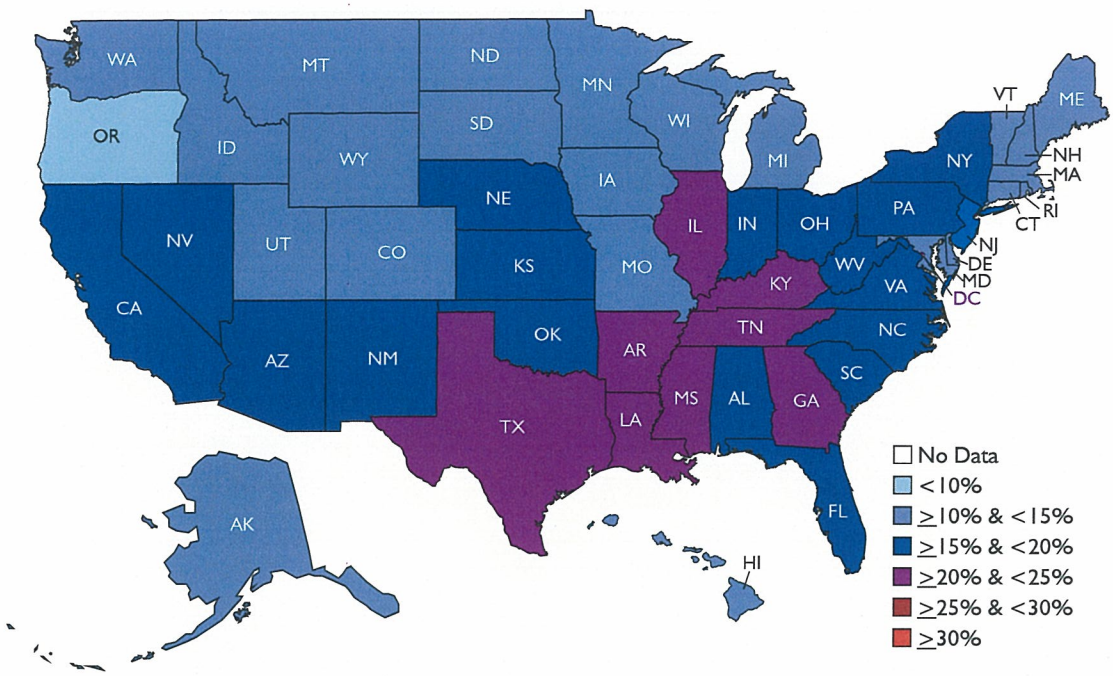
B. CHILDHOOD AND YOUTH OBESITY AND OVERWEIGHT RATES

1. Study of Children Ages 10–17 (2007)

The most recent data for childhood statistics on a state-by-state level are from the 2007 National Survey of Children's Health (NSCH).[43] *The next NSCH release is expected in late 2012.* According to the 2007 study, obesity rates for children ages 10–17, defined as BMI greater than the 95th percentile for age group, ranged from a low of 9.6 percent in Oregon to a high of 21.9 percent in Mississippi. The NSCH study is based on a survey of parents in each state. The data are derived from parental reports, so they are not as reliable as measured data, such as NHANES, but they are the only source of comparative state-by-state data for children.

Nine of the 10 states with the highest rates of obese children are in the South. In 2003, when the last NSCH was conducted, only Washington, D.C., and three states — Kentucky, Tennessee and West Virginia — had childhood obesity rates higher than 20 percent. Four years later, in 2007, six more states had childhood obesity rates over 20 percent: Arkansas, Georgia, Illinois, Louisiana, Mississippi and Texas.

OBESE 10- TO 17-YEAR-OLDS, 2007 NSCH



Source: National Survey on Children's Health, 2007.

States with the Highest Rates of Obese 10- to 17-year-olds		
Rank	**States**	**Percentage of Obese 10- to 17-year-olds** (95 percent Confidence Intervals)
1	Mississippi	21.9% (+/- 3.5)
2	Georgia	21.3% (+/- 5.1)
3	Kentucky	21.0% (+/- 3.5)
4 (tie)	Illinois	20.7% (+/- 3.6)
4 (tie)	Louisiana	20.7% (+/- 4.0)
6	Tennessee	20.6% (+/- 3.7)
7 (tie)	Arkansas	20.4% (+/- 3.6)
7 (tie)	Texas	20.4% (+/- 5.0)
9	D.C.	20.1% (+/- 3.9)
10	West Virginia	18.9% (+/- 3.2)

*Note: For rankings, 1 = Highest rate of childhood obesity.

Eight of the states with the lowest rates of obese 10- to 17-year-olds are in the West.

States with the Lowest Rates of Obese 10- to 17-year-olds		
Rank	**States**	**Percentage of Obese 10- to 17-year-olds** (95 percent Confidence Intervals)
51	Oregon	9.6% (+/- 2.7)
50	Wyoming	10.2% (+/- 2.7)
48 (tie)	Washington	11.1% (+/- 3.4)
48 (tie)	Minnesota	11.1% (+/- 3.0)
46 (tie)	Iowa	11.2% (+/- 2.7)
46 (tie)	Hawaii	11.2% (+/- 2.8)
44 (tie)	Utah	11.4% (+/- 3.5)
44 (tie)	North Dakota	11.4% (+/- 2.5)
42 (tie)	Montana	11.8% (+/- 2.8)
42 (tie)	Idaho	11.8% (+/- 2.7)

*Note: For rankings, 51 = Lowest rate of childhood obesity.

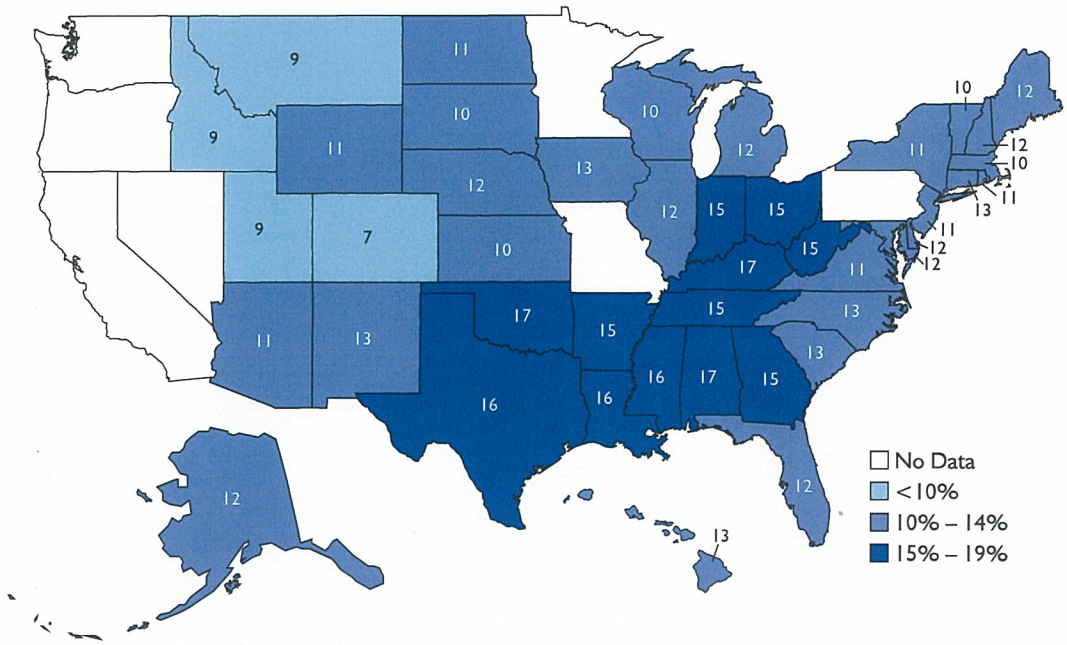
000245

2. Study of High School Students

The Youth Risk Behavior Surveillance System (YRBSS) includes both national and state surveys that provide data on adolescent obesity and overweight rates, most recently in 2011.[44] The information from the YRBSS is based on self-reported information. According to the national survey, 13 percent of high school students were obese and 15.2 percent were overweight.[45] There has been an upward trend from 1999 to 2011 in the prevalence of students nationwide who were obese (10.6 percent to 13 percent) and who were overweight (14.2 percent to 15.2 percent).[46] Students also reported on whether or not they participated in at least 60 minutes of physical activity every day of the week. The most recent state surveys, conducted in 43 states, found a range in the percentage of high school students who were physically active for at least 60 minutes per day seven days a week, from a high of 33.1 percent in Oklahoma to a low of 20.8 percent in Utah, with a median prevalence of 25.8 percent.

The latest state surveys also found a range of obesity levels: a low of 7.3 percent in Colorado to a high of 17.0 percent in Alabama, with a median prevalence of 12.0 percent. Overweight prevalence among high school students ranged from a low of 10.7 percent in Colorado to a high of 19.5 percent in Louisiana, with a median prevalence of 14.7 percent.

PERCENT OF OBESE HIGH SCHOOL STUDENTS — Selected U.S. States, Youth Risk Behavior Survey, 2011



Source: YBRS. Trend maps from 2003-2011 are available at: http://www.cdc.gov/healthyyouth/obesity/obesity-youth.htm.

Percentage of Obese and Overweight U.S. High School Students by Sex		
	Obese	Overweight
Female	9.8%	15.4%
Male	16.1%	15.1%
Total	13.0%	15.2%

Percentage of Obese and Overweight U.S. High School Students by Race/Ethnicity		
	Obese	Overweight
White*	11.5%	14.2%
Black*	18.2%	16.2%
Hispanic	14.1%	17.4%
Total**	13.0%	15.2%

Notes: *Non-Hispanic. **Other race/ethnicities are included in the total but are not presented separately.

Percentage of Obese and Overweight U.S. High School Students by Sex and Race/Ethnicity				
	Obese		Overweight	
	Female	Male	Female	Male
White*	7.7%	15.0%	13.8%	14.7%
Black*	18.6%	17.7%	19.6%	12.8%
Hispanic	8.6%	19.2%	18.0%	16.9%
Total**	9.8%	16.1%	15.4%	15.1%

Notes: *Non-Hispanic. **Other race/ethnicities are included in the total but are not presented separately.

3. Study of Children from Lower-Income Families (2010)

The Pediatric Nutrition Surveillance Survey (PedNSS), which examines children between the ages of 2 and 5 from lower-income families, found that 14.4 percent of this group is obese, compared with 12.1 percent for all U.S. children of a similar age.[47] The data for PedNSS is based on actual measurements rather than self reports.

The prevalence of obesity among children from lower-income families increased from 12.7 percent in 1999 to 14.4 percent in 2010, although rates have remained stable since 2003. The highest obesity rates were seen among American Indian and Alaska Native children (21.1 percent) and Latino children (17.6 percent).

4. Physical Inactivity in Adults

Physical inactivity in adults reflects the number of survey respondents who reported not engaging in physical activity or exercise during the previous 30 days other than doing their regular jobs.

Mississippi, the state with the highest rate of obesity, also had the highest reported percentage of inactivity at 36 percent.

States with the Highest Physical Inactivity Rates, 2011			
Rank	State	Percentage of Adult Physical Inactivity (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
1	Mississippi	36.0% (+/- 1.5)	1
2	Tennessee	35.2% (+/- 2.7)	15 (tie)
3	West Virginia	35.1% (+/- 1.6)	3
4	Louisiana	33.8% (+/- 1.5)	2
5	Alabama	32.6% (+/- 1.6)	4
6	Oklahoma	31.2% (+/- 1.4)	6
7	Arkansas	30.9% (+/- 2.1)	7
8	Kentucky	29.4% (+/- 1.5)	10 (tie)
9	Indiana	29.3% (+/- 1.4)	8 (tie)
10	Missouri	28.5% (+/- 1.6)	12

*Note: For rankings, 1=Highest rate of physical inactivity

Colorado, the state with the lowest rate of adult obesity, also had the lowest reported rate of physical inactivity at 16.5 percent.

States with the Lowest Physical Inactivity Rates, 2011			
Rank	State	Percentage of Adult Physical Inactivity (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
51	Colorado	16.5% (+/- 1.8)	51
50	Utah	18.9% (+/- 1.0)	45
49	California	19.1% (+/- 0.9)	46
48	Oregon	19.7% (+/- 1.5)	31
47	D.C.	19.8% (+/- 1.8)	47 (tie)
46	Vermont	21.0% (+/- 1.3)	37 (tie)
45	Hawaii	21.3% (+/- 1.5)	50
44	Idaho	21.4% (+/- 1.7)	30
43	Minnesota	21.8% (+/- 1.0)	36
42	Washington	21.9% (+/- 1.2)	33

*Note: For rankings, 51 = Lowest rate of physical inactivity.

000247

D. TYPE 2 DIABETES AND HYPERTENSION IN ADULTS

Obesity and physical inactivity have been linked to a range of chronic diseases, including diabetes and hypertension. Seven of the 10 states with the highest diabetes rates are also in the top 10 for obesity rates; and 7 of the 10 states with the highest hypertension rates are also in the top 10 for obesity.

1. Type 2 Diabetes

All 10 of the states with the highest rates of type 2 diabetes are in the South.

States with the Highest Rates of Adults with Type 2 Diabetes, 2011			
Rank	**State**	**Percentage of Adult Diabetes** (Based on 2011 Data, Including Confidence Intervals)	**Obesity Ranking**
1	Mississippi	12.3% (+/- 0.8)	1
2	West Virginia	12.1% (+/- 1.0)	3
3	South Carolina	12.0% (+/- 0.8)	8 (tie)
4	Alabama	11.8% (+/- 0.9)	4
5	Louisiana	11.8% (+/- 0.9)	2
6 (tie)	Arkansas	11.2% (+/- 1.2)	7
6 (tie)	Tennessee	11.2% (+/- 1.5)	15 (tie)
8	Oklahoma	11.1% (+/- 0.8)	6
9 (tie)	Kentucky	10.8% (+/- 0.8)	10 (tie)
9 (tie)	North Carolina	10.8% (+/- 0.8)	17

*Note: For rankings, 1 = Highest rate of type 2 diabetes.

THE DIABETES BELT

In the 1960s researchers first identified the Southeastern United States as the "stroke belt," since strokes were much more frequent in that region than the rest of the country. Now, scientists are focusing on a "diabetes belt," made up of 644 counties in 15 mostly Southern states. This belt includes parts of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, West Virginia, and all of Mississippi.[48] The demographics of these 644 counties vary greatly from those of the overall country. They have a high percentage of Blacks, and, not surprisingly, a high number of people who are obese and lead sedentary lives.[49] Policymakers hope to use this new information to target resources to those who most need help.

2. Hypertension

All 10 states with the highest rates of hypertension are also in the South.

States with the Highest Rates of Adult Hypertension, 2011			
Rank	**State**	**Percentage of Adult Hypertension** (Based on 2011 Data, Including Confidence Intervals)	**Obesity Ranking**
1	Alabama	40.0% (+/- 1.6)	4
2	Mississippi	39.2% (+/- 1.4)	1
3	Tennessee	38.6% (+/- 2.6)	15 (tie)
4	Louisiana	38.3% (+/- 1.4)	2
5	Kentucky	37.9% (+/- 1.5)	10 (tie)
6	West Virginia	37.1% (+/- 1.6)	3
7	South Carolina	36.4% (+/- 1.3)	8 (tie)
8	Arkansas	35.7% (+/- 2.1)	7
9	Oklahoma	35.5% (+/- 1.4)	6
10	Delaware	34.6% (+/- 1.9)	19

*Note: For rankings, 1 = Highest rate of hypertension.

000248

E. FRUIT AND VEGETABLE CONSUMPTION

Fruit and vegetable consumption, as part of a healthy diet, is important for weight management, optimal child growth, and chronic disease prevention. Seven of the 10 states with the highest rates of obesity were also in the bottom 10 for fruit and vegetable consumption.

The number of individuals who reported eating fruits and vegetables five or more times a day was the lowest in West Virginia (7.9 percent) and was the highest in Washington, D.C. (25.6 percent). The data are from survey responses to the 2011 BRFSS survey.

States with the Lowest Adult Fruit and Vegetable Consumption, 2011

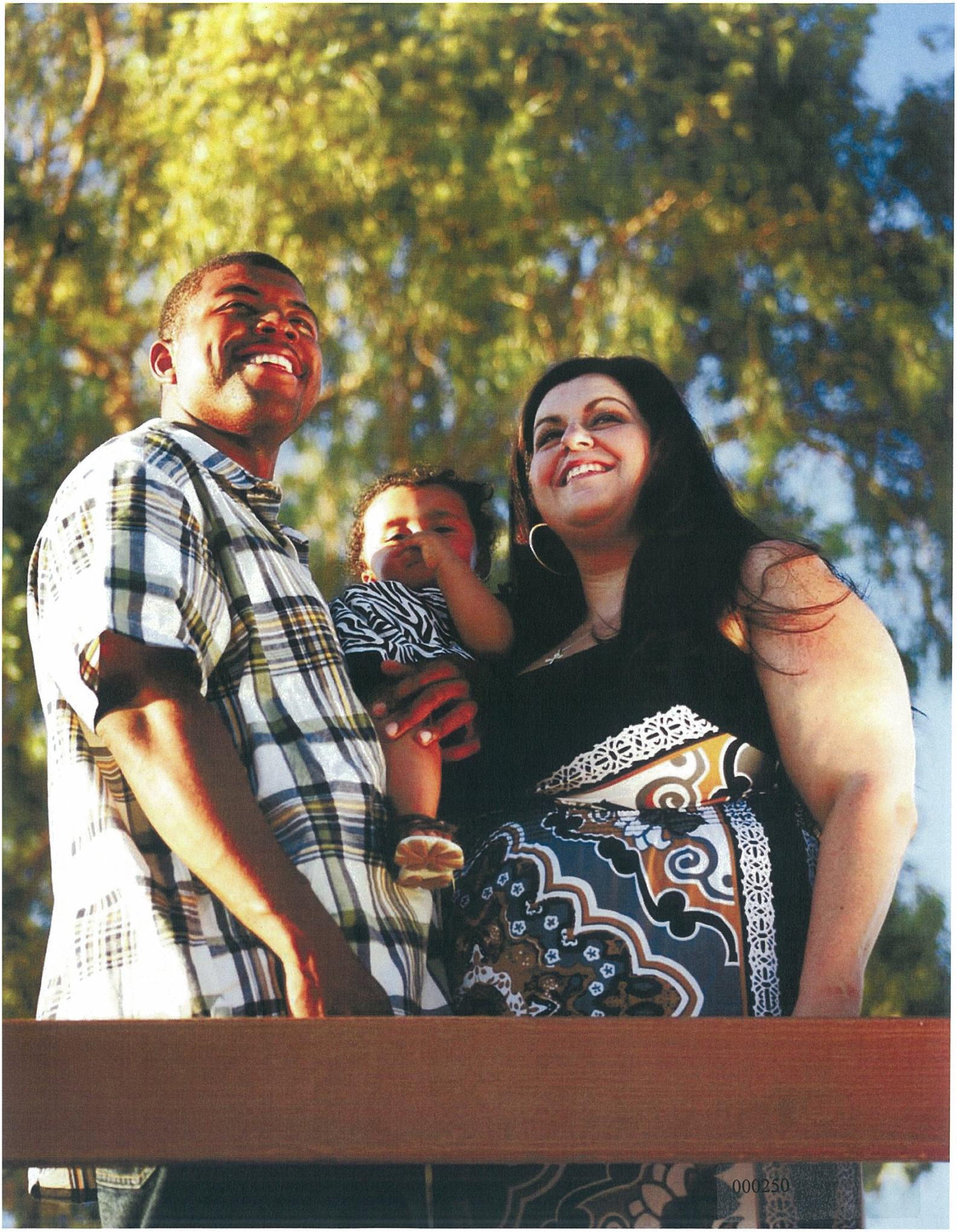
Rank	State	Percentage of Adult Fruit and Vegetable Consumption (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
1	West Virginia	7.9% (+/- 0.9)	3
2	Louisiana	8.2% (+/- 0.9)	2
3	Oklahoma	9.8% (+/- 0.9)	6
4	Mississippi	10.3% (+/- 1.0)	1
5 (tie)	Kentucky	10.6% (+/- 1.0)	10 (tie)
5 (tie)	Tennessee	10.6% (+/- 1.9)	15 (tie)
7	South Dakota	11.0% (+/- 1.2)	23
8 (tie)	Alabama	12.5% (+/- 1.1)	4
8 (tie)	South Carolina	12.5% (+/- 0.9)	8
10	Delaware	12.9% (+/- 1.4)	19

Note: For rankings, 1 = Lowest rate of fruit and vegetable consumption.

States with the Highest Adult Fruit and Vegetable Consumption, 2011

Rank	State	Percentage of Adult Fruit and Vegetable Consumption (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
51	D.C.	25.6% (+/- 2.1)	47 (tie)
50	California	24.4% (+/- 0.9)	46
49	Vermont	22.7% (+/- 1.3)	37 (tie)
48	New Hampshire	22.5% (+/- 1.5)	35
47	Oregon	22.3% (+/- 1.4)	31
46	Arizona	21.4% (+/- 2.0)	40
45	Connecticut	20.8% (+/- 1.4)	42 (tie)
44	New York	19.9% (+/- 1.3)	42 (tie)
43	Rhode Island	19.8% (+/- 1.4)	37 (tie)
42	Hawaii	19.7% (+/- 1.4)	50

Note: For rankings, 51 = Highest rate of fruit and vegetable consumption.



SECTION 2

Two Futures for America's Health

TFAH and RWJF commissioned the National Heart Forum (NHF) to conduct a modeling study to examine how obesity rates in states could change if trends continued on their current trajectory, including the potential impact on obesity-related diseases and costs by 2030. The analysis also looked at how disease rates and costs could be affected by lowering the average BMI in the state by only 5 percent in each state.

Currently, more than 35 percent of American adults are obese.[50] Individuals with a BMI of 30 or higher are considered obese. The report found if current trends continue, by the year 2030, more than 44 percent of adults could be obese, which could lead to major increases in obesity-related disease rates and health care costs. But, if states could reduce the average adult BMI by 5 percent, millions of Americans could be spared from preventable diseases and each state could save billions in health care costs. For an adult of average weight, reducing BMI by 1 percent is equivalent to a weight loss of around 2.2 pounds.[51]

The analysis concluded, therefore, that there are two potential futures for America's health.

BACKGROUND

The study is based on a peer-reviewed model developed by researchers at the NHF and used for the basis of an analysis, "Health and Economic Burden of the Projected Obesity Trends in the USA and the UK," published in 2011 in *The Lancet*.[52] The full methodology is available in Appendix C.

The NHF is an international center for the prevention of avoidable chronic diseases, including coronary heart disease, stroke, cancer and diabetes. The organization is an alliance of 65 charitable organizations in the United Kingdom, including leading policy research experts on chronic disease prevention and promotes consensus-based healthy public policy.

PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum. Micro Health Simulations used the model in a peer reviewed study, "Health and Economic Burden of the Projected Obesity Trends in the [United States and the United Kingdom]," published in 2011 in *The Lancet*.[53] The full methodology is available in Appendix C.

All models have limitations in forecasting the future, but they help predict the trajectory of trends based on past data. Trends can, of course, change significantly over time for a variety of reasons. However, having a sense of potential scenarios is particularly helpful to understand patterns, such as growth rates for diseases and costs projections, which can inform policy priorities and decisions.

The NHF study published in *The Lancet* in 2011 developed national projections for obesity and the potential growth in related disease rates and costs between 2010 and 2030, using data from the National Health and Nutrition Examination Survey (NHANES).

They found the number of obese Americans could grow from 32 percent, in 2011, to around 50 percent (+/- 5) in 2030, with the potential estimated low rate would be 45 and the high rate is 55.

Based on the predicted rise in obesity, they found the baseline potential growth in obesity costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $20 billion or as high as $110 billion.

In addition, they projected baseline estimates for:[54]

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
- The number of new cases of cancer could be 0.5 million (+/- 0.1 million) per year, which means it could be as low as 0.4 million or as high as 0.6 million.

The projections in the state-by-state analysis featured in the F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the BRFSS instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven). In other words, more data points enables researchers to estimate projections more precisely.

The modeling study also reflects adjustments of data to correct for self-reporting bias in BRFSS.[55]

These findings are similar to a 2012 study in the American Journal of Preventive Medicine. The study found that by 2030, 42 percent of U.S. adults will be obese.[56] This study also found that the rate of severe obesity will double by 2030, when more than 10 percent of adults will be considered severely obese.[57] The projected increase in obesity is estimated to cost the United States $550 billion in health spending between now and 2030.[58]

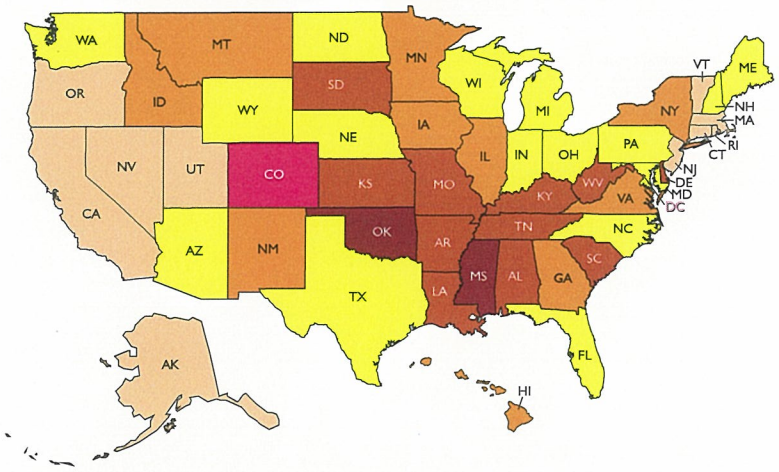
A. KEY FINDINGS

Obesity in 2030

If obesity rates continue on their current track, in 2030, more than 60 percent of adults in America could be obese in 13 states; more than half of adults could be obese in 39 states; and more than 44 percent could be obese in all 50 states.

However, if states could reduce average adult BMIs by 5 percent, no state would have an obesity rate above 60 percent. More than half of Americans would be obese in 24 states; two states would have rates under 40 percent (Alaska at 39.4 percent and Colorado at 39 percent); and Washington, D.C. would be below 30 percent (29.1 percent).

2030: Adult Obesity Rates if the Current Trajectory Continues



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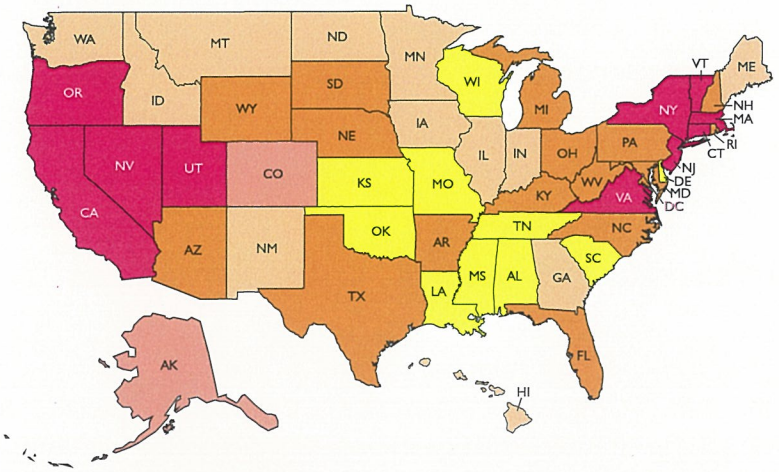
2030: Adult Obesity Rates if Average BMI is Reduced by 5 Percent



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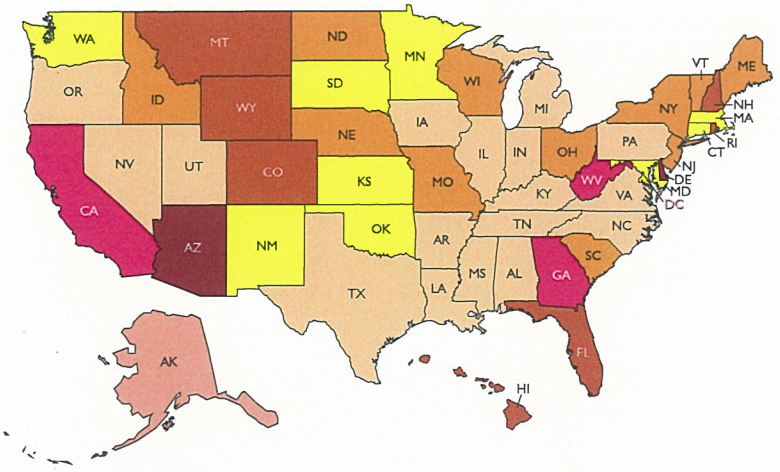
Potential Percent Increase in Obesity Rates 2010-2030



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RATES AND RANKINGS 2030				
State	Obesity rates in 2030 on current track	Rank	Obesity rates in 2030 if states reduce average adult BMI by 5%	Rank
Alabama	62.6%	6	55.1%	8
Alaska	45.6%	49	39.4%	49
Arizona	58.8%	16	51.8%	17
Arkansas	60.6%	10	53.4%	11
California	46.6%	46	40.5%	47
Colorado	44.8%	50	39.0%	50
Connecticut	46.5%	47	40.5%	47
Delaware	64.7%	3	56.4%	4
DC	32.6%	51	29.1%	51
Florida	58.6%	18	51.1%	19
Georgia	53.6%	35	47.5%	33
Hawaii	51.8%	38	45.5%	38
Idaho	53.0%	37	46.9%	37
Illinois	53.7%	34	47.5%	33
Indiana	56.0%	27	49.5%	25
Iowa	54.4%	31	47.6%	32
Kansas	62.1%	7	55.1%	8
Kentucky	60.1%	13	53.2%	15
Louisiana	62.1%	7	55.4%	7
Maine	55.2%	29	49.0%	29
Maryland	58.8%	16	52.2%	16
Massachusetts	48.7%	43	42.4%	43
Michigan	59.4%	15	53.4%	11
Minnesota	54.7%	30	47.5%	33
Mississippi	66.7%	1	59.9%	1
Missouri	61.9%	9	55.5%	5
Montana	53.6%	35	47.4%	36
Nebraska	56.9%	23	50.6%	21
Nevada	49.6%	41	43.8%	41
New Hampshire	57.7%	20	50.8%	20
New Jersey	48.6%	44	42.3%	44
New Mexico	54.2%	32	48.8%	30
New York	50.9%	39	44.5%	40
North Carolina	58.0%	19	51.4%	18
North Dakota	57.1%	22	49.4%	26
Ohio	59.8%	14	53.5%	10
Oklahoma	66.4%	2	58.6%	2
Oregon	48.8%	42	43.4%	42
Pennsylvania	56.7%	24	50.4%	23
Rhode Island	53.8%	33	48.4%	31
South Carolina	62.9%	5	55.5%	5
South Dakota	60.4%	11	53.3%	14
Tennessee	63.4%	4	57.4%	3
Texas	57.2%	21	50.4%	23
Utah	46.4%	48	40.6%	46
Vermont	47.7%	45	42.1%	45
Virginia	49.7%	40	44.7%	39
Washington	55.5%	28	49.1%	28
West Virginia	60.2%	12	53.4%	11
Wisconsin	56.3%	26	49.4%	26
Wyoming	56.6%	25	50.5%	22

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DISEASE RATES

Nationally, obesity could contribute to more than 6 million cases of type 2 diabetes, 5 million cases of coronary heart disease and stroke, and more than 400,000 cases of cancer in the next two decades, according to *The Lancet* study's conservative estimates.[59]

As the number of obese individuals grows, the segment of the population that is currently at risk for the highest incidence of health problems related to obesity exponentially increases their risk of developing those conditions. This report examined the potential growth of five of the highest-cost and highest-incidence health problems related to obesity — type 2 diabetes, coronary heart disease and stroke, hypertension, arthritis and obesity-related cancer. For instance, approximately 33 percent of Americans (79 million people) are currently pre-diabetic, which means they have prolonged or uncontrolled elevated blood sugar levels that can contribute to the development of diabetes. These 79 million Americans are at a tipping point. As more Americans become obese, more people who are currently maintaining blood sugar levels below the level of full-blown diabetes will cross over that line. Twenty years ago, only 7.8 million Americans had been diagnosed with diabetes. Currently, around 25.8 million Americans have diabetes, and if trends continue on their current track, in 2030, more than 31 million Americans will have diabetes.

The analysis found that if we continue on current trajectories by 2030, for every 100,000 Americans, the number of additional individuals that could develop the top five obesity-related health conditions (new cases) range from:

- **Type 2 Diabetes:** Between 8,658 in Utah to 15,208 in West Virginia (average for all states: 12,127)
- **Coronary Heart Disease and Stroke:** Between 16,730 in Utah to 35,519 in West Virginia (average for all states: 26,573)
- **Hypertension:** Between 17,790 in Utah to 30,508 in Maine (average for all states: 24,923)
- **Arthritis:** Between 12,504 in Utah to 18,725 in Maine (average for all states: 16,152)
- **Obesity-Related Cancer:** Between 2,468 in Utah to 4,897 in Maine (average for all states: 3,781)

However, if states could reduce the average BMI by 5 percent by 2030, thousands of cases of type 2 diabetes, coronary heart disease, stroke, hypertension and arthritis (except Alaska and Utah) could be prevented per 100,000 people in nearly each state, and more than 100 cases of obesity-related cancer per 100,000 people could be prevented per state.

For every 100,000 Americans, the number of **individuals who could avoid these serious health problems** range from:

- **Type 2 Diabetes:** Between 1,810 in Utah to 3,216 in West Virginia
- **Coronary Heart Disease and Stroke:** Between 1,339 in Utah to 2,898 in West Virginia
- **Hypertension:** Between 1,427 in Utah to 2,512 in Maine
- **Arthritis:** Between 849 in Utah to 1,382 in Maine
- **Obesity-Related Cancer:** Between 101 in Utah to 277 in Maine

More information about these five top obesity-related health problems is provided in the following section.

Health Care Costs

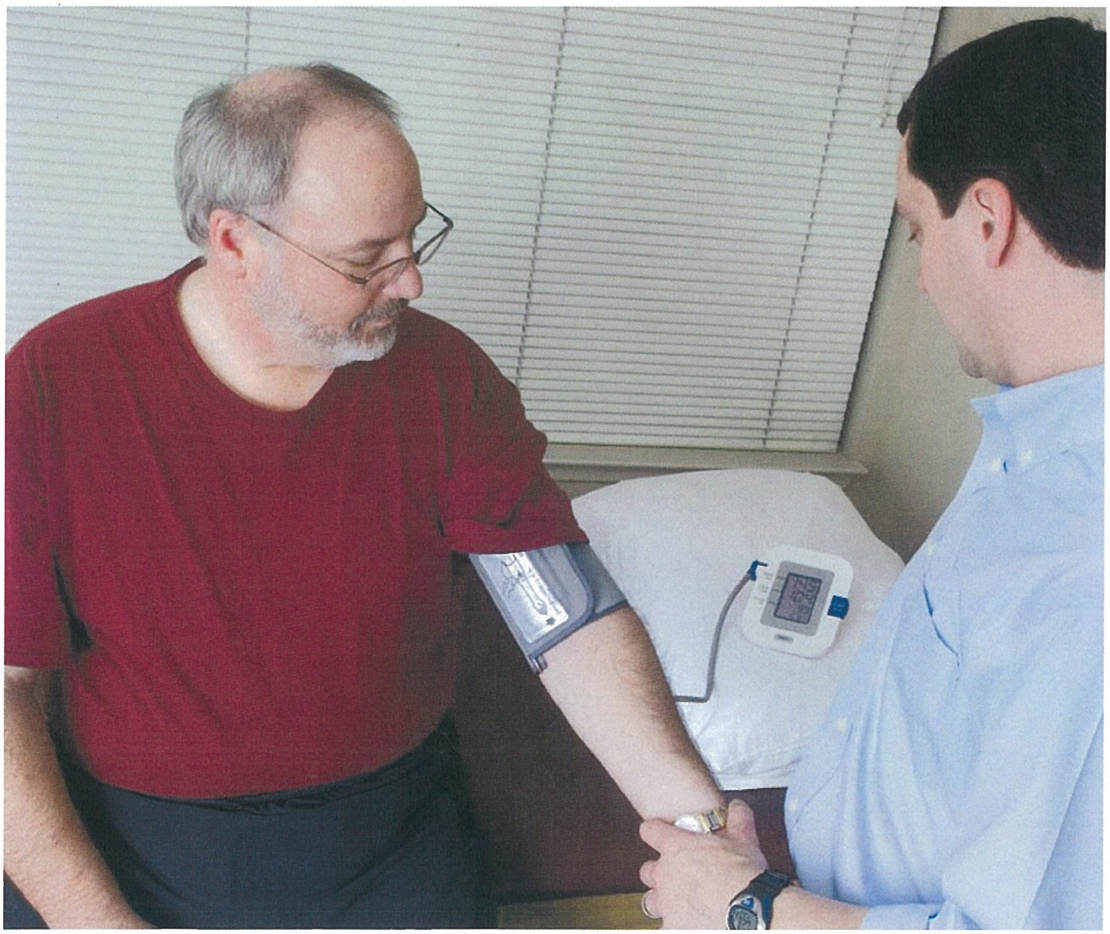
The national analysis found combined medical costs associated with treating preventable obesity-related diseases are estimated to increase by between $48 billion and $66 billion per year in the United States by 2030 — while the loss in economic productivity could be between $390 billion and $580 billion annually by 2030.[60]

In the state-by-state review, the analysis found that if obesity rates continue on their current track, obesity-related health care costs are on a course to increase significantly in most states:

- New Jersey could see an increase of more than a third (34.5 percent);
- Eight states could see increases between 20 percent and 30 percent — New Hampshire (28.7 percent), Colorado (28.5 percent), Alaska (25.7 percent), Georgia (24.3 percent), Virginia (23.8 percent), Washington (21.6 percent), Maryland (21.3 percent) and Vermont (20.3 percent);
- 16 states and Washington, D.C., could expect increases between 15 percent and 20 percent;
- 18 states could expect increases between 10 percent and 15 percent; and
- Only seven states could have increases lower than 10 percent.

Many states that currently have lower obesity rates, such as Colorado and New Hampshire, stand to see the largest increases in obesity-related costs if obesity continues to grow on its current trajectory.

Reducing average BMI by 5 percent by 2030 could significantly reduce health care costs around the country. Every state except Florida would save between 6.5 percent and 7.8 percent in obesity-related health costs. (The impact on Florida, which could see a 2.1 percent reduction, would likely be less significant because of the older demographics in the state.)



New Cases by 2030

State	New Diabetes Cases by 2030 (per 100,000)	Rank (per 100,000)	New Cancer Cases by 2030 (per 100,000)	Rank (per 100,000)	New CHD & Stroke Cases by 2030 (per 100,000)	Rank (per 100,000)	New Hypertension Cases by 2030 (per 100,000)	Rank (per 100,000)	New Arthritis Cases by 2030 (per 100,000)	Rank (per 100,000)
Alabama	13,777	9	4,169	9	30,376	8	26,782	10	17,039	13
Alaska	9,648	49	3,034	50	20,785	50	21,258	50	14,501	50
Arizona	11,239	42	3,358	45	23,405	44	22,356	47	14,942	45
Arkansas	13,000	18	3,950	20	28,548	18	25,512	26	16,484	25
California	10,078	48	3,320	46	22,365	47	22,360	46	14,783	49
Colorado	10,146	47	3,443	43	22,979	46	23,592	43	15,371	44
Connecticut	11,524	37	4,130	12	28,320	20	26,281	17	16,677	20
Delaware	13,360	13	4,217	8	29,936	9	27,039	8	16,922	14
DC	9,346	50	3,288	48	21,229	49	21,989	49	14,892	47
Florida	12,816	19	4,561	3	32,471	3	27,611	5	17,138	9
Georgia	11,405	40	3,311	47	23,032	45	23,286	44	15,519	42
Hawaii	11,031	45	3,791	31	26,121	38	24,174	42	15,486	43
Idaho	11,156	43	3,400	44	23,845	42	22,605	45	14,894	46
Illinois	11,856	34	3,639	41	25,304	41	24,420	38	15,975	36
Indiana	12,497	25	3,737	33	26,801	32	24,925	31	16,181	31
Iowa	12,007	33	3,933	21	28,018	21	24,996	29	16,150	32
Kansas	12,809	20	3,703	38	26,803	31	24,838	34	16,022	35
Kentucky	13,596	10	4,034	16	29,257	14	26,909	9	17,132	10
Louisiana	13,238	14	3,718	36	26,723	34	24,870	33	16,267	30
Maine	14,507	3	4,897	1	34,833	2	30,508	1	18,725	1
Maryland	12,720	21	3,825	30	26,433	37	25,538	25	16,617	24
Massachusetts	11,313	41	4,045	15	27,214	27	25,858	21	16,639	22
Michigan	13,997	5	4,002	19	28,941	15	26,450	15	17,249	8
Minnesota	11,411	39	3,642	40	25,550	40	24,549	36	15,808	39
Mississippi	13,945	6	3,729	35	27,346	24	25,233	28	16,372	27
Missouri	14,032	4	4,016	18	29,291	13	26,373	16	16,918	15
Montana	12,639	22	4,287	7	30,542	6	27,080	7	17,063	11
Nebraska	12,225	30	3,706	37	26,672	35	24,211	41	15,741	41
Nevada	11,443	38	3,670	39	25,796	39	24,361	39	15,806	40
New Hampshire	13,850	8	4,363	5	30,933	5	28,959	3	18,146	3
New Jersey	11,012	46	3,492	42	23,661	43	24,687	35	16,078	34
New Mexico	12,146	31	3,850	28	26,875	29	24,515	37	15,972	37
New York	11,612	36	3,915	23	26,806	30	25,450	27	16,332	28
North Carolina	12,604	24	3,759	32	26,638	36	24,994	30	16,289	29
North Dakota	11,641	35	3,913	25	27,836	22	24,925	31	16,098	33
Ohio	13,851	7	4,079	13	29,441	12	26,742	13	17,058	12
Oklahoma	13,525	12	3,879	27	28,516	19	25,579	23	16,373	26
Oregon	12,078	32	3,922	22	27,245	26	25,555	24	16,666	21
Pennsylvania	13,586	11	4,340	6	31,110	4	27,338	6	17,376	7
Rhode Island	13,215	15	4,149	10	28,655	17	26,754	12	17,497	5
South Carolina	13,156	16	4,023	17	28,886	16	25,993	18	16,687	19
South Dakota	12,278	29	3,737	33	27,013	28	24,317	40	15,844	38
Tennessee	14,673	2	4,066	14	29,625	10	26,778	11	17,449	6
Texas	11,107	44	3,158	49	22,156	48	22,160	48	14,791	48
Utah	8,658	51	2,468	51	16,730	51	17,790	51	12,504	51
Vermont	12,322	28	4,430	4	30,429	7	27,823	4	17,608	4
Virginia	12,607	23	3,890	26	27,309	25	25,976	19	16,780	18
Washington	12,366	27	3,829	29	26,758	33	25,769	22	16,639	22
West Virginia	15,208	1	4,796	2	35,519	1	30,092	2	18,720	2
Wisconsin	12,408	26	3,914	24	27,658	23	25,880	20	16,785	17
Wyoming	13,005	17	4,149	10	29,564	11	26,632	14	16,892	16

TOTAL HEALTH CARE COSTS 2030					
State	Percentage of Potential Increase in Obesity-Related Health Care Costs by 2030 on Current Course	Rank for Potential Increase in Obesity-Related Health Care Costs by 2030	Potential Savings by 2020 if State Reduced Average BMI by 5% (cumulative)	Potential Savings by 2030 if State Reduced Average BMI by 5% (cumulative)	Percentage of Potential Savings by 2030 if State Reduced Average BMI by 5%
Alabama	12%	34th	$3,381,000,000	$9,481,000,000	7.1%
Alaska	25.7%	4th	$573,000,000	$1,530,000,000	6.5%
Arizona	11.1%	41st	$4,775,000,000	$13,642,000,000	7.5%
Arkansas	9.6%	45th	$2,157,000,000	$6,054,000,000	7.6%
California	15.7%	22nd	$28,886,000,000	$81,702,000,000	7.6%
Colorado	28.5%	3rd	$3,792,000,000	$10,794,000,000	7.1%
Connecticut	15.7%	22nd	$2,626,000,000	$7,370,000,000	7.0%
Delaware	14.0%	28th	$701,000,000	$1,912,000,000	7.3%
DC	18.8%	15th	$364,000,000	$1,026,000,000	6.7%
Florida	3.3%	50th	$12,541,000,000	$34,436,000,000	2.1%
Georgia	24.3%	5th	$7,963,000,000	$22,743,000,000	7.7%
Hawaii	12.3%	38th	$976,000,000	$2,704,000,000	7.1%
Idaho	12.0%	36th	$1,195,000,000	$3,280,000,000	7.3%
Illinois	16.1%	21st	$9,852,000,000	$28,185,000,000	7.5%
Indiana	13.0%	32nd	$5,020,000,000	$13,400,000,000	7.1%
Iowa	3.7%	49th	$2,059,000,000	$5,702,000,000	7.1%
Kansas	11.2%	43rd	$2,188,000,000	$5,979,000,000	7.7%
Kentucky	17.6%	17th	$3,376,000,000	$9,437,000,000	7.3%
Louisiana	12.8%	39th	$3,657,000,000	$9,839,000,000	7.3%
Maine	19.0%	12th	$1,019,000,000	$2,870,000,000	7.1%
Maryland	21.3%	7th	$4,935,000,000	$13,836,000,000	7.6%
Massachusetts	19.1%	10th	$5,045,000,000	$14,055,000,000	7.2%
Michigan	19.0%	12th	$8,710,000,000	$24,187,000,000	7.7%
Minnesota	15.7%	26th	$4,189,000,000	$11,630,000,000	7.3%
Mississippi	11.7%	40th	$2,270,000,000	$6,120,000,000	6.9%
Missouri	13.9%	31st	$4,718,000,000	$13,368,000,000	7.9%
Montana	13.0%	32nd	$715,000,000	$1,939,000,000	6.9%
Nebraska	6.7%	47th	$1,334,000,000	$3,686,000,000	7.5%
Nevada	18.2%	14th	$2,095,000,000	$5,921,000,000	7.3%
New Hampshire	28.7%	2nd	$1,158,000,000	$3,257,000,000	7.1%
New Jersey	34.5%	1st	$471,000,000	$1,391,000,000	7.4%
New Mexico	11.8%	42nd	$1,483,000,000	$4,095,000,000	7.3%
New York	14.8%	29th	$14,097,000,000	$40,017,000,000	7.2%
North Carolina	17.6%	17th	$7,633,000,000	$21,101,000,000	7.5%
North Dakota	1.9%	51st	$413,000,000	$1,177,000,000	7.2%
Ohio	15.2%	25th	$9,628,000,000	$26,328,000,000	7.6%
Oklahoma	10.8%	44th	$2,755,000,000	$7,444,000,000	7.2%
Oregon	17.3%	16th	$2,791,000,000	$7,938,000,000	7.3%
Pennsylvania	9.1%	46th	$8,774,000,000	$24,498,000,000	7.1%
Rhode Island	19.9%	11th	$855,000,000	$2,478,000,000	7.6%
South Carolina	12.6%	35th	$3,319,000,000	$9,309,000,000	7.4%
South Dakota	3.6%	48th	$569,000,000	$1,553,000,000	7.6%
Tennessee	17.8%	20th	$4,928,000,000	$13,827,000,000	7.6%
Texas	17.1%	19th	$19,386,000,000	$54,194,000,000	7.7%
Utah	13.7%	30th	$2,122,000,000	$5,843,000,000	7.8%
Vermont	20.3%	9th	$487,000,000	$1,376,000,000	7.3%
Virginia	23.8%	6th	$6,266,000,000	$18,114,000,000	7.4%
Washington	21.6%	8th	$5,201,000,000	$14,729,000,000	7.4%
West Virginia	12.0%	36th	$1,346,000,000	$3,638,000,000	6.8%
Wisconsin	14.7%	27th	$4,148,000,000	$11,962,000,000	7.4%
Wyoming	15.6%	24th	$389,000,000	$1,088,000,000	7.3%

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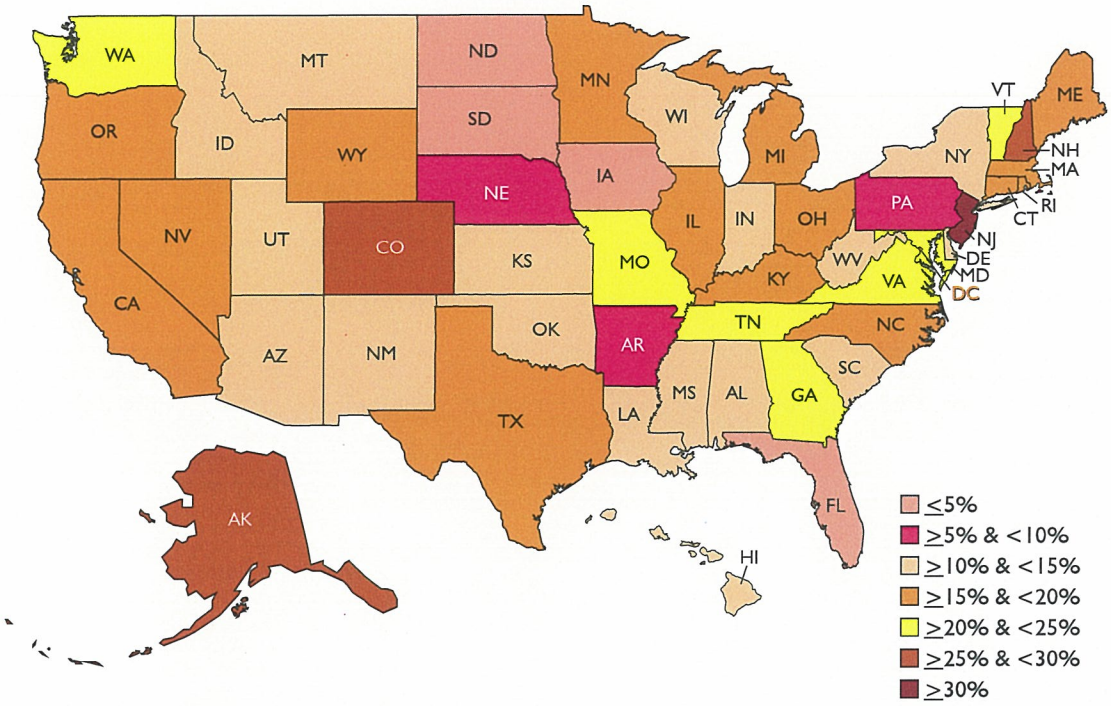
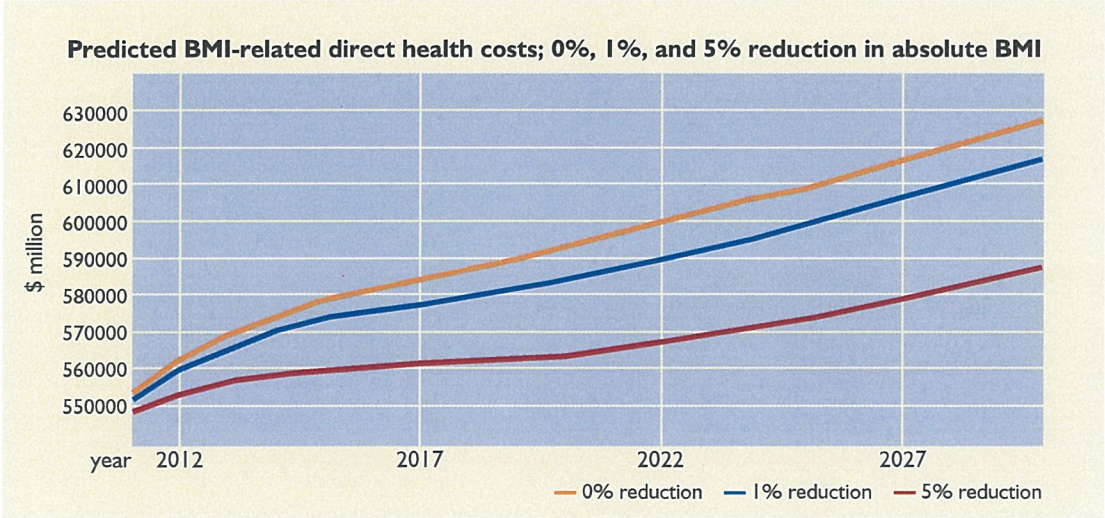
Potential Percent Growth in Obesity-Related Health Care Costs by 2030 if the Current Trajectory Continues (By Percent)



Projected Obesity-Related Health Care Costs 2010 to 2030



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CURRENT ECONOMIC COSTS OF OBESITY

Health Care Costs

- The medical cost of adult obesity in the United States is difficult to calculate but estimates range from $147 billion to nearly $210 billion per year.[61] The bulk of the spending is generated from treating obesity-related diseases such as diabetes.[62]
  - ▲ Of the $147 billion, Medicare and Medicaid are responsible for $61.8 billion. Medicare and Medicaid spending would be 8.5 percent and 11.8 percent lower, respectively, in the absence of obesity.[63]
  - ▲ Obese people spend 42 percent more on health care costs than healthy-weight people.[64]
- Childhood obesity alone is responsible for $14.1 billion in direct costs.[65]
- Annually, the average total health expenses for a child treated for obesity under Medicaid is $6,730, while the average health cost for all children covered by Medicaid is $2,446. The average total health expenses for a child treated for obesity under private insurance is $3,743, while the average health cost for all children covered by private insurance is $1,108.[66]
- Hospitalizations of children and youths with a diagnosis of obesity nearly doubled between 1999 and 2005, while total costs for children and youth with obesity-related hospitalizations increased from $125.9 million in 2001 to $237.6 million in 2005, measured in 2005 dollars.[67]
- In California alone, the economic costs of overweight, obesity and physical inactivity are estimated at $41 billion a year.[68]

Decreased Worker Productivity and Increased Absenteeism

- Obesity-related job absenteeism costs $4.3 billion annually.[69]
- Obesity is associated with lower productivity while at work (presenteeism), which costs employers $506 per obese worker per year.[70]
- As a person's BMI increases, so do the number of sick days, medical claims and health care costs associated with that person.[71]

Higher Workers' Compensation Claims

- A number of studies have shown obese workers have higher workers' compensation claims.[72, 73, 74, 75, 76, 77]
- Obese employees had $51,091 in medical claims costs per 100 full-time employees, compared with only $7,503 in medical claims costs for healthy-weight workers. And obese workers had $59,178 in indemnity claims costs per 100 full-time employees, compared with only $5,396 in indemnity claims costs for healthy-weight employees.[78] Indemnity claims are those where an insurer agrees to cover the cost of losses suffered by the insured and can include medical payments and payment for lost time by the injured worker.

Occupational Health and Safety Costs

- Emergency responders and health care providers face unique challenges in transporting and treating the heaviest patients. According to one study, the number of severely obese (BMI $\geq$ 40) patients quadrupled between 1986 and 2000 from one in 200 to one in 50. The number of super-obese (BMI $\geq$ 50) patients grew by a factor of five, from one in 2,000 to one in 400.[79]
- A typical ambulance outfitted with equipment and two emergency medical technicians (EMTs) that can transport a 400-pound patient costs $70,000. A specially outfitted bariatric ambulance that can transport patients weighing up to 1,000 pounds costs $110,000.[80]
- A standard hospital bed can hold 500 pounds and costs $1,000. A bariatric hospital bed that can hold up to 1,000 pounds costs $4,000.[81]

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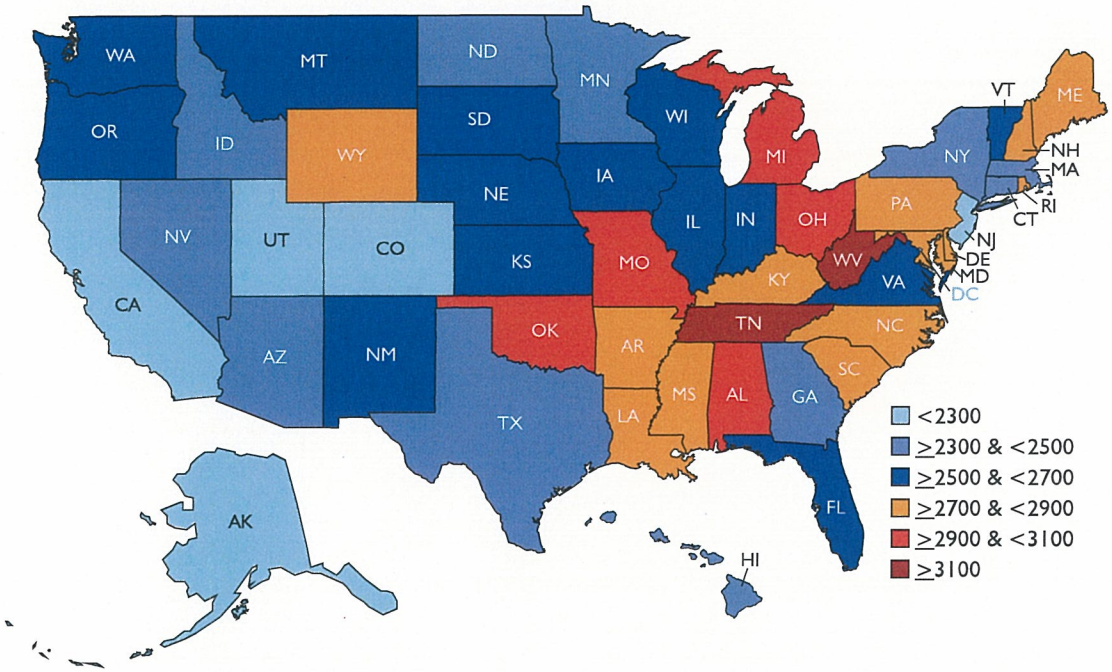
B. FIVE TOP OBESITY-RELATED HEALTH ISSUES

The NHF study commissioned by RWJF and TFAH examined the potential future rates — and related costs — of five of the leading health problems related to obesity if trends continue on their current track versus if average adult BMI was reduced by 5 percent in every state.

1. TYPE 2 DIABETES AND OBESITY

Potential Diabetes Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Diabetes is the seventh leading cause of death in the United States and accounts for $174 billion in total U.S. health care costs.[82]

More than 25 million adult Americans have diabetes.[83] Another 79 million Americans are pre-diabetic, which means they have elevated blood sugar levels that can contribute to the development of diabetes.[84] CDC projects that as many as one in three U.S. adults could have diabetes by 2050, and the analysis in this report shows the numbers could top 31 percent by 2030.[85]

Over a 10-year period, the number of adults in the United States ages 18–79 with newly diagnosed diabetes more than tripled from 493,000 in 1980 to more than 1.7 million in 2010.[86] About 1.9 million people aged 20 years or older were newly diagnosed with diabetes in 2010.[87]

Approximately 215,000 individuals under the age of 20 have diabetes.[88] Two million adolescents ages 12–19 have pre-diabetes.[89]

Being overweight or obese significantly increases an individual's risk of type 2 diabetes. More than 80 percent of people with type 2 diabetes are overweight.[90] Excess weight decreases the effectiveness of insulin, a hormone that transports sugar from blood to cells. When insulin doesn't work correctly, too much sugar stays in the bloodstream. To make up for this, the cells that produce insulin must produce more of the hormone. This process may lead the cells to deteriorate more quickly, exacerbating the development of diabetes.[91, 92]

People with type 2 diabetes have higher-than-normal levels of glucose, a source of sugar that humans produce by metabolizing carbohydrates, in their blood. High blood sugar contributes to a range of serious health problems, including heart disease, stroke, kidney disease, circulatory problems, neurological problems and eye damage.

Nutrition, Physical Activity, Weight Loss and Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) found that a 7 percent weight loss together with moderate levels of physical activity (walking 30 minutes a day, five days a week) decreased the number of new type 2 diabetes cases by 58 percent among people at risk for diabetes.[93] While the lifestyle changes in nutrition and activity through the Diabetes Prevention Program (DPP) reduced the incidence of type 2 diabetes by 58 percent, drug therapy reduced the incidence by only 31 percent.[94]

Physical activity and weight loss both increase insulin sensitivity, which increases the body's ability to transport sugar from the bloodstream to cells. A healthy diet, with recommended levels of fruits, vegetables and grains and a limited amount of saturated fats and sweets, can also help reduce the severity of the illness.[95, 96, 97]

DIABETES MANAGEMENT AND TEENS: STUDY FINDS DISCOURAGING RESULTS

Because type 2 diabetes previously was considered to be an adult condition, there are few studies evaluating how to treat young people with the disease. New research in the *New England Journal of Medicine* examined various treatments for controlling blood sugar in teens. Results showed that nearly half of participants failed in controlling the disease, and one in five suffered serious complications within a few years of diagnosis.[98] The results highlight the importance of preventing type 2 diabetes in the first place.

The research focused on nearly 700 overweight and obese teens recently diagnosed with type 2 diabetes. Teens were placed in one of three treatment groups and followed for four years. One group took metformin, another took metformin plus diet and exercise counseling, and the final group was given metformin plus a second drug, Avandia. Results showed that half in the metformin group failed to maintain blood sugar control, but the outcomes for the other two groups were not much better.[99]

WHERE YOU LIVE MATTERS: MOVING TO HIGHER-INCOME AREAS REDUCES RISK OF OBESITY AND DIABETES FOR POOR WOMEN

Between 1994 and 1998 the U.S. Department of Housing and Urban Development (HUD) randomly assigned families living in public housing projects in high-poverty neighborhoods into an experimental and control group. The experimental group was given vouchers to move to higher-income neighborhoods, and the control group did not receive vouchers. Findings of the study, which were released in the *New England Journal of Medicine*, revealed that having the option to move to lower-poverty neighborhoods lowered the risk of obesity and diabetes among poor women.[100] Women who were given the vouchers were almost one-fifth less likely to become extremely obese and were one-fifth less likely to develop diabetes compared with women who were not offered the housing voucher.[101]

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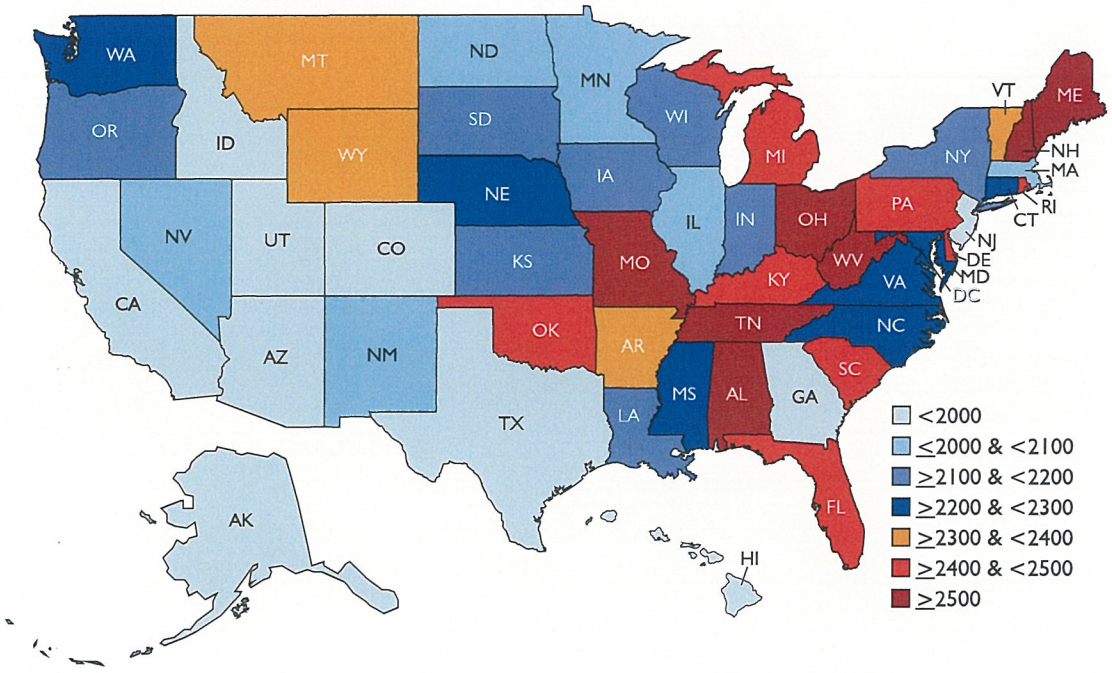
Diabetes Costs and Cases

State	2010 Number of Cases	New Diabetes Cases by 2030	New Diabetes Cases by 2030 (per 100,000)	Rank New Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	448,912	661,673	13,777	9	72,185	$1,152,000,000	141,297	$3,672,000,000
Alaska	50,843	69,728	9,648	49	7,892	$176,000,000	14,389	$546,000,000
Arizona	496,106	728,569	11,239	42	79,411	$1,739,000,000	154,737	$5,781,000,000
Arkansas	265,417	381,937	13,000	18	41,337	$722,000,000	80,530	$2,324,000,000
California	2,694,595	3,798,591	10,078	48	420,642	$9,747,000,000	796,430	$31,087,000,000
Colorado	333,206	519,150	10,146	47	54,596	$1,247,000,000	108,067	$4,043,000,000
Connecticut	267,944	412,641	11,524	37	42,682	$887,000,000	83,932	$2,824,000,000
Delaware	79,275	121,193	13,360	13	13,017	$228,000,000	25,427	$721,000,000
DC	40,312	57,758	9,346	50	6,155	$133,000,000	11,705	$433,000,000
Florida	1,722,611	2,442,415	12,816	19	260,135	$4,459,000,000	501,976	$14,074,000,000
Georgia	754,593	1,119,425	11,405	40	123,475	$2,563,000,000	238,019	$8,324,000,000
Hawaii	105,063	151,655	11,031	45	15,879	$319,000,000	31,634	$1,051,000,000
Idaho	119,270	176,821	11,156	43	19,384	$404,000,000	36,677	$1,274,000,000
Illinois	1,014,097	1,525,779	11,856	34	167,300	$3,434,000,000	325,721	$11,141,000,000
Indiana	544,815	814,420	12,497	25	89,021	$1,635,000,000	170,743	$5,160,000,000
Iowa	262,746	367,691	12,007	33	40,851	$726,000,000	77,783	$2,287,000,000
Kansas	239,691	367,777	12,809	20	39,537	$741,000,000	77,294	$2,390,000,000
Kentucky	394,029	594,058	13,596	10	63,793	$1,104,000,000	124,701	$3,503,000,000
Louisiana	398,422	605,617	13,238	14	66,884	$1,212,000,000	127,455	$3,882,000,000
Maine	120,878	192,680	14,507	3	19,949	$344,000,000	40,550	$1,114,000,000
Maryland	469,294	741,358	12,720	21	79,731	$1,580,000,000	158,413	$5,211,000,000
Massachusetts	483,855	745,248	11,313	41	77,206	$1,656,000,000	155,532	$5,436,000,000
Michigan	861,006	1,382,370	13,997	5	147,056	$2,777,000,000	294,113	$9,067,000,000
Minnesota	410,004	609,902	11,411	39	65,368	$1,350,000,000	127,368	$4,367,000,000
Mississippi	284,269	415,353	13,945	6	45,988	$774,000,000	86,347	$2,472,000,000
Missouri	535,793	843,420	14,032	4	90,942	$1,575,000,000	179,659	$5,084,000,000
Montana	83,849	126,162	12,639	22	13,156	$234,000,000	26,522	$758,000,000
Nebraska	152,276	225,263	12,225	30	24,784	$458,000,000	47,577	$1,456,000,000
Nevada	214,217	311,630	11,443	38	34,232	$690,000,000	65,087	$2,172,000,000
New Hampshire	108,764	182,570	13,850	8	18,692	$385,000,000	38,425	$1,239,000,000
New Jersey	607,689	971,386	11,012	46	103,119	$158,000,000	202,357	$520,000,000
New Mexico	173,054	252,907	12,146	31	26,569	$486,000,000	52,597	$1,599,000,000
New York	1,516,923	2,260,299	11,612	36	241,952	$4,774,000,000	473,588	$15,726,000,000
North Carolina	820,118	1,217,093	12,604	24	134,610	$2,363,000,000	261,785	$7,746,000,000
North Dakota	58,887	79,617	11,641	35	8,809	$150,000,000	16,873	$491,000,000
Ohio	1,012,377	1,599,091	13,851	7	174,329	$3,075,000,000	342,192	$9,899,000,000
Oklahoma	337,823	512,801	13,525	12	56,835	$912,000,000	110,522	$2,950,000,000
Oregon	313,737	467,643	12,078	32	49,676	$936,000,000	98,578	$3,089,000,000
Pennsylvania	1,135,646	1,731,248	13,586	11	185,919	$3,208,000,000	366,995	$10,318,000,000
Rhode Island	82,811	138,930	13,215	15	14,308	$297,000,000	29,889	$1,018,000,000
South Carolina	429,273	615,599	13,156	16	68,972	$1,099,000,000	133,498	$3,548,000,000
South Dakota	70,269	101,181	12,278	29	11,166	$196,000,000	21,780	$638,000,000
Tennessee	594,871	939,564	14,673	2	102,390	$1,676,000,000	201,257	$5,505,000,000
Texas	1,962,059	2,851,687	11,107	44	321,447	$6,597,000,000	605,152	$21,338,000,000
Utah	164,385	243,915	8,658	51	27,327	$718,000,000	50,992	$2,289,000,000
Vermont	50,472	77,189	12,322	28	8,000	$160,000,000	16,193	$526,000,000
Virginia	644,975	1,020,739	12,607	23	106,956	$2,122,000,000	209,621	$6,837,000,000
Washington	550,296	844,602	12,366	27	90,361	$1,680,000,000	178,401	$5,534,000,000
West Virginia	191,529	282,164	15,208	1	29,964	$430,000,000	59,669	$1,391,000,000
Wisconsin	470,136	708,716	12,408	26	74,310	$1,442,000,000	147,935	$4,733,000,000
Wyoming	48,566	73,889	13,005	17	7,750	$127,000,000	15,596	$421,000,000

2. HEART DISEASE, STROKE AND OBESITY

Potential Chronic Heart Disease & Stroke Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Being overweight or obese raises the risk of having high blood pressure, having high levels of harmful blood fats known as triglycerides and high levels of low-density lipoprotein (LDL), also known as "bad cholesterol." And, it can lead to lower levels of high-density lipoprotein (HDL), also known as "good cholesterol." These conditions can raise the long-term risk of heart disease or stroke. Excess body fat can also produce chemicals in the body that trigger inflammation. Chronic inflammation throughout the body, and especially in blood vessels, may increase the risk of heart disease.[102]

Most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies, particularly those focusing on physical activity and nutrition, according to a review of more than 200 articles by the American Heart Association.[103]

Weight Loss, Physical Activity, Nutrition and Heart Disease and Stroke

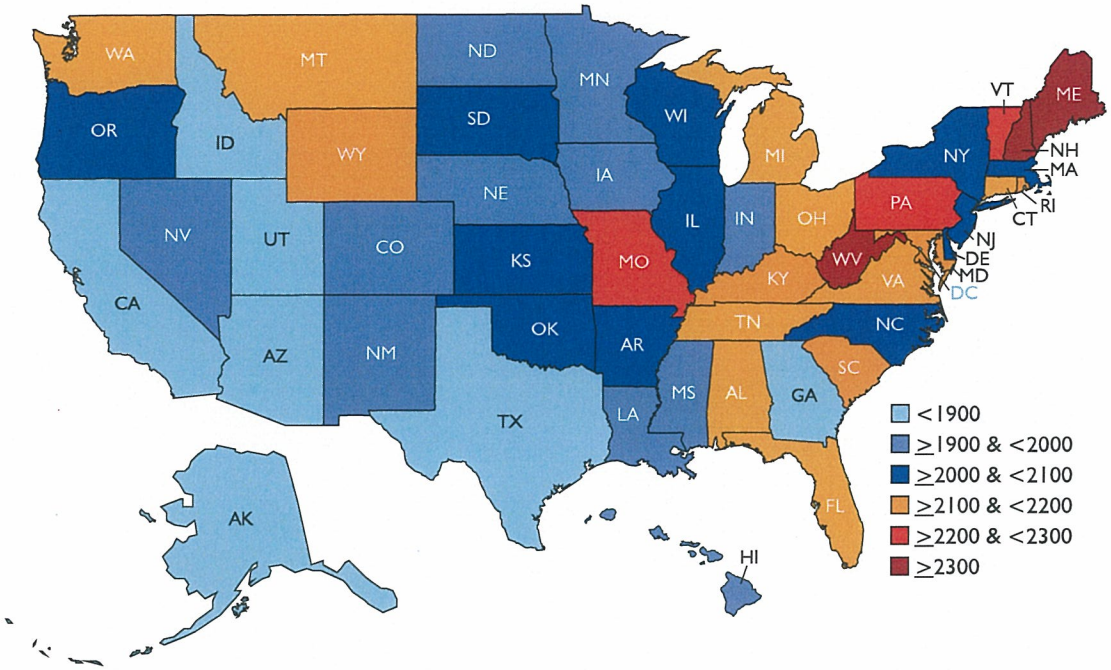
For individuals who are overweight or obese, evidence indicates that losing as little as 5 percent to 10 percent of total weight can reduce the risk of heart disease and stroke. For someone who weighs 220 pounds, 5 percent of total weight is 11 pounds. Weight loss may cut risks of heart disease and stroke by decreasing hypertension, lowering levels of triglycerides and bad cholesterol, and reducing inflammation, which may decrease cardiovascular risk. It also reduces the production of inflammatory chemicals in the body, and, as a result, reduces cardiovascular inflammation. In addition, exercise can help by strengthening the heart and improving blood flow. A healthy diet also can protect against heart disease and stroke.[104, 105]

Coronary Heart Disease & Stroke Costs and Cases

State	2010 Number of Cases	New CHD & Stroke Cases by 2030	New CHD & Stroke Cases by 2030 (per 100,000)	Rank New CHD & Stroke Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	311,842	1,458,880	30,376	8	59,122	$1,627,000,000	121,749	$4,235,000,000
Alaska	29,747	150,217	20,785	50	6,273	$281,000,000	11,889	$692,000,000
Arizona	348,694	1,517,230	23,405	44	58,537	$2,148,000,000	114,546	$5,467,000,000
Arkansas	187,061	838,734	28,548	18	32,935	$1,027,000,000	67,867	$2,642,000,000
California	1,876,680	8,429,796	22,365	47	321,512	$13,923,000,000	656,970	$35,571,000,000
Colorado	231,944	1,175,789	22,979	46	45,232	$1,761,000,000	95,428	$4,735,000,000
Connecticut	214,986	1,014,057	28,320	20	37,776	$1,296,000,000	79,528	$3,316,000,000
Delaware	57,340	271,560	29,936	9	10,786	$344,000,000	22,261	$871,000,000
DC	29,219	131,194	21,229	49	4,721	$165,000,000	9,295	$406,000,000
Florida	1,412,354	6,188,174	32,471	3	234,408	$5,913,000,000	465,385	$14,684,000,000
Georgia	465,535	2,260,639	23,032	45	87,846	$3,735,000,000	185,409	$9,928,000,000
Hawaii	78,240	359,114	26,121	38	13,363	$482,000,000	26,286	$1,153,000,000
Idaho	85,114	377,940	23,845	42	15,232	$585,000,000	30,146	$1,454,000,000
Illinois	719,649	3,256,437	25,304	41	129,207	$4,649,000,000	268,967	$12,073,000,000
Indiana	386,193	1,746,600	26,801	32	72,338	$2,499,000,000	140,700	$5,922,000,000
Iowa	206,491	857,998	28,018	21	33,808	$940,000,000	67,065	$2,373,000,000
Kansas	176,438	769,578	26,803	31	31,727	$1,051,000,000	63,052	$2,560,000,000
Kentucky	264,958	1,278,342	29,257	14	52,389	$1,656,000,000	107,355	$4,298,000,000
Louisiana	274,399	1,222,533	26,723	34	50,964	$1,723,000,000	99,640	$4,120,000,000
Maine	91,512	462,648	34,833	2	17,970	$491,000,000	38,398	$1,265,000,000
Maryland	320,731	1,540,592	26,433	37	63,295	$2,408,000,000	129,330	$6,099,000,000
Massachusetts	375,028	1,792,732	27,214	27	65,085	$2,358,000,000	138,075	$5,918,000,000
Michigan	601,065	2,858,267	28,941	15	117,033	$4,401,000,000	241,967	$10,943,000,000
Minnesota	298,457	1,365,612	25,550	40	54,304	$2,071,000,000	111,066	$5,242,000,000
Mississippi	183,417	814,504	27,346	24	35,444	$1,122,000,000	66,897	$2,681,000,000
Missouri	383,542	1,760,591	29,291	13	73,330	$2,290,000,000	152,070	$5,935,000,000
Montana	64,244	304,870	30,542	6	12,018	$358,000,000	23,617	$847,000,000
Nebraska	116,013	491,469	26,672	35	20,435	$629,000,000	40,796	$1,593,000,000
Nevada	144,554	702,508	25,796	39	26,144	$989,000,000	55,556	$2,653,000,000
New Hampshire	76,996	407,757	30,933	5	16,082	$561,000,000	35,077	$1,467,000,000
New Jersey	398,981	2,087,173	23,661	43	77,009	$220,000,000	168,660	$610,000,000
New Mexico	123,330	559,598	26,875	29	21,384	$730,000,000	43,102	$1,782,000,000
New York	1,140,661	5,217,841	26,806	30	194,652	$6,777,000,000	410,326	$17,296,000,000
North Carolina	543,752	2,572,272	26,638	36	106,510	$3,733,000,000	213,310	$9,360,000,000
North Dakota	46,993	190,379	27,836	22	7,222	$183,000,000	14,116	$467,000,000
Ohio	732,181	3,398,949	29,441	12	145,120	$4,726,000,000	293,011	$11,718,000,000
Oklahoma	239,699	1,081,186	28,516	19	46,484	$1,345,000,000	92,323	$3,281,000,000
Oregon	225,575	1,054,888	27,245	26	40,229	$1,330,000,000	82,200	$3,388,000,000
Pennsylvania	892,129	3,964,312	31,110	4	150,111	$3,956,000,000	312,456	$9,867,000,000
Rhode Island	64,087	301,251	28,655	17	11,722	$394,000,000	25,063	$1,009,000,000
South Carolina	289,176	1,351,642	28,886	16	56,853	$1,682,000,000	114,735	$4,297,000,000
South Dakota	54,373	222,609	27,013	28	9,246	$277,000,000	17,899	$660,000,000
Tennessee	396,752	1,896,993	29,625	10	79,145	$2,380,000,000	162,325	$6,034,000,000
Texas	1,261,654	5,688,482	22,156	48	230,559	$9,169,000,000	465,739	$23,124,000,000
Utah	113,478	471,321	16,730	51	20,030	$1,026,000,000	37,723	$2,530,000,000
Vermont	38,031	190,617	30,429	7	6,978	$243,000,000	14,702	$618,000,000
Virginia	442,803	2,211,102	27,309	25	86,796	$3,041,000,000	183,631	$8,114,000,000
Washington	378,316	1,827,582	26,758	33	74,379	$2,575,000,000	151,285	$6,592,000,000
West Virginia	137,761	659,007	35,519	1	26,420	$685,000,000	53,768	$1,658,000,000
Wisconsin	347,847	1,579,761	27,658	23	59,574	$1,968,000,000	123,717	$5,171,000,000
Wyoming	35,021	167,970	29,564	11	6,619	$189,000,000	13,403	$474,000,000

3. HYPERTENSION AND OBESITY

Potential Hypertension Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Hypertension, often known as high blood pressure, can cause damage to an individual's arteries, heart, brain, kidneys, eyes and other body functions and can increase an individual's risk for heart disease, stroke, kidney damage and other health problems.[106] About 1 in 3 U.S. adults—an estimated 68 million—have high blood pressure.[107]

Being overweight or obese can increase risk for hypertension in a number of ways:

- Increased activity of the sympathetic nervous system, which controls some automatic bodily functions, including blood pressure;
- Increased salt retention and insulin resistance, both of which can increase blood pressure;
- Increased levels of systemic inflammation, which can damage blood vessels and lead to hypertension; and
- Increased risk of sleep apnea, which raises the risk of high blood pressure.[108]

Nutrition, Physical Activity and Hypertension

A range of studies have found that reducing obesity can reduce high blood pressure. Losing as little as five pounds can reduce hypertension and may allow people to reduce the amount of blood pressure medicine they take. Reducing sodium intake may also reduce the amount of blood pressure medicine needed. Getting at least 30 minutes of physical activity several times a week and eating a healthy, lower sodium diet also can help to lower high blood pressure. Losing weight lowers blood pressure through a combination of changes: reduced activity in the sympathetic nervous system, reduced sodium intake, reduced systemic inflammation, and a lowered risk of sleep apnea.[109,110]

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Hypertension Costs and Cases

State	2010 Number of Cases	New Hypertension Cases by 2030	New Hypertension Cases by 2030 (per 100,000)	Rank New Hypertension Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	1,006,222	1,286,270	26,782	10	60,370	$214,000,000	102,683	$570,000,000
Alaska	113,936	153,635	21,258	50	6,562	$36,000,000	10,826	$94,000,000
Arizona	1,176,899	1,449,229	22,356	47	67,742	$327,000,000	112,018	$876,000,000
Arkansas	606,605	749,537	25,512	26	34,933	$148,000,000	60,434	$391,000,000
California	6,478,109	8,427,912	22,360	46	364,104	$1,773,000,000	698,431	$5,422,000,000
Colorado	847,137	1,207,155	23,592	43	55,978	$274,000,000	97,935	$759,000,000
Connecticut	708,945	941,046	26,281	17	43,219	$184,000,000	75,911	$506,000,000
Delaware	187,986	245,280	27,039	8	11,575	$47,000,000	18,887	$119,000,000
DC	98,237	135,891	21,989	49	5,296	$26,000,000	9,665	$72,000,000
Florida	4,372,562	5,261,978	27,611	5	235,932	$827,000,000	401,924	$2,175,000,000
Georgia	1,649,642	2,285,570	23,286	44	106,004	$535,000,000	184,624	$1,492,000,000
Hawaii	264,816	332,347	24,174	42	14,587	$64,000,000	26,740	$184,000,000
Idaho	283,475	358,286	22,605	45	17,276	$77,000,000	29,084	$213,000,000
Illinois	2,369,745	3,142,673	24,420	38	145,937	$680,000,000	258,801	$1,889,000,000
Indiana	1,249,620	1,624,343	24,925	31	77,095	$334,000,000	128,579	$864,000,000
Iowa	636,409	765,455	24,996	29	34,573	$135,000,000	60,940	$369,000,000
Kansas	558,427	713,158	24,838	34	34,943	$144,000,000	57,769	$379,000,000
Kentucky	881,343	1,175,750	26,909	9	54,617	$219,000,000	93,198	$576,000,000
Louisiana	882,898	1,137,762	24,870	33	55,539	$241,000,000	91,451	$618,000,000
Maine	296,784	405,204	30,508	1	19,113	$73,000,000	33,364	$196,000,000
Maryland	1,083,304	1,488,428	25,538	25	71,397	$338,000,000	126,707	$930,000,000
Massachusetts	1,258,549	1,703,405	25,858	21	75,888	$340,000,000	135,308	$952,000,000
Michigan	1,934,745	2,612,251	26,450	15	122,761	$559,000,000	211,548	$1,480,000,000
Minnesota	990,242	1,312,110	24,549	36	60,985	$286,000,000	105,240	$783,000,000
Mississippi	595,822	751,568	25,233	28	35,861	$145,000,000	56,741	$357,000,000
Missouri	1,221,011	1,585,199	26,373	16	77,117	$295,000,000	133,798	$823,000,000
Montana	212,207	270,312	27,080	7	12,428	$49,000,000	21,391	$126,000,000
Nebraska	364,659	446,122	24,211	41	21,872	$91,000,000	36,005	$238,000,000
Nevada	511,848	663,428	24,361	39	31,999	$149,000,000	53,677	$401,000,000
New Hampshire	263,771	381,736	28,959	3	18,455	$83,000,000	31,320	$217,000,000
New Jersey	1,438,554	2,177,679	24,687	35	100,473	$37,000,000	177,570	$104,000,000
New Mexico	419,506	510,457	24,515	37	23,821	$95,000,000	40,458	$251,000,000
New York	3,749,386	4,953,893	25,450	27	219,567	$992,000,000	395,338	$2,793,000,000
North Carolina	1,831,530	2,413,521	24,994	30	113,366	$486,000,000	195,735	$1,311,000,000
North Dakota	145,630	170,470	24,925	31	7,667	$26,000,000	13,248	$75,000,000
Ohio	2,336,929	3,087,351	26,742	13	150,084	$621,000,000	249,255	$1,602,000,000
Oklahoma	765,126	969,830	25,579	23	46,939	$176,000,000	77,423	$451,000,000
Oregon	749,127	989,454	25,555	24	43,442	$182,000,000	77,631	$503,000,000
Pennsylvania	2,752,209	3,483,650	27,338	6	163,109	$609,000,000	284,931	$1,656,000,000
Rhode Island	207,285	281,265	26,754	12	12,973	$57,000,000	23,602	$155,000,000
South Carolina	961,722	1,216,272	25,993	18	56,291	$202,000,000	101,446	$568,000,000
South Dakota	169,415	200,392	24,317	40	9,724	$38,000,000	16,721	$103,000,000
Tennessee	1,299,689	1,714,690	26,778	11	83,372	$321,000,000	139,977	$842,000,000
Texas	4,300,252	5,689,509	22,160	48	271,638	$1,352,000,000	472,671	$3,777,000,000
Utah	390,890	501,184	17,790	51	24,341	$141,000,000	40,202	$393,000,000
Vermont	128,688	174,292	27,823	4	7,605	$34,000,000	13,976	$95,000,000
Virginia	1,512,608	2,103,174	25,976	19	96,997	$434,000,000	175,777	$1,219,000,000
Washington	1,282,066	1,760,032	25,769	22	83,258	$358,000,000	145,002	$987,000,000
West Virginia	433,914	558,316	30,092	2	25,474	$86,000,000	42,840	$220,000,000
Wisconsin	1,130,359	1,478,205	25,880	20	65,742	$286,000,000	114,692	$777,000,000
Wyoming	118,620	151,312	26,632	14	7,085	$23,000,000	12,119	$68,000,000

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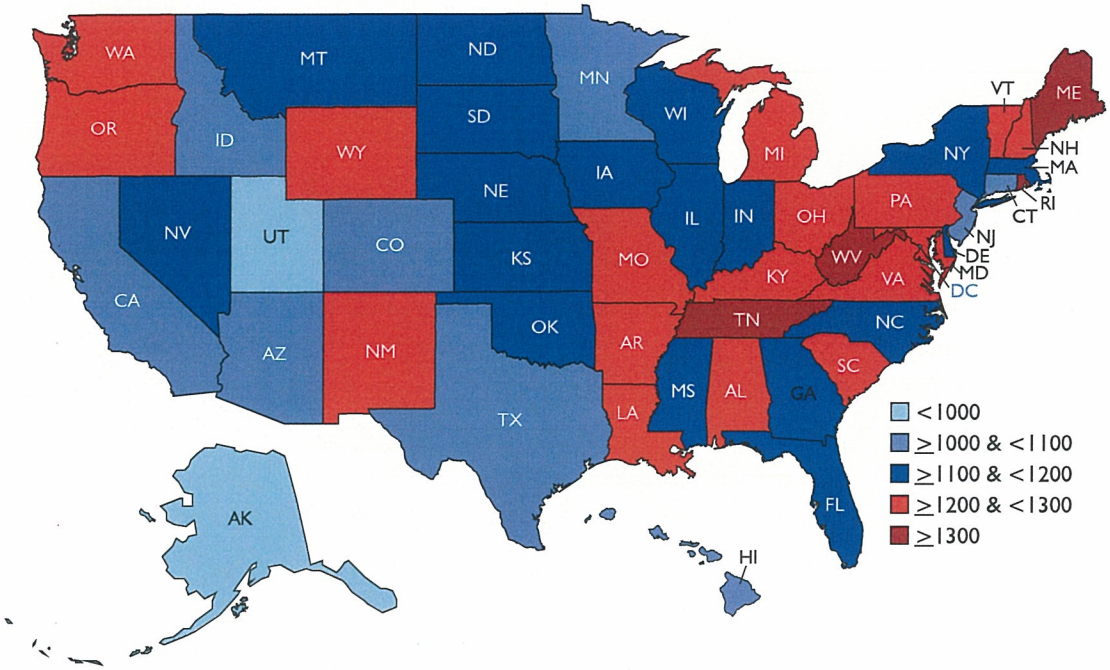
4. ARTHRITIS AND OBESITY

Potential Arthritis Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Obesity is a known risk factor for the development and progression of osteoarthritis of the knee and possibly of other joints. Obese adults are up to four times more likely to develop osteoarthritis of the knee than healthy-weight adults.[111]

Among individuals who have received a doctor's diagnosis of arthritis, 68.8 percent are overweight or obese.[112] Obesity prevalence is 54 percent higher among adults with arthritis compared with adults without arthritis.[113]

Being overweight or obese puts more stress on joints and cartilage, and leads to increased deterioration. Increased body fat also triggers the production of inflammatory chemicals, which may accelerate the arthritic process.[114, 115]

Adults with arthritis are significantly less likely to participate in leisure time physical activity compared with those without arthritis.[116]

Arthritis and Weight Loss

For those who are overweight or obese, losing weight can make a significant difference for arthritis symptoms and for the overall progression of the disease. Losing as little as 5 percent of total body weight can reduce the pounding on knees, hips and lower back, and can reduce the production of inflammatory chemicals that can worsen pain and speed deterioration.[117, 118]

For every pound of body weight lost, there is a 4 percent reduction in knee joint stress among overweight and obese people with osteoarthritis of the knee.[119]

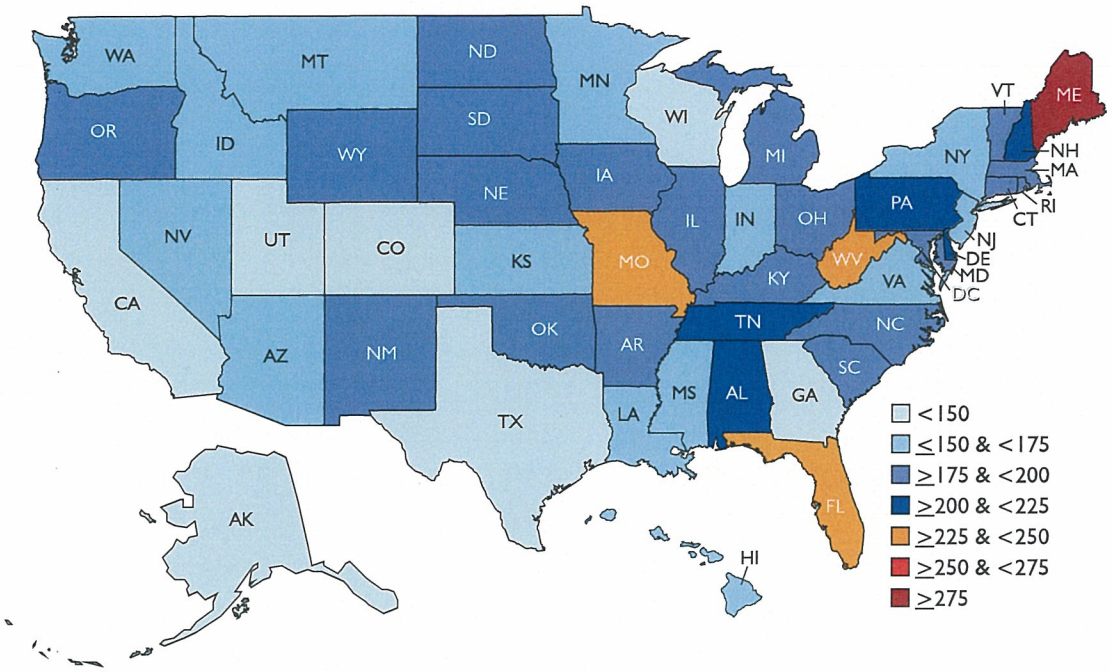
000268

Arthritis Costs and Cases

State	2010 Number of Cases	New Arthritis Cases by 2030	New Arthritis Cases by 2030 (per 100,000)	Rank New Arthritis Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	988,452	818,339	17,039	13	31,890	$295,000,000	59,554	$791,000,000
Alaska	117,391	104,801	14,501	50	3,845	$55,000,000	6,895	$151,000,000
Arizona	1,179,621	968,616	14,942	45	37,145	$436,000,000	68,326	$1,269,000,000
Arkansas	598,760	484,296	16,484	25	19,067	$193,000,000	36,343	$561,000,000
California	6,631,138	5,571,995	14,783	49	209,567	$2,758,000,000	387,850	$7,865,000,000
Colorado	875,842	786,503	15,371	44	29,984	$347,000,000	52,652	$949,000,000
Connecticut	710,198	597,155	16,677	20	20,911	$220,000,000	38,564	$608,000,000
Delaware	184,829	153,505	16,922	14	5,633	$54,000,000	10,341	$143,000,000
DC	103,440	92,032	14,892	47	3,424	$38,000,000	6,582	$118,000,000
Florida	4,225,438	3,266,082	17,138	9	117,776	$1,013,000,000	218,399	$2,849,000,000
Georgia	1,707,454	1,523,222	15,519	42	58,793	$752,000,000	108,753	$2,196,000,000
Hawaii	265,338	212,903	15,486	43	8,084	$84,000,000	14,834	$249,000,000
Idaho	285,313	236,068	14,894	46	8,828	$101,000,000	16,151	$286,000,000
Illinois	2,387,762	2,055,864	15,975	36	78,116	$923,000,000	149,927	$2,730,000,000
Indiana	1,243,233	1,054,503	16,181	31	40,079	$430,000,000	74,684	$1,200,000,000
Iowa	628,692	494,563	16,150	32	18,527	$176,000,000	34,635	$513,000,000
Kansas	555,211	460,030	16,022	35	17,199	$189,000,000	33,105	$515,000,000
Kentucky	876,143	748,558	17,132	10	29,187	$286,000,000	53,350	$790,000,000
Louisiana	877,591	744,189	16,267	30	29,645	$327,000,000	55,676	$915,000,000
Maine	290,329	248,703	18,725	1	9,457	$86,000,000	18,356	$249,000,000
Maryland	1,098,166	968,487	16,617	24	37,884	$458,000,000	70,406	$1,262,000,000
Massachusetts	1,270,472	1,096,100	16,639	22	40,777	$439,000,000	76,086	$1,257,000,000
Michigan	1,929,807	1,703,543	17,249	8	67,553	$771,000,000	126,613	$2,161,000,000
Minnesota	998,206	844,916	15,808	39	31,481	$365,000,000	56,923	$1,013,000,000
Mississippi	589,477	487,642	16,372	27	19,509	$191,000,000	35,176	$521,000,000
Missouri	1,207,427	1,016,888	16,918	15	40,031	$369,000,000	75,434	$1,082,000,000
Montana	207,585	170,323	17,063	11	6,418	$64,000,000	11,948	$175,000,000
Nebraska	361,250	290,050	15,741	41	11,093	$116,000,000	20,601	$321,000,000
Nevada	512,502	430,448	15,806	40	16,667	$191,000,000	30,746	$540,000,000
New Hampshire	262,518	239,199	18,146	3	8,806	$97,000,000	16,807	$265,000,000
New Jersey	1,504,360	1,418,265	16,078	34	48,075	$40,000,000	93,945	$119,000,000
New Mexico	413,967	332,573	15,972	37	13,701	$135,000,000	25,757	$391,000,000
New York	3,752,890	3,179,056	16,332	28	115,429	$1,347,000,000	220,151	$3,718,000,000
North Carolina	1,843,890	1,572,931	16,289	29	62,284	$679,000,000	115,491	$1,942,000,000
North Dakota	141,984	110,099	16,098	33	4,001	$39,000,000	7,585	$110,000,000
Ohio	2,316,148	1,969,338	17,058	12	75,273	$730,000,000	144,774	$2,131,000,000
Oklahoma	752,463	620,784	16,373	26	23,697	$233,000,000	44,816	$629,000,000
Oregon	751,876	645,284	16,666	21	24,122	$251,000,000	47,508	$754,000,000
Pennsylvania	2,691,043	2,214,204	17,376	7	84,103	$788,000,000	163,746	$2,267,000,000
Rhode Island	208,610	183,946	17,497	5	7,170	$79,000,000	13,856	$229,000,000
South Carolina	947,357	780,823	16,687	19	29,432	$278,000,000	58,678	$803,000,000
South Dakota	166,267	130,568	15,844	38	4,928	$52,000,000	9,625	$145,000,000
Tennessee	1,289,571	1,117,321	17,449	6	44,119	$428,000,000	84,332	$1,201,000,000
Texas	4,426,828	3,797,542	14,791	48	149,683	$1,704,000,000	270,868	$4,891,000,000
Utah	410,666	352,265	12,504	51	13,382	$190,000,000	23,918	$541,000,000
Vermont	127,660	110,302	17,608	4	4,228	$44,000,000	8,062	$129,000,000
Virginia	1,519,490	1,358,610	16,780	18	51,899	$579,000,000	104,689	$1,750,000,000
Washington	1,294,975	1,136,450	16,639	22	43,507	$477,000,000	82,370	$1,371,000,000
West Virginia	418,737	347,324	18,720	2	13,099	$111,000,000	25,307	$308,000,000
Wisconsin	1,124,133	958,720	16,785	17	34,499	$377,000,000	66,542	$1,091,000,000
Wyoming	116,541	95,973	16,892	16	3,744	$37,000,000	6,858	$100,000,000

5. CANCER AND OBESITY

Potential Obesity-Related Cancer Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Cancer death rates have declined in the United States in recent years, but the rise in obesity could change that trend.

Being overweight, obese or physically inactive can significantly increase a person's risk of cancer. Approximately one-third of cancer deaths are linked to obesity or lack of physical activity, according to the American Cancer Society.[120] A review of 7,000 studies has shown links between obesity and cancer.[121]

- Approximately 20 percent of cancer in women and 15 percent of cancer in men is attributable to obesity.[122]
- Cancer is the second-leading cause of death in the United States.[123]

Research has found that obesity may increase the risk for many types of cancers through increased levels of some types of hormones (including estrogen, insulin and other tumor growth regulators), chronic hypertension and/or damage caused by chronic low-level inflammation.[124]

Obesity Increases Risk for Some Types of Cancer

Type of Cancer	Estimated Percentage Cancer Cases Caused by Obesity
Endometrial (lining of the uterus)	39 percent
Esophageal	37 percent
Kidney	25 percent
Colon	11 percent
Postmenopausal Breast	9 percent

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Physical Activity and Cancer

On the other hand, physical activity can reduce a person's risk for a variety of cancers, including:[126]

- Colon cancer by 30 percent to 40 percent;
- Breast cancer by at least 20 percent;
- Endometrial (uterine) cancer by 20 percent to 40 percent; and
- Lung cancer by approximately 20 percent.

Increased activity could prevent nearly 100,000 cases of breast and colon cancer in the United States each year, according to one analysis of more than 200 current studies.[127]

There is also increasing evidence that limiting the amount of time a person spends sitting during the day, independent of physical activity, can also decrease the likelihood of developing obesity, type 2 diabetes, cardiovascular disease and some forms of cancer.[128]

And, physical activity also has been shown to improve survival rates for individuals with colon and breast cancer and slow the progression of prostate cancer.[129]

Nutrition and Cancer

According to the American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention, individuals who maintain a healthy diet are at lower risk for cancer. According to a review of the research, individuals who eat more processed and red meats, potatoes, refined grains and sugar-sweetened beverages and foods are at a higher risk for developing some forms of cancer, while consuming a diet that contains a variety of vegetables and fruits, whole grains and fish or poultry or is lower in red and processed meats is associated with lower risks of developing certain types of cancers.[130]

Evidence also suggests that weight loss, through calorie reduction with or without exercise, can produce a significant reduction in various breast cancer biomarkers.[131] Results from a recent study showed that weight loss of greater than 5 percent could be associated with a 22 percent decrease in breast cancer risk.

BREAST CANCER AND WEIGHT LOSS

A randomized 12-month intervention published in the Journal of Clinical Oncology reveals that biomarkers associated with postmenopausal breast cancer can be improved through weight loss, with or without exercise.[132] The study compared estrogen and androgen levels, which are both positively associated with risk for breast cancer,[133] between women assigned to one of four study groups: diet, exercise, diet and exercise or control group. Results showed that women in the experimental groups experienced large and statistically significant reductions in sex hormones and an increase in sex-hormone binding globulin (SHBG), which reduces bioactivity of the hormones.[134]

Obesity Related Cancer Costs and Cases

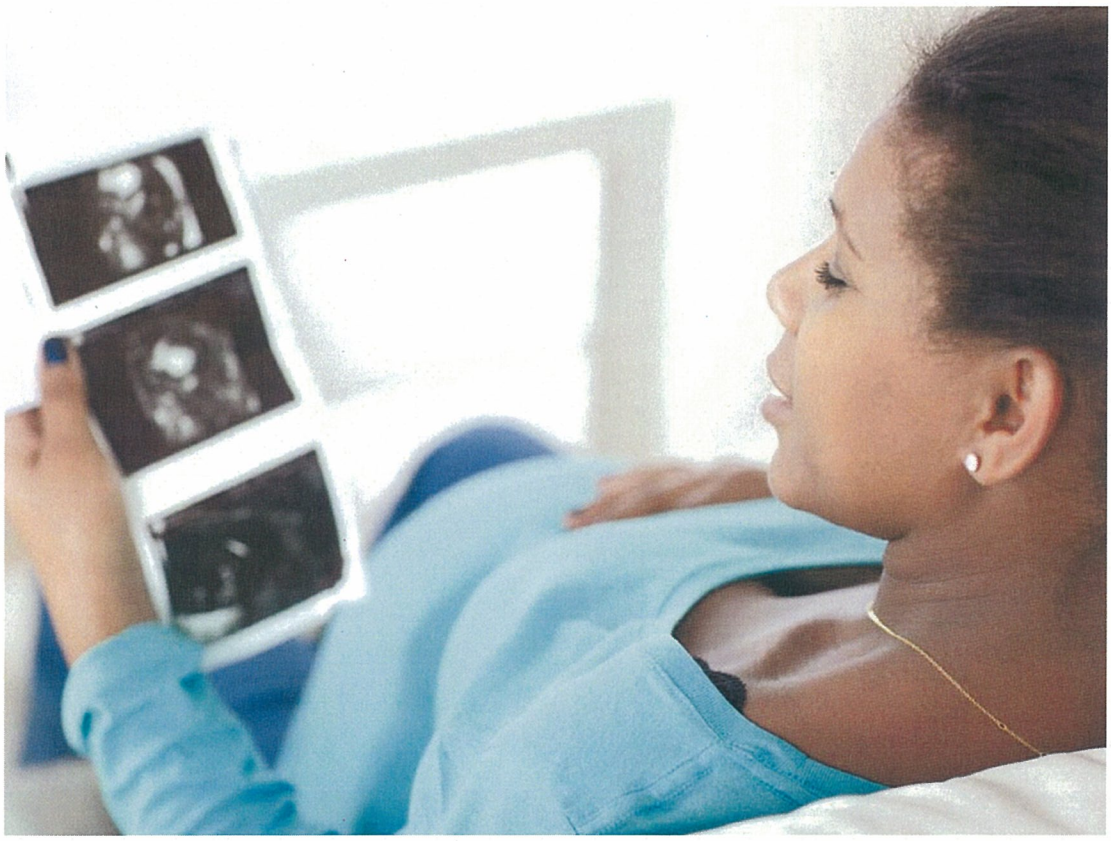
State	2010 Number of Cases	New Cancer Cases by 2030	New Cancer Cases by 2030 (per 100,000)	Rank New Cancer Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	79,581	200,226	4,169	9	4,947	$95,000,000	9,846	$213,000,000
Alaska	7,892	21,927	3,034	50	434	$26,000,000	809	$51,000,000
Arizona	87,125	217,683	3,358	45	6,223	$123,000,000	9,983	$249,000,000
Arkansas	47,390	116,050	3,950	20	2,732	$76,000,000	5,347	$145,000,000
California	505,825	1,251,371	3,320	46	29,023	$689,000,000	52,769	$1,766,000,000
Colorado	64,932	176,171	3,443	43	3,684	$160,000,000	7,624	$313,000,000
Connecticut	58,115	147,883	4,130	12	2,900	$37,000,000	6,374	$118,000,000
Delaware	14,714	38,254	4,217	8	1,125	$23,000,000	1,923	$47,000,000
DC	8,417	20,320	3,288	48	371	$6,000,000	667	$7,000,000
Florida	352,183	869,214	4,561	3	24,965	$328,000,000	43,451	$656,000,000
Georgia	126,027	324,982	3,311	47	6,380	$382,000,000	12,073	$812,000,000
Hawaii	21,062	52,119	3,791	31	1,210	$27,000,000	2,323	$74,000,000
Idaho	21,778	53,889	3,400	44	1,474	$29,000,000	2,710	$51,000,000
Illinois	189,693	468,312	3,639	41	11,325	$163,000,000	23,036	$353,000,000
Indiana	99,188	243,537	3,737	33	6,387	$122,000,000	10,883	$256,000,000
Iowa	51,477	120,441	3,933	21	3,460	$84,000,000	5,849	$160,000,000
Kansas	44,590	106,322	3,703	38	2,527	$62,000,000	4,939	$132,000,000
Kentucky	68,075	176,260	4,034	16	4,151	$118,000,000	8,651	$277,000,000
Louisiana	69,400	170,092	3,718	36	3,934	$156,000,000	7,640	$302,000,000
Maine	23,721	65,041	4,897	1	1,886	$27,000,000	3,679	$53,000,000
Maryland	86,375	222,932	3,825	30	5,537	$156,000,000	10,841	$339,000,000
Massachusetts	102,436	266,466	4,045	15	6,851	$250,000,000	13,109	$489,000,000
Michigan	150,809	395,245	4,002	19	9,382	$203,000,000	18,370	$540,000,000
Minnesota	77,233	194,660	3,642	40	5,024	$118,000,000	8,338	$230,000,000
Mississippi	46,018	111,069	3,729	35	2,591	$34,000,000	4,795	$79,000,000
Missouri	96,772	241,389	4,016	18	6,852	$186,000,000	13,704	$438,000,000
Montana	16,490	42,793	4,287	7	868	$17,000,000	1,637	$46,000,000
Nebraska	29,132	68,288	3,706	37	1,935	$41,000,000	3,243	$79,000,000
Nevada	37,310	99,946	3,670	39	2,369	$82,000,000	4,521	$164,000,000
New Hampshire	20,353	57,513	4,363	5	1,318	$31,000,000	2,715	$65,000,000
New Jersey	110,882	308,035	3,492	42	6,616	$13,000,000	13,232	$31,000,000
New Mexico	32,920	80,166	3,850	28	1,978	$39,000,000	3,665	$72,000,000
New York	306,188	762,062	3,915	23	14,794	$206,000,000	29,392	$481,000,000
North Carolina	142,818	362,984	3,759	32	9,174	$371,000,000	17,382	$742,000,000
North Dakota	11,572	26,762	3,913	25	739	$19,000,000	1,272	$38,000,000
Ohio	185,989	470,919	4,079	13	12,469	$475,000,000	22,974	$977,000,000
Oklahoma	59,906	147,073	3,879	27	3,981	$83,000,000	7,128	$126,000,000
Oregon	58,349	151,854	3,922	22	3,678	$89,000,000	7,240	$200,000,000
Pennsylvania	227,588	553,041	4,340	6	15,674	$217,000,000	28,162	$393,000,000
Rhode Island	17,094	43,619	4,149	10	1,041	$29,000,000	2,092	$68,000,000
South Carolina	75,148	188,245	4,023	17	5,007	$52,000,000	9,124	$88,000,000
South Dakota	13,490	30,796	3,737	33	832	$8,000,000	1,467	$8,000,000
Tennessee	101,301	260,360	4,066	14	7,236	$124,000,000	14,151	$246,000,000
Texas	328,379	810,806	3,158	49	20,540	$560,000,000	34,918	$1,061,000,000
Utah	29,834	69,529	2,468	51	1,747	$47,000,000	2,845	$92,000,000
Vermont	10,273	27,751	4,430	4	614	$9,000,000	1,222	$12,000,000
Virginia	118,372	314,958	3,890	26	5,506	$89,000,000	13,764	$195,000,000
Washington	99,240	261,522	3,829	29	5,669	$107,000,000	11,748	$239,000,000
West Virginia	33,990	88,983	4,796	2	2,375	$33,000,000	4,379	$57,000,000
Wisconsin	89,046	223,559	3,914	24	4,341	$75,000,000	7,882	$187,000,000
Wyoming	9,068	23,573	4,149	10	574	$11,000,000	1,068	$21,000,000

C. ADDITIONAL HEALTH AND OBESITY ISSUES

In addition to the five health issues examined in the NHF analysis, obesity increases the risk for a number of other health problems. Some key areas reviewed in the following section include: children and maternal health with a special focus on breastfeeding, mental health and neurological conditions with a special focus on dementia, kidney and liver diseases and HIV/AIDS.

1. MATERNAL HEALTH AND OBESITY

- There is a growing body of evidence documenting the links between maternal health conditions, including obesity and chronic diseases, and increased risks before, during and after birth.[135]
- Children born to obese mothers are twice as likely to be obese and to develop type 2 diabetes later in life.[136]
- Many pregnant women are overweight, obese, or have diabetes, all of which can have negative effects on the fetus as well as the mother. According to CDC, approximately 50 percent of women of child-bearing age (between 18 and 44) were either overweight or obese in 2002 and 9 percent had diabetes.[137]
- Teenage mothers who are obese before pregnancy are four times more likely than their healthy-weight counterparts to develop gestational diabetes, a form of diabetes that arises during pregnancy and increases a woman's risk of developing type 2 diabetes later on.[138]
- CDC and the Kaiser Permanente Northwest Center for Health Research found in a recent study that obesity during pregnancy is associated with an increased use of health care services and longer hospital stays.[139] The study of more than 13,000 pregnancies found that obese women required more outpatient medications, were given more obstetrical ultrasounds, and were less likely to see nurse midwives or nurse practitioners in favor of physicians. Cesarean delivery rates were 45.2 percent for extremely obese women, compared with 21.3 percent for healthy-weight women.[140]



Only Two States Meet Breastfeeding Goals

Children who are breastfed have lower rates of obesity; this is especially true for those who are breastfed exclusively, without formula supplementation.[141] Breastfeeding also is associated with a range of other benefits, and the American Academy of Pediatrics (AAP), the American Academy of Family Physicians, the Academy of Breastfeeding Medicine, the World Health Organization, the United Nations Children's Fund and many other health organizations recommend exclusive breastfeeding for the first six months of life.

However, according to CDC's 2012 Breastfeeding Report Card, only 16.3 percent of mothers in the United States are breastfeeding exclusively through six months, which is well below the *Healthy People 2020* goal of 25.5 percent.[142] Only two states, Colorado and Oregon, meet this goal.

States with the Highest Rates of Exclusive Breastfeeding at 6 Months

Rank	State	Percentage Breastfeeding Exclusively at 6 Months (2009)	Obesity Ranking
1	Colorado	26.6%	51
2	Oregon	26.3%	31
3	Utah	24.8%	45
4	New Hampshire	24.7%	35
5	Vermont	23.3%	37
6	Idaho	23.2%	30
7	New Mexico	22.8%	34
8	South Dakota	22.1%	23
9	California	21.7%	46
10	Alaska	21.0%	28

*Note: For rankings, 1 = Highest rate of breastfeeding.

States with the Lowest Rates of Exclusive Breastfeeding at 6 Months

Rank	State	Percentage Breastfeeding Exclusively at 6 Months (2009)	Obesity Ranking
51	Mississippi	7.6%	1
49 (tie)	Alabama	9.1%	4
49 (tie)	West Virginia	9.1%	3
47 (tie)	Kentucky	9.6%	10
47 (tie)	Louisiana	9.6%	2
46	Oklahoma	10.4%	6
45	Arkansas	10.6%	7
44	Ohio	11.0%	13
43	Nevada	11.7%	42
42	Montana	12.5%	41

*Note: For rankings, 51 = Lowest rate of breastfeeding.

Evidence from a comprehensive review of existing breastfeeding research found that breastfeeding has the following effects:[143]

- For the child: reduced risk of ear, skin, stomach and respiratory infections, diarrhea, sudden infant death syndrome, necrotizing enterocolitis, and other bacterial and viral infections; and in the longer term, reduced risk of obesity, type 1 and 2 diabetes, asthma, celiac disease, inflammatory bowel disease and childhood leukemia.[144]
- For the mother: quicker loss of pregnancy weight, prevention of postpartum bleeding and reduced risk of breast cancer, ovarian cancer, type 2 diabetes and postpartum depression.[145]

The AAP recommends that babies are breastfed through the first year of life.[146]

Breast milk provides a baby with food that is nutritious and easy for the baby to digest. It also gives the baby the ability to decide when to eat and when to stop eating, allowing for the baby to develop healthy eating patterns. Keeping a baby at a healthy weight from infancy is important because recent studies have shown that overweight babies are more at risk for being overweight or obese throughout childhood.[147]

A recent study at Children's Hospital in Boston and Harvard Medical School found that feeding an infant solid food before 4 months of age may increase the baby's risk of becoming obese as a toddler.[148] The study included almost 900 infants; about two-thirds were breastfed for at least four months.[149] Follow-up at age 3 revealed that 9 percent of the toddlers were obese.[150] Results showed that among formula-fed babies, those that were introduced to solid foods before 4 months of age were six times more likely to be obese by age 3, but timing of solid food introduction was not associated with obesity among the breastfed babies.[151]

In conjunction with the release of the Let's Move campaign in 2010, the U.S. Breastfeeding Committee (USBC) released a statement highlighting the importance of including breastfeeding as part of the national strategy to reduce childhood obesity.[152]

Data from the National Immunization Survey shows that approximately 75 percent of new mothers begin breastfeeding, but only 43 percent are still breastfeeding at all at six months.[153] According to USBC chair, Dr. Joan Younger Meek, "The duration of breastfeeding has been shown to be inversely related to overweight—meaning that the longer the duration of breastfeeding, the lower the odds of overweight. And although further research is needed, exclusive breastfeeding appears to have a stronger protective effect than breastfeeding combined with formula feeding."[154]

000274

SURGEON GENERAL'S CALL TO ACTION TO SUPPORT BREASTFEEDING

In an effort to make breastfeeding easier for women, the U.S. Surgeon General has identified 20 key actions to improve support for breastfeeding.[155]

Some key barriers to breastfeeding include:[156]

- Lack of Knowledge
- Lactation Problems
- Poor Family and Social Support
- Social Norms
- Embarrassment
- Employment and Child Care
- Health Services

In order to address some of the barriers to breastfeeding the Surgeon General suggests the following actions by various key stakeholders:[157]

Mothers and Families

- Give mothers the support they need to breastfeed.
- Develop programs to educate fathers and grandmothers about breastfeeding.

Communities

- Strengthen programs that provide mother-to-mother support and peer counseling.
- Use community-based organizations to support and promote breastfeeding.
- Create a national campaign to promote breastfeeding.
- Ensure that the marketing of infant formula is conducted in a way that minimizes its negative impacts on exclusive breastfeeding.

Health Care

- Ensure that maternity care practices around the United States are fully supportive of breastfeeding.
- Develop systems to guarantee continuity of skilled support for lactation between hospitals and health care settings in the community.
- Provide education and training in breastfeeding for all health professionals who care for women and children.
- Include basic support for breastfeeding as a standard of care for midwives, obstetricians, family physicians, nurse practitioners and pediatricians.
- Ensure access to services provided by International Board Certified Lactation Consultants.
- Identify and address obstacles to greater availability of safe banked donor milk for fragile infants.

Employment

- Work toward establishing paid maternity leave for all employed mothers.
- Ensure that employers establish and maintain comprehensive, high-quality lactation support programs for their employees.
- Expand the use of programs in the workplace that allow lactating mothers to have direct access to their babies.
- Ensure that all child care providers accommodate the needs of breastfeeding mothers and infants.

Research and Surveillance

- Increase funding of high-quality research on breastfeeding.
- Strengthen existing capacity and develop future capacity for conducting research on breastfeeding.
- Develop a national monitoring system to improve the tracking of breastfeeding rates as well as the policies and environmental factors that affect breastfeeding.

Public Health Infrastructure

- Improve national leadership on the promotion and support of breastfeeding.

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Spotlight *on*

Bradley Memorial Campus Strategy

Draft Final Recommendations
April 23, 2013

The Hospital of Central Connecticut
A Hartford HealthCare Partner

HEALTH STRATEGIES & SOLUTIONS, INC.

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Recommended Strategy

000277

Strategic Questions Addressed in this Process

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Positioning in a post-reform era	• Function as a **high-quality and efficient provider** (low cost, appropriate scale and service offerings)
Role in the community	• Provide the **appropriate services close to home** without **duplicating complex and costly services** available at nearby HHC facilities
Role in the health system	• Create a **strong ambulatory presence** in **HHC's southwest service area**
Leveraging strengths of other HHC campuses	• **Align initiatives with the HHC vision** and work collaboratively with HHC and affiliates to meet the needs of the greater Southington community

000278

2017 Vision and Goals for Ambulatory Surgery

Vision for Ambulatory Surgery

*BMC provides **high-quality** and **efficient** ambulatory surgical care in a comfortable setting and is an integrated piece of HHC's network of leading ambulatory surgery sites in the region*

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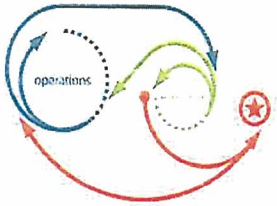

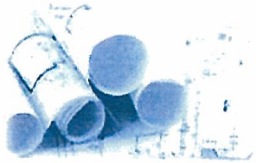

	Recruitment goal	Operational goal	Facility goal	Referral development goal
2-YEAR	Additional surgeons are recruited, with 1-2 incremental surgeons(1) actively practicing at BMC	Operational practices and performance are transitioned from an inpatient/hospital surgical program to an ASC(2)	Renovations are completed for at least three operating rooms and the surgical suite	A large proportion of primary care providers in the Southington community refer to BMC for ambulatory surgical care
5-YEAR	A strong base of surgeons who are active, dedicated to the ASC, and looking to develop their practice	Efficiency and flow that will support excellent patient care and meet physician needs	Modern ASC facilities that promote efficiency and are easily accessible for patients	An image of high quality ambulatory surgery services that are attractive to patients and referring physicians

(1) Including at least one general surgeon.

(2) ASC could potentially be managed by an outside management company.

000279

Major Initiatives Required to Achieve the Vision and Goals for Ambulatory Surgery

Goal Area	Major Initiatives
Recruitment	• Develop physician alignment models and approaches that economically incentivize surgeons to practice at BMC • ***Recruit surgeons (focusing on general surgery, eye and ear, orthopedics)***
Operational	• ***Consider partnership with ASC management company*** • ***Redesign operations as necessary to ensure effective and efficient processes*** • Staff recruitment/education
Facility	• ***Complete renovation of the surgical suites ensuring that all pre- and post-operation space is co-located with ORs*** • Address design issues to ensure that the ASC is easily accessible for patients
Referral development	• Create marketing plan • Package pricing incentives • Rollout

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Italicized major initiatives represent priorities over the next two years

Primary Service Area Towns

The Hospital of Central Connecticut:

NEW BRITAIN:	**06050, 06051, 06052, 06053**
PLAINVILLE:	**06062**
BERLIN:	**06023, 06037**
NEWINGTON:	**06111, 06131**
SOUTHINGTON:	**06444, 06467, 06479, 06489**

MidState Medical Center:

MERIDEN:	**06450, 06451**
SOUTHINGTON:	**06444, 06467, 06479, 06489**
WALLINGFORD:	**06492, 06493, 06494, 06495**
CHESIRE:	**06410**

Lucille Janatka

Lucille Janatka has been the President and Chief Executive Officer for MidState Medical Center, an acute-care hospital located in Meriden serving the communities in central Connecticut, since September, 1999. She is also a Senior Vice President of Hartford HealthCare, MidState's parent company.

Prior to joining MidState, Lucille was Chief Operating Officer at Waterbury Hospital. Previously, she held executive positions at Hospital of St. Raphael, Greenwich Hospital, and the former Meriden-Wallingford Hospital.

Lucille is a Fellow of the American College of Healthcare Executives and serves on numerous Boards, including Clinical Laboratory Partners, Naugatuck Savings Bank, Nutmeg Financial, and the Meriden Economic Development Corporation.

The American College of Healthcare Executives, an international professional society of 30,000 healthcare executives, named Lucille Outstanding Connecticut Healthcare Executive of 2005. This recognition was based on her demonstrated leadership capabilities, mentoring, organizational acumen, regional and community involvement and participation in ACHE programs.

In May 2006 she received the Women in Leadership Award for Health Care from the Women & Families Center of Meriden, Connecticut. She was the recipient of the 2008 Athena Award by the Quinnipiac Chamber of Commerce. Lucille was nationally recognized as one of the top 25 women in healthcare by *Modern Healthcare* and given special recognition by the Connecticut Women's Hall of Fame in 2009. In 2011, Lucille was named one of eight outstanding Women in Business by the Hartford Business Journal and was the recipient of the 19th Annual Community Partnership Award by the Greater Meriden Chamber of Commerce.

Lucille is a graduate of Boston College, in Boston, Massachusetts and St. Anselm College in Manchester, New Hampshire.

12-1-11

LUCILLE ANDOLINA JANATKA, FACHE

P. O. Box 940
Woodbury, Connecticut 06798
203.405.3452

PROFESSIONAL EXPERIENCE:

1999 - Present **President/Chief Executive Officer**
MidState Medical Center
Meriden, Connecticut 06451

Responsible for executive oversight and all aspects of MidState Medical Center, an acute care hospital with 144 licensed beds and net revenue of approximately $182,000,000. MidState consistently ranks in the top ten percent in customer satisfaction, measured by Press Ganey. Compared to 31 hospitals in Connecticut, MidState has been in the top ten hospitals, maintaining a margin of three-to-four percent consistently for ten years.

MidState Medical Center has received the following recognition:

- *2000 Connecticut Award For Excellence – Nutmeg Award (Organizational Excellence)*
- *2001 Excellence Award for Values Integration: Sodexho Healthcare Services; and listed in Modern Healthcare Magazine (12-17-01)*
- *2003 Connecticut Breakthrough Quality Award (only hospital in State to receive this business award)*
- *One of the Best 25 Medium Companies to Work for in America – 2005*
- *Connecticut Nurses Association Excellence in the Workplace Award – 2006*
- *2010 Hospital & Health Networks "Most Wired" for information technology systems*
- *2011 Massachusetts Excellence Award (state-level Baldrige award)*

1995 – 1999 **Chief Operating Officer**
Waterbury Hospital
Waterbury, Connecticut 06708

Responsible for all hospital operations at this 360-bed acute care teaching facility; implemented a redesign plan that achieved $10 million savings in operating expenses; negotiated sale of dialysis business for $2 million above offering price; developed joint venture with rehabilitation agency, increasing net revenues by $500,000; participated in planning stages of merging outpatient cancer services operating at two hospitals, into new independent LLC.

1992 – 1995 **Vice President, Operations**
Hospital of St. Raphael
New Haven, Connecticut 06511

Accountable for all Clinical and Support Services in 500-bed teaching tertiary care hospital; hospital-wide program coordination for cancer services, JCAHO requirements, union negotiations, and

Engineering/Maintenance, Construction Management, Environmental Health and Safety departments.

1990 - 1992

Vice President, Administration
Greenwich Hospital
Greenwich, Connecticut 06830

Responsible for operation of all clinical departments, Environmental Services, Engineering, construction programs, Materials Management, Laundry, Safety and Security; directed construction of 600-car ($6.8 million) parking garage; coordinated plan, design, and construction of cancer center and medical offices ($15 million); participated in development of master plan for renovation and expansion of entire hospital.

1986 - 1990

Senior Vice President
Meriden-Wallingford Hospital
Meriden, Connecticut 06450

Responsible for operation of both clinical and non-clinical departments; coordinated purchase and operation of walk-in center, industrial medicine services program, physical therapy services; changed physician referral patterns, increased market share with $1 million new revenue to hospital; developed new Women's Health Center; physician recruitment; participated in planning, strategy, and implementation of merger with competitor hospital.

1982 - 1986

Vice President for Patient Care Services
Meriden-Wallingford Hospital
Meriden, Connecticut 06450

Areas of responsibility included Division of Nursing, Anesthesia, Operating Room, Emergency Department, Continuing Care/Social Services, OB clinics, Hospice, Infection Control, SurgiCenter, and labor relations; decentralized Nursing Division; instituted walk-in program for non-emergent care through the Emergency Department; key member of negotiating team for all union contracts.

EDUCATION:

MSN Degree, Boston College, School of Arts and Sciences, Chestnut Hill, Boston, Massachusetts

BSN Degree, St. Anselm College
Manchester, New Hampshire

PROFESSIONAL ASSOCIATIONS:

- Fellow of the American College of Health Care Executives 1987-present.
- Connecticut Women in Health Care Management 1988-present

PERSONAL AWARDS:

- 2003 Strong, Smart & Bold Award - Girls, Inc., Meriden, CT
- 2005 Regent's Award - American College of Healthcare Executives

- 2006 Women in Leadership – Women & Families Center, Meriden, CT
- 2008 Athena Award – Quinnipiac Chamber of Commerce, Wallingford, CT
- 2009 Top 25 Women in Healthcare – Modern Healthcare Magazine
- 2009 CT Women's Hall of Fame
- 2011 Women in Business Award – Hartford Business Journal, Hartford, CT

COMMUNITY ACTIVITIES:

- Senior Vice President, Hartford Healthcare Corp.
- Rushford Centers, Inc. – Board of Directors
- Eastern Rehabilitation Network – Board of Directors
- Meriden Imaging Partners – Board of Directors
- City of Meriden CEDS Committee
- Meriden Economic Development Corporation (MEDCO)
- Hartford Hospital - Corporator
- Naugatuck Savings Bank - Corporator

6/13/11

CLARENCE J. SILVIA

The Hospital of Central Connecticut
100 Grand Street
New Britain, CT 06050
Telephone – Business: (860) 224-5723

EMPLOYMENT HISTORY

CENTRAL CONNECTICUT HEALTH ALLIANCE, NEW BRITAIN, CT (1995 – PRESENT)
President (2010 to Present)
Senior Vice President, Operations (1995 to 2010)

THE HOSPITAL OF CENTRAL CONNECTICUT, NEW BRITAIN, CT (2006 MERGER OF BRADLEY MEMORIAL HOSPITAL AND NEW BRITAIN GENERAL HOSPITAL),
President and CEO (2010 – Present)
Chief Operating Officer (1995 to 2010)

Central Connecticut Health Alliance is the parent company of an integrated system of health care entities. The Alliance includes The Hospital of Central Connecticut which is a 414-bed acute care general hospital with two campuses, Central Connecticut Senior Health Services, with two skilled nursing facilities and two assisted living communities and a home care, behavioral health and rehabilitation division. In my role as President of the parent company, I serve as the President and CEO of The Hospital of Central Connecticut responsible for clinical and support services. In addition, I serve as the President of Central Connecticut Senior Health Services.

Major Achievements

- Together with Senior Administration, Board and Medical Staff successfully negotiated a Memorandum of Understanding for CCHA to become part of the Hartford Health care Corporation.
- Responsible for the coordination and completion of the merger between Bradley Memorial Hospital and New Britain General Hospital into The Hospital of Central Connecticut.
- Consolidation of all clinical and support services between the two campuses.
- Together with Senior Administrative Staff, achieved an average operating margin of 2% over the last 2 years.
- Responsible for the development and establishment of outpatient diagnostic centers, including an outpatient MRI Center.
- Worked with the Medical Staff in the development and establishment of new programs and services: vascular center, wound care center, primary angioplasty.
- Implemented a dashboard for the Board which includes financial, operating, human resources, quality and safety measures and benchmarks.
- Achieved a 4% bottom line in the senior care division the last 2 years.
- Developed a strategic plan in conjunction with the Medical Staff, Board and key constituents and a process for monitoring and updating the plan.

EMPLOYMENT HISTORY – CONTD.

BRADLEY MEMORIAL HOSPITAL AND HEALTH CENTER, SOUTHINGTON, CT
(1986 – 2006)
President and Chief Executive Officer (1993 to 2006)

Executive Vice President (1986 to 1993)

Bradley Memorial Hospital and Health Center was an 84-bed acute care general hospital. As President and CEO, I was responsible for the operations of the hospital and reported directly to the Board of Directors. I also served as President of a number of the subsidiary corporations which include a 130-bed nursing home, two assisted living communities, a women's health center and an occupational health program.

As Executive Vice President, I served as Chief Operating Officer for the hospital and was also responsible for the planning activities of the hospital and its subsidiaries.

Major Achievements

- Responsible for the coordination and completion of the affiliation between Bradley Memorial Hospital and New Britain General Hospital and the establishment of the Central Connecticut Health Alliance.
- Responsible for the successful Certificate of Need application for a 130-bed nursing home, the subsequent construction and operation of the facility.
- Development of a 90-bed assisted/independent living community and a 90-bed Alzheimer's assisted living community
- The establishment of new programs and services: MRI, hyperbaric therapy, PET scanning, occupational medicine program.
- Recruitment of primary care and specialist physicians to the community.

MANCHESTER MEMORIAL HOSPITAL, MANCHESTER, CT (1979 – 1986)
Vice President – Professional Services (1983 to 1986)
Manchester Memorial Hospital is a 303-bed not-for-profit acute care general hospital. As Vice President, I was responsible for the management and coordination of the Laboratory, Emergency Service, Radiology, Pharmacy, Physical Therapy, Quality Assurance, Respiratory Therapy, Epidemiology and Ambulatory Surgery Departments.

Assistant Hospital Director (1980 to 1983)
Managed and developed operating plans for the Laboratory, Central Sterile Supply, Cardiology, Management Engineering, EEG and Ambulatory Surgery Departments.

Director of Management Engineering (1980)
Management Engineer (1979)

EDUCATION

- M.B.A., Health Systems, University of Connecticut, Storrs, Connecticut, 1979
  Honors: Beta Gamma Sigma, Business and Management Society

- B.S., Chemistry, University of Connecticut, Storrs, Connecticut, 1977
  Honors: Summa Cum Laude, Phi Beta Kappa, Phi Lamda Epsilon

PROFESSIONAL ACTIVITIES

- Board Member, United Way of Southington (2006 – Present)
- Board Member, Connecticut Hospital Association (Secretary of the Board, 1995 – 1998)
- Board Member, Southington Chamber of Commerce (1999 – 2001)
- Board Member, Community Mental Health Affiliates (1990 – 1996, Chairman, 1993 – 1996)
- Member, Town of Southington Emergency Medical Services Committee
- Board Member, Manchester Road Race Committee

Comprehensive Orthopaedics And Musculoskeletal Care LLC

No bones about it, we're the best!

Providers

Dr. Paul Zimmering, *MD*

Licensure

- State of Louisiana
- State of Connecticut, 1984 - Present

Board Certification

- Federal Licensure Examination - 1979
- American Board of Orthopaedic Surgery - Certification 1986, Recertification 1993

Education

- Brown University, Providence, Rhode Island, 1970 - 1974 A.B. Degree, Magna Cum Laude
- Brown University Program in Medicine, Providence, Rhode Island, 1975 - 1979 M.D. Degree

Teaching & Research Positions

- Teaching Assistant, Molecular Biology, Biomedical Division, Brown University, Providence, Rhode Island, 1973 - 1974
- Research Assistant, Genetic Toxicology, Roger Williams Hospital, Providence, Rhode Island, 1974 - 1975
- Adjunct Clinical Faculty, Quinnipiac College, 1997 - Present

Post-Graduate Training

Internship:

- Flexible, Alton Ochsner Medical Foundation, New Orleans, Louisiana, 1979 - 1980

Residency:

- Orthopaedic Surgery, Alton Ochsner Medical Foundation, New Orleans, Louisiana, 1980 - 1984
- Pediatric Orthopaedic Surgery, Shriners' Hospital for Crippled Children, Shreveport, Louisiana, 1983

Hospital Affiliations

- MidState Medical Center (formerly Veterans Memorial Medical Center - VMMC), Meriden, Connecticut, Active staff, 1984 - Present
- Bradley Memorial Hospital, Southington, Connecticut, Courtesy Staff, 1994 - Present
- Masonic Geriatric Health Center, Wallingford, Connecticut, Consulting Staff, 1998 - Present

Offices and Committees

- Chairman, Division of Orthopaedic Surgery, Veterans Memorial Medical Center, January 1992 - December 1995
- Medical Board, Veterans Memorial Medical Center, January 1992 - December 1995
- Credentials Committee, Veterans Memorial Medical Center, January 1992 - December 1995
- Hospital (VMMC) Representative to Utilization Review Committee, Aetna Health Plans - Connecticut, 1989 - 1991
- Chairman, Physical Therapy Committee, Veterans Memorial Medical Center, 1988-1990
- Various hospital committees, including Perioperative Committee, Medical Staff Long Range Planning Committee, Utilization Review Committee, Capital Budget Committee, Network Development Work Group, and Clinical Information Management Committee.

Professional Society Membership

- American Academy of Orthopaedic Surgeons
- American College of Surgeons
- Arthroscopy Association of North America
- Eastern Orthopaedic Association
- New England Orthopaedic Association
- Southern Orthopaedic Association
- American College of Physician Executives
- Brown University Medical Association
- Connecticut Medical Society
- New Haven Medical Society

Team Affiliations

- Team Physician, Lyman Hall High School Football, Wallingford, Connecticut, 1990 - Present
- Team Physician, Cheshire Academy, Cheshire, Connecticut, 1995 - Present
- Team Physician, Middlesex Youth Hockey, Middletown, Connecticut, 1991 - 1996
- Team Physician, Platt High School Football, Meriden, Connecticut, 1994 - 1995
- Team Physician, Sheehan High School Football, Wallingford, Connecticut, 1990 - 1993

(203) 265-3280

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KRISTIAN M. MINEAU II

47 Highridge Road - Simsbury, CT 06092

Home: (860)651-3290 **KrisMineau@CSCus.net** *Cell: (860)833-2507*

PROFESSIONAL EXPERIENCE

CONSTITUTION SURGERY CENTERS, Newington, Connecticut
2000-Present
President & Chief Executive Officer

- CSC is the largest operator of outpatient surgery centers in New England with 15 locations performing 80,000 surgical cases annually
- Over 400 employees and a medical staff of more than 300 surgeons

CONSTITUTION EYE SURGERY CENTER, Newington, Connecticut
1997-2000
Administrator

- Organized and managed the largest eye surgery center in the Northeast
- Marketed ASC to new partner physicians; growing the medical staff from 10 to 40 physicians

MILITARY EXPERIENCE

UNITED STATES AIR FORCE
1988-1997
U.S. Air Force Pilot / Officer
Commanded several different types of aircraft flying a variety of missions worldwide

- C-5 Pilot: Involved in worldwide strategic airlift, 337th Airlift Squadron, Westover MA
- C-27 Aircraft Commander: Flew drug interdiction and search/rescue missions throughout Central and South America, 310th Airlift Squadron, Howard AFB, Panama
- T-37 Instructor / Evaluator Pilot: Taught instrument, formation, low-level navigation, instructor training and basic pilot training, 64th Flying Training Wing, Reese AFB, TX

EDUCATION

UNITED STATES AIR FORCE ACADEMY, Colorado Springs, CO
1984-1988
Bachelor of Science

MEMBERSHIPS & AFFILIATIONS

YOUNG PRESIDENTS ORGANIZATION — 2009-Present
Member, Connecticut Chapter

HARTFORD GOLF CLUB — 2010-Present
Member

CT ASSOCIATION OF AMBULATORY SURGERY CENTERS
Founding President — 1998
Chapter Member — 1999-Present

RECYCLED

2013 Accreditation Handbook

For Ambulatory Health Care

AAAHC

ACCREDITATION ASSOCIATION
for AMBULATORY HEALTH CARE, INC.

000292

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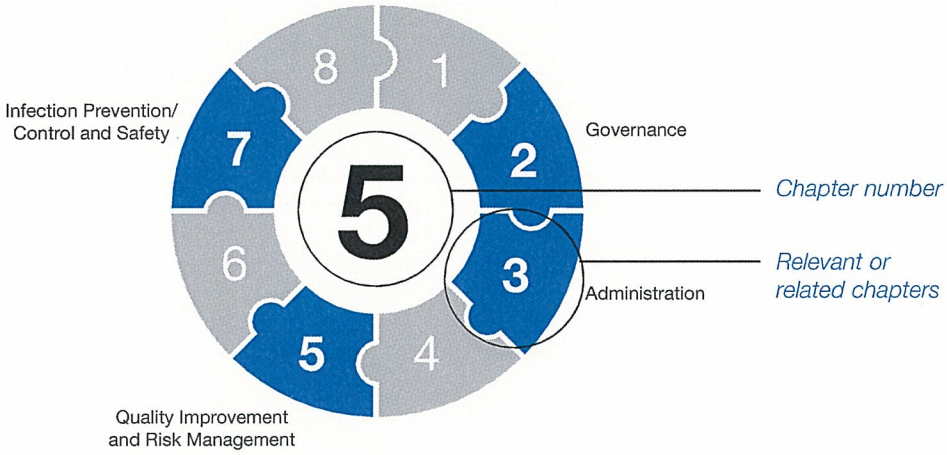
Core Chapters

Standards in the core chapters will be applied to all organizations seeking accreditation.

All of the AAAHC Standards were developed and designed to help organizations improve. Individually and collectively, they help organizations drive toward one mission: patient safety through the provision of high-quality care. For this reason, Standards are both inextricably interrelated, and appropriately located in different chapters.



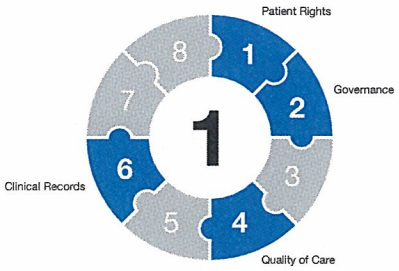
At the beginning of each core chapter, you will see the symbol above. The current chapter number is in the center, surrounded by eight connected segments, representing the core chapters:

1. **Patient Rights and Responsibilities**
2. **Governance**
3. **Administration**
4. **Quality of Care Provided**
5. **Quality Management and Improvement**
6. **Clinical Records and Health Information**
7. **Infection Prevention and Control and Safety**
8. **Facilities and Environment**

All of these chapters are connected to one another, and one or more of them also may be highlighted in color. The highlights are our suggestions about chapters that may be particularly relevant and should be consulted for Standards that are closely related.

Consider the Standards as a system of connected principles, rather than a list of discrete requirements.

01. Patient Rights and Responsibilities



An accreditable organization recognizes the basic human rights of patients. Such an organization has the following characteristics:

		Compliance SC	PC	NC
A.	Patients are treated with respect, consideration, and dignity.	A. ☐	☐	☐
B.	Patients are provided appropriate privacy.	B. ☐	☐	☐
C.	When the need arises, reasonable attempts are made for health care professionals and other staff to communicate in the language or manner primarily used by patients.	C. ☐	☐	☐
D.	Patients are provided, to the degree known, information concerning their diagnosis, evaluation, treatment, and prognosis. When it is medically inadvisable to give such information to a patient, the information is provided to a person designated by the patient or to a legally authorized person.	D. ☐	☐	☐
E.	Patients are given the opportunity to participate in decisions involving their health care, except when such participation is contraindicated for medical reasons.	E. ☐	☐	☐
F.	Information is available to patients and staff concerning:	F. ☐	☐	☐
1.	Patient rights, including those specified in A, B, C, D, and E above.	1. ☐	☐	☐
2.	Patient conduct, responsibilities, and participation.	2. ☐	☐	☐
3.	Services available at the organization.	3. ☐	☐	☐
4.	Provisions for after-hours and emergency care.	4. ☐	☐	☐
5.	Fees for services.	5. ☐	☐	☐
6.	Payment policies.	6. ☐	☐	☐
7.	Patient's right to refuse to participate in research.	7. ☐	☐	☐
8.	Advance directives, as required by state or federal law and regulations.	8. ☐	☐	☐
9.	The credentials of health care professionals.	9. ☐	☐	☐
10.	The absence of malpractice coverage if applicable.	10. ☐	☐	☐
11.	How to voice grievances regarding treatment or care that is (or fails to be) furnished.	11. ☐	☐	☐
12.	Methods for providing feedback, including complaints.	12. ☐	☐	☐
G.	Prior to receiving care, patients are informed of patient responsibilities. These responsibilities require the patient to:	G. ☐	☐	☐
1.	Provide complete and accurate information to the best of his/her ability about his/her health, any medications, including over-the-counter products and dietary supplements, and any allergies or sensitivities.	1. ☐	☐	☐

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		Compliance SC	PC	NC
2.	Follow the treatment plan prescribed by his/her provider and participate in his/her care.	2. ☐	☐	☐
3.	Provide a responsible adult to transport him/her home from the facility and remain with him/her for 24 hours, if required by his/her provider.	3. ☐	☐	☐
4.	Accept personal financial responsibility for any charges not covered by his/her insurance.	4. ☐	☐	☐
5.	Be respectful of all the health care professionals and staff, as well as other patients.	5. ☐	☐	☐
H.	Patients are informed of their right to change providers if other qualified providers are available.	H. ☐	☐	☐

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02. Governance

An accreditable organization has a governing body that sets policy and is responsible for the organization. Such an organization has the following characteristics:

		Compliance SC	PC	NC
Subchapter I — General Requirements: This subchapter describes general requirements for an organization and its governing body.	I.	☐	☐	☐
A. The organization is a legally constituted entity, or an organized sub-unit of a legally constituted entity, or is a sole proprietorship in the state(s) in which it is located and provides services.	A.	☐	☐	☐
1. The names and addresses of all owners or controlling parties (whether individuals, partnerships, trusts, corporate bodies, or subdivisions of other bodies, such as public agencies or religious, fraternal, or other philanthropic organizations) are available upon request and furnished to the Accreditation Association for Ambulatory Health Care (AAAHC).	1.	☐	☐	☐
2. A legally constituted entity is documented by at least one of the following: articles of organization, articles of incorporation, partnership agreement, operating agreement, legislative or executive act, or bylaws, unless the organization is a sole proprietorship.	2.	☐	☐	☐
B. The governing body addresses and is fully and legally responsible, either directly or by appropriate professional delegation, for the operation and performance of the organization. Governing body responsibilities include, but are not limited to:	B.	☐	☐	☐
1. Determining the mission, goals, and objectives of the organization.	1.	☐	☐	☐
2. Ensuring that facilities and personnel are adequate and appropriate to carry out the mission.	2.	☐	☐	☐
3. Establishing an organizational structure and specifying functional relationships among the various components of the organization.	3.	☐	☐	☐
4. Adopting bylaws or similar rules and regulations for the orderly development and management of the organization.	4.	☐	☐	☐
5. Adopting policies and procedures necessary for the orderly conduct of the organization, including the organization's scope of clinical activities.	5.	☐	☐	☐
a. The organization defines pediatric patients and develops and maintains a written policy defining the care of pediatric patients, if relevant. Specific components of perioperative care are listed in Standard 10.I.AA.	a.	☐	☐	☐
6. Ensuring that the quality of care is evaluated and that identified problems are appropriately addressed.	6.	☐	☐	☐
7. Reviewing all legal and ethical matters concerning the organization and its staff and, when necessary, responding appropriately.	7.	☐	☐	☐

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	Compliance SC	PC	NC
8. Maintaining effective communication throughout the organization, including ensuring links between quality management and improvement activities and other management functions of the organization.	8. ☐	☐	☐
9. Establishing a system of financial management and accountability appropriate to the organization.	9. ☐	☐	☐
10. Determining a policy on the rights and responsibilities of patients.	10. ☐	☐	☐
11. Approving and assuring compliance of all major contracts or arrangements affecting the medical and dental care provided under its auspices and ensuring that services are provided in a safe and effective manner, including, but not limited to, those concerning:	11. ☐	☐	☐
a. The employment or contracting of health care professionals.	a. ☐	☐	☐
b. The provision of external services for radiology, pathology, medical laboratory, and housekeeping services.	b. ☐	☐	☐
c. The provision of care by other health care organizations, such as hospitals.	c. ☐	☐	☐
d. The provision of education to students and postgraduate trainees.	d. ☐	☐	☐
e. The provision of after-hours patient information or telephone triage services, including the review of protocols.	e. ☐	☐	☐
f. The Centers for Medicare & Medicaid Services (CMS) requirements, if the organization participates in the Medicare/Medicaid program.	f. ☐	☐	☐
g. The activities or services delegated to another entity.	g. ☐	☐	☐
12. Formulating long-range plans in accordance with the mission, goals, and objectives of the organization.	12. ☐	☐	☐
13. Fulfilling all applicable obligations under local, state, and federal laws and regulations, such as those addressing disabilities, medical privacy, grievances, fraud and abuse, self-referral, anti-trust, reporting to the National Practitioner Data Bank (NPDB)[1], etc.	13. ☐	☐	☐
14. Ensuring that none of the marketing and advertising regarding the competence and capabilities of the organization is misleading.	14. ☐	☐	☐
15. Developing a program of risk management appropriate to the organization that includes review of risk management activities.	15. ☐	☐	☐
16. Determining a policy on continuing education for personnel and/or patient education for members/enrollees, if applicable.	16. ☐	☐	☐
17. Development, implementation, and oversight of the organization's infection control and safety programs to ensure a safe environment of care.	17. ☐	☐	☐

[1] *For information on the National Practitioner Data Bank, see http://www.npdb-hipdb.hrsa.gov.*

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	Compliance SC	PC	NC
C. Accredited organizations must notify AAAHC in writing within 15 calendar days of significant organizational, ownership, operational, or quality of care events, including criminal indictment, guilty plea or verdict in a criminal proceeding (other than a traffic violation) directly or indirectly involving the organization or any of its officers, administrators, physicians/health care professionals, or staff within their role in the organization. Any such change/event that negatively affects public perception of the accredited organization or AAAHC, as the accrediting body, must also be reported. An organization's duty to provide this information continues during the entire accreditation term.	C. ☐	☐	☐
D. Representation of accreditation to the public must accurately reflect the AAAHC-accredited entity.	D. ☐	☐	☐
E. The governing body meets at least annually, or more frequently as determined by the governing body, and keeps such minutes or other records as may be necessary for the orderly conduct of the organization.	E. ☐	☐	☐
1. Items to be reviewed should include, but are not limited to:	1. ☐	☐	☐
a. Rights of patients.	a. ☐	☐	☐
b. Delegated administrative responsibilities.	b. ☐	☐	☐
c. Quality of care.	c. ☐	☐	☐
d. The quality management and improvement program.	d. ☐	☐	☐
e. The organization's policies and procedures.	e. ☐	☐	☐
f. The appointment/reappointment process.	f. ☐	☐	☐
g. The infection control program.	g. ☐	☐	☐
h. The safety program.	h. ☐	☐	☐
i. Compliance with all other applicable Standards.	i. ☐	☐	☐
F. If the governing body elects, appoints, or employs officers and administrators to carry out its directives, the authority, responsibility, and functions of all such positions are defined.	F. ☐	☐	☐

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	Compliance SC	PC	NC

Subchapter II — Credentialing and Privileging: This subchapter describes the requirements for credentialing and privileging of health care professionals to provide patient care in an accreditable organization. Organizations may find the *Worksheets and Forms* located in the back of this *Handbook* helpful in creating medical staff applications and in measuring compliance with credentials verification processes.

Credentialing is a three-phase process of assessing and validating the qualifications of an individual to provide services. The objective of credentialing is to establish that the applicant has the specialized professional background that he or she claims and that the position requires. An accreditable organization: 1) establishes minimum training, experience, and other requirements (i.e., credentials) for physicians and other health care professionals; 2) establishes a process to review, assess, and validate an individual's qualifications, including education, training, experience, certification, licensure, and any other competence-enhancing activities against the organization's established minimum requirements; and 3) carries out the review, assessment, and validation as outlined in the organization's description of the process.

II. ☐ ☐ ☐

A. The medical staff must be accountable to the governing body. The governing body establishes and is responsible for a credentialing and reappointment process, applying criteria in a uniform manner to appoint individuals to provide patient care for the organization. The governing body approves mechanisms for credentialing, reappointment, the granting of privileges, and suspending or terminating clinical privileges, including provisions for appeal of such decisions.

A. ☐ ☐ ☐

B. The governing body, either directly or by delegation, makes (in a manner consistent with state law) initial appointment, reappointment, and assignment or curtailment of clinical privileges of medical staff members based on professional peer evaluation. This process has the following characteristics:

B. ☐ ☐ ☐

1. The governing body has specific criteria for the initial appointment and reappointment of physicians and dentists.

1. ☐ ☐ ☐

2. Provisions are made for the expeditious processing of applications for clinical privileges.

2. ☐ ☐ ☐

3. On an application for initial credentialing and privileges, the applicant is required to provide sufficient evidence of training, experience, and current documented competence in performance of the procedures for which privileges are requested. At a minimum, the following credentialing and privileging information shall be provided for evaluation of the candidate:

3. ☐ ☐ ☐

   a. Education, training, and experience: Relevant education and training are verified at the time of appointment and initial granting of clinical privileges; the applicant's experience is reviewed for continuity, relevance, and documentation of any interruptions in that experience.

   a. ☐ ☐ ☐

   b. Peer evaluation: Current competence is verified and documented.

   b. ☐ ☐ ☐

   c. Current state license: Current licensure is verified and documented at the time of appointment.

   c. ☐ ☐ ☐

   d. Drug Enforcement Administration (DEA) registration, if applicable.

   d. ☐ ☐ ☐

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		Compliance SC	PC	NC
e.	Proof of current medical liability coverage meeting governing body requirements, if any.	e. ☐	☐	☐
f.	Information obtained from the National Practitioner Data Bank (NPDB)[1] **Note:** The NPDB Proactive Disclosure Services (PDS) is an acceptable service for meeting the requirement for querying the NPDB (see Resources).	f. ☐	☐	☐
g.	The organization requires, at initial appointment and reappointment, written attestation from the applicant addressing other pertinent information which includes, but need not be limited to:	g. ☐	☐	☐
	i. Professional liability claims history.	i. ☐	☐	☐
	ii. Information on licensure revocation, suspension, voluntary relinquishment, licensure probationary status, or other licensure conditions or limitations.	ii. ☐	☐	☐
	iii. Complaints or adverse action reports filed against the applicant with a local, state, or national professional society or licensure board.	iii. ☐	☐	☐
	iv. Refusal or cancellation of professional liability coverage.	iv. ☐	☐	☐
	v. Denial, suspension, limitation, termination, or nonrenewal of professional privileges at any hospital, health plan, medical group, or other health care entity.	v. ☐	☐	☐
	vi. DEA and state license action.	vi. ☐	☐	☐
	vii. Disclosure of any Medicare/Medicaid sanctions.	vii. ☐	☐	☐
	viii. Conviction of a criminal offense (other than minor traffic violations).	viii. ☐	☐	☐
	ix. Current physical, mental health, or chemical dependency problems that would interfere with an applicant's ability to provide high-quality patient care and professional services.	ix. ☐	☐	☐
	x. Signed statement releasing the organization from liability and attesting to the correctness and completeness of the submitted information.	x. ☐	☐	☐

[1] *For information on the National Practitioner Data Bank, see http://www.npdb-hipdb.hrsa.gov.*

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	Compliance SC	PC	NC
4. Upon completion of the application, the credentials are verified according to procedures established in the organization's bylaws, rules and regulations, or policies. The organization has established procedures to obtain information necessary for primary or secondary source verification of the credentials and is responsible for obtaining this information. An accreditable organization may use information provided by a Credentials Verification Organization (CVO) after proper assessment of the capability and quality of the CVO. Alternatively, a CVO may demonstrate such capability and quality by becoming accredited or certified by a nationally recognized accreditation organization. Primary or acceptable secondary source verification is required for items listed in 2.II.B.3.a-f, unless a CVO or an organization performing primary source verification that is accredited or certified by a nationally recognized body is used. If the organization utilizes a CVO or another organization to verify credentials, those entities must perform primary source verification unless such sources do not exist or are impossible to verify.	4. ☐	☐	☐
5. Medical staff must apply for reappointment every three years, or more frequently if state law or organizational policies so stipulate. At reappointment, the organization requires completion of a reappointment application and verifies items listed in Standards 2.II.B.3.c-g and peer review activities as described in Chapter 2.III.	5. ☐	☐	☐
6. The organization shall monitor and document the currency of date-sensitive information such as licensure, professional liability insurance (if required), certifications, DEA registrations, and other such items, where applicable, on an ongoing basis (at expiration, appointment, and re-appointment, at minimum.)	6. ☐	☐	☐
7. In a solo medical or dental practice, the provider's credentials file shall be reviewed by an outside physician (for a medical practice) or an outside dentist (for a dental practice) at least every three years, or more frequently, if state law or organizational policies so stipulate, to ensure currency, accuracy, and completeness of credentials. The provider is required to complete an application or reapplication, and the documentation identified in Standard 2.II.B.3 must be present in the credentials file, including a list of procedures that will be performed by the provider in the organization/practice setting and evidence of appropriate education, training, and experience to perform the privileged procedures. Applications are available for other providers requesting credentialing and privileges to perform procedures in the solo provider's organization, including any anesthesia providers. In a solo provider's practice, the granting of privileges shall be reviewed by an outside physician (for medical practices) or dentist (for dental practices) with documentation provided to the organization.	7. ☐	☐	☐

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	Compliance SC	PC	NC
Privileging is a three-phase process. The objective of privileging is to determine the specific procedures and treatments that a health care professional may perform. An accreditable organization: 1) determines the clinical procedures and treatments that are offered to patients; 2) determines the qualifications related to training and experience that are required to authorize an applicant to obtain each privilege; and 3) establishes a process for evaluating the applicant's qualifications using appropriate criteria and approving, modifying, or denying any or all of the requested privileges in a non-arbitrary manner.			
C. The scope of procedures must be periodically reviewed by the governing body and amended as appropriate.	C. ☐	☐	☐
D. Privileges to carry out specified procedures are granted by the organization to the health care professional to practice for a specified period of time. The health care professional must be legally and professionally qualified for the privileges granted. These privileges are granted based on an applicant's qualifications within the services provided by the organization and recommendations from qualified medical personnel.	D. ☐	☐	☐
E. The organization has its own independent process of credentialing and privileging. The approval of credentials or the granting of privileges requires review and approval by the organization's governing body. Credentials may not be approved, nor privileges granted, solely on the basis that another organization, such as a hospital, approved credentials or granted privileges, without further review. Such status at another organization may be included in the governing body's consideration of the application.	E. ☐	☐	☐
F. The governing body provides a process (in a manner consistent with state law and based on evidence of education, training, experience, and current competence) for the initial appointment, reappointment, and assignment or curtailment of privileges and practice for allied health care professionals.	F. ☐	☐	☐

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		Compliance SC	PC	NC
Subchapter III — Peer Review: An accreditable organization maintains an active and organized process for peer review that is integrated into the quality management and improvement program and is evidenced by the following characteristics:	III.	☐	☐	☐
A. The health care professionals understand, support, and participate in a peer review program through organized mechanisms that are consistent with the organization's policies and procedures, and are responsible to the governing body. The peer review activities are evidenced in the quality improvement program.	A.	☐	☐	☐
B. At least two physicians (or dentists in dental practices) are involved to provide peer-based review. (In solo physician or dental organizations, such as office-based surgical practices, independent practice associations, and dental practices, an outside physician or dentist is involved to provide peer-based review.)	B.	☐	☐	☐
1. At least two health care professionals, one of whom may be a physician or dentist, are involved to provide peer-based review within their scope of practice for professionals such as nurse practitioners, certified registered nurse anesthetists, and physician assistants. Peer review as part of an employee's performance evaluation is acceptable.	1.	☐	☐	☐
C. The organization provides ongoing monitoring of important aspects of the care provided by physicians, dentists, and other health care professionals. Monitoring important aspects of care is necessary for monitoring performance and establishing internal benchmarks.	C.	☐	☐	☐
D. Health care professionals participate in the development and application of the criteria used to evaluate the care they provide.	D.	☐	☐	☐
E. Data related to established criteria is collected in an ongoing manner and are periodically evaluated to identify acceptable or unacceptable trends or occurrences that affect patient outcomes.	E.	☐	☐	☐
F. The results of peer review activities are reported to the governing body.	F.	☐	☐	☐
G. The results of peer review are used as part of the process for granting continuation of clinical privileges, as described in Chapter 2.II.	G.	☐	☐	☐
H. To improve the professional competence and skill, as well as the quality of performance, of the health care professionals and other professional personnel it employs, the organization:	H.	☐	☐	☐
1. Provides convenient access to reliable, up-to-date information pertinent to the clinical, educational, administrative, and research services provided by the organization.	1.	☐	☐	☐
2. Encourages health care professionals to participate in educational programs and activities, as demonstrated in the organization's policies or procedures; these educational programs may be internal or external, and are consistent with the organization's mission, goals, and objectives.	2.	☐	☐	☐

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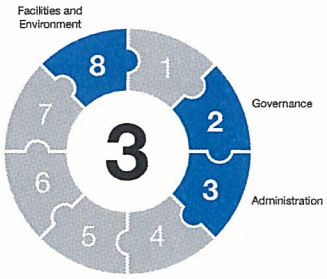
03. Administration



An accreditable organization is administered in a manner that ensures the provision of high-quality health services and that fulfills the organization's mission, goals, and objectives. Organizations may find it helpful to use the *Personnel Records Worksheet* to evaluate compliance with some Standards found in this chapter. The *Worksheets and Forms* section is located in the back of this *Handbook*.

	Compliance		
	SC	PC	NC
A. Administrative policies, procedures and controls are established and implemented to ensure the orderly and efficient management of the organization. Administrative responsibilities include, but are not limited to:	A. ☐	☐	☐
1. Enforcing policies delegated by the governing body.	1. ☐	☐	☐
2. Employing qualified management personnel.	2. ☐	☐	☐
3. Taking all reasonable steps to comply with applicable laws and regulations.	3. ☐	☐	☐
4. Protecting the assets of the organization.	4. ☐	☐	☐
5. Implementing fiscal controls, including, but not limited to:	5. ☐	☐	☐
a. Authorization and record procedures that are adequate to provide accounting controls over assets, liabilities, revenues, and expenses.	a. ☐	☐	☐
b. Policies and procedures for controlling accounts receivable and accounts payable and for handling cash and credit arrangements.	b. ☐	☐	☐
c. Rates and charges for services provided by the organization.	c. ☐	☐	☐
d. Methods of collection of unpaid accounts that are reviewed before referral to a collection agency.	d. ☐	☐	☐
6. Using methods of communicating and reporting designed to ensure the orderly flow of information within the organization.	6. ☐	☐	☐
7. Controlling the purchase, maintenance, and distribution of the equipment, materials, and facilities of the organization.	7. ☐	☐	☐
8. Operating based on established lines of authority.	8. ☐	☐	☐
9. Establishing controls relating to the custody of the official documents of the organization.	9. ☐	☐	☐
10. Maintaining the confidentiality, security, and physical safety of data on patients and staff.	10. ☐	☐	☐
11. Maintaining a health information system that supports the collection, integration, and analysis of data and allows reporting as necessary.	11. ☐	☐	☐
12. Dealing with inquiries from governmental agencies, attorneys, consumer advocate groups, and the media.	12. ☐	☐	☐

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	Compliance SC	PC	NC
B. Personnel policies are established and implemented to facilitate attainment of the mission, goals, and objectives of the organization. Personnel policies:	B. ☐	☐	☐
1. Define and delineate functional responsibilities and authority.	1. ☐	☐	☐
2. Require the employment of personnel with qualifications commensurate with job responsibilities and authority, including appropriate licensure or certification.	2. ☐	☐	☐
3. Specify privileges and responsibilities of employment, including compliance with an adverse incident reporting system, as described in Standard 5.II.E.2-4.	3. ☐	☐	☐
4. Reflect the requirement for documentation of initial orientation and training according to position description. Initial orientation and training shall be:	4. ☐	☐	☐
a. Completed within 30 days of commencement of employment.	a. ☐	☐	☐
b. Provided annually thereafter and when there is an identified need.	b. ☐	☐	☐
5. Require periodic appraisal of each person's job performance, including current competence.	5. ☐	☐	☐
6. Describe incentives and rewards, if any exist.	6. ☐	☐	☐
7. Require periodic review of employee compensation.	7. ☐	☐	☐
8. Are made known to employees at the time of employment.	8. ☐	☐	☐
9. Comply with federal and state laws and regulations regarding verification of eligibility for employment, such as I-9 (Immigration and Naturalization form) and visas, as required.	9. ☐	☐	☐
C. Health care workers are protected from biologic hazards, consistent with state, federal, and CDC guidelines. The organization has:	C. ☐	☐	☐
1. Approved and implemented policies that comply with all applicable occupational health and safety regulations for health care workers, such as the Occupational Safety and Health Administration (OSHA) rules on Occupational Exposure to Bloodborne Pathogens (Title 29 CFR 1910.1030) designed to eliminate and/or minimize employee exposures.	1. ☐	☐	☐
2. The organization has a written exposure control plan that is reviewed and updated at least annually, including an evaluation for the availability of safer medical devices and changes in technology.	2. ☐	☐	☐
3. The exposure control plan is made a part of employee initial orientation and retraining that is conducted within one year of their last training.	3. ☐	☐	☐
4. The organization has an effective program addressing bloodborne pathogens, including:	4. ☐	☐	☐
a. Hepatitis B vaccination program.	a. ☐	☐	☐
b. Post-exposure evaluation and treatment.	b. ☐	☐	☐
c. Appropriate training in and communication of hazards to employees.	c. ☐	☐	☐
d. Appropriate record keeping and management.	d. ☐	☐	☐

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	Compliance SC	PC	NC
5. An immunization program for other infectious agents of risk to health care workers and their patients.	5. ☐	☐	☐
6. A tuberculosis respiratory protection program.	6. ☐	☐	☐
7. Programs that address other relevant biological hazards, such as bioterrorism, as needed for employee safety and health.	7. ☐	☐	☐
D. A program is maintained to assess and reduce risks associated with occupational chemical exposures, including:	D. ☐	☐	☐
1. Hazard assessment of chemicals used in the workplace.	1. ☐	☐	☐
2. Engineering measures to reduce the risk of chemical exposure.	2. ☐	☐	☐
3. Worker training programs.	3. ☐	☐	☐
E. A program is maintained to assess and, where necessary, reduce risks associated with physical hazards, such as ergonomic exposures, violence at the workplace, and external physical threats such as terrorism.	E. ☐	☐	☐
F. Records of work injuries and illnesses are maintained, consistent with reporting requirements, and employee health records are managed appropriately.	F. ☐	☐	☐
G. The organization periodically assesses patient satisfaction with services and facilities provided by the organization. The findings are reviewed by the governing body and, when appropriate, corrective actions are taken.	G. ☐	☐	☐
H. When students and postgraduate trainees are present, their status is defined in the organization's written policies and procedures.	H. ☐	☐	☐

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04. Quality of Care Provided

An accreditable organization provides high-quality health care services in accordance with the principles of professional practice and ethical conduct, and with concern for the costs of care and for improving the community's health status. Such an organization has the following characteristics:

	Compliance SC	PC	NC
A. All health care professionals have the necessary and appropriate training and skills to deliver the services provided by the organization.	A. ☐	☐	☐
B. Health care professionals practice their professions in an ethical and legal manner.	B. ☐	☐	☐
C. All personnel assisting in the provision of health care services are appropriately qualified and supervised and are available in sufficient numbers for the care provided.	C. ☐	☐	☐
D. The organization has a current and comprehensive written quality management and improvement program.	D. ☐	☐	☐
E. The organization facilitates the provision of high-quality health care as demonstrated by the following:	E. ☐	☐	☐
1. Health care provided is consistent with current standard of care.	1. ☐	☐	☐
2. Education of and effective communication with patients served concerning the diagnosis and treatment of their conditions, appropriate preventive measures, and use of the health care system.	2. ☐	☐	☐
3. Appropriate and timely diagnosis based on findings of the current history and physical examination.	3. ☐	☐	☐
4. Medication reconciliation is performed.	4. ☐	☐	☐
5. Treatment that is consistent with clinical impression or working diagnosis.	5. ☐	☐	☐
6. Appropriate and timely consultation and referrals.	6. ☐	☐	☐
7. When clinically indicated, patients are contacted as quickly as possible for follow-up regarding significant problems and/or abnormal findings.	7. ☐	☐	☐
8. Continuity of care and patient follow-up.	8. ☐	☐	☐
9. Assessing patient satisfaction and taking corrective actions, when indicated.	9. ☐	☐	☐
10. The use of performance measures to improve outcomes.	10. ☐	☐	☐

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	Compliance SC	PC	NC
F. Health services available at the organization are accessible to patients and ensure patient safety by at least the following:	F. ☐	☐	☐
1. Provision for and information about services when the organization's facilities are not open.	1. ☐	☐	☐
2. Adequate and timely transfer of information when patients are transferred to other health care professionals.	2. ☐	☐	☐
G. The organization has policies and procedures for identifying, storing, and transporting laboratory specimens and biological products. The policies and procedures include logging and tracking to ensure that results for each specimen are obtained and have been reported to the ordering physician in a timely manner.	G. ☐	☐	☐
H. When the need arises, the organization assists patients with the transfer of their care from one health care professional to another.	H. ☐	☐	☐
1. Adequate specialty consultation services are available by prior arrangement.	1. ☐	☐	☐
2. Referral to another health care professional is clearly outlined to the patient and arranged with the accepting health care professional.	2. ☐	☐	☐
I. When emergencies or unplanned outcomes occur, and hospitalization is indicated for the evaluation and stabilization of the patient, the organization shall have **one** of the following in place:	I. ☐	☐	☐
1. A written transfer agreement for transferring patients to a nearby hospital.	1. ☐	☐	☐
2. A written policy of credentialing and privileging physicians and dentists who have admitting and similar privileges at a nearby hospital.	2. ☐	☐	☐
3. Written agreement with a physician or provider group with admitting privileges at a nearby hospital.	3. ☐	☐	☐
4. A detailed written procedural plan for handling medical emergencies.	4. ☐	☐	☐
J. Concern for the costs of care is present throughout the organization.	J. ☐	☐	☐

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05. Quality Management and Improvement

In striving to improve the quality of care and to promote more effective and efficient utilization of facilities and services, an accreditable organization maintains an active, integrated, organized, ongoing, data-driven, peer-based program of quality management and improvement that links peer review, quality improvement activities, and risk management in an organized, systematic way.

Organizations may also find it useful to refer to *Analyzing Your Quality Management Program and Creating Meaningful Studies* in the *Worksheets and Forms* section in the back of this *Handbook*.

Note: The intent of this chapter is that administrative and clinical personnel be involved in the quality management and improvement activities of the organization.

	Compliance SC	PC	NC
Subchapter I — Quality Improvement Program: An accreditable organization maintains an active, integrated, organized, and peer-based quality improvement (QI) program as evidenced by the following characteristics:	I. ☐	☐	☐
A. The organization has a written quality improvement program for ensuring ongoing quality and improving performance when needed. The program is broad in scope in order to address clinical, administrative, and cost-of-care performance issues, as well as actual patient outcomes, i.e., results of care, including safety of patients. At a minimum, the written program:	A. ☐	☐	☐
1. Addresses the full scope of the organization's health care delivery services and describes how these services are assessed for quality.	1. ☐	☐	☐
2. Identifies the specific committee(s) or individuals responsible for development, implementation and oversight of the program.	2. ☐	☐	☐
3. Ensures participation by health care professionals, one or more of whom is a physician or dentist. In organizations where a physician or a dentist is not on the medical staff, and the organization is therefore led by an advanced practice registered nurse or a physician assistant, or in a behavioral health setting led by a licensed clinical behavioral health professional, one or more of such licensed healthcare providers is a participant.	3. ☐	☐	☐
4. Includes program purposes, as well as specific objectives that the program intends to achieve.	4. ☐	☐	☐
5. Specifies the data collection processes used to ensure ongoing quality and identify quality-related problems or concerns (see Standard 5.I.B below).	5. ☐	☐	☐
6. Implements activities to improve performance when opportunities for improvement are identified (see Standard 5.I.C below).	6. ☐	☐	☐

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	Compliance SC	PC	NC
7. Describes how the organization integrates quality improvement activities, peer review, and the risk management program.	7. ☐	☐	☐
8. Is evaluated at least annually for effectiveness and to determine if the program's purposes and objectives are continuing to be met.	8. ☐	☐	☐
9. Describes processes used to ensure that the results of quality improvement activities, including the annual program evaluation, are reported to the governing body and throughout the organization, as appropriate.	9. ☐	☐	☐
B. The organization implements data collection processes to ensure ongoing quality and to identify quality-related problems or concerns. Such processes should include but are not limited to:	B. ☐	☐	☐
1. Analysis of the results of peer review activities.	1. ☐	☐	☐
2. Periodic audits of critical processes, as appropriate for the services provided. (See "quality monitoring" in the Glossary.)	2. ☐	☐	☐
3. Ongoing monitoring of important processes and outcomes of care, as appropriate for the services provided. (See "quality monitoring" in the Glossary.)	3. ☐	☐	☐
4. Comparison of the organization's performance to internal and external benchmarks.	4. ☐	☐	☐
5. Methods to systematically collect information from other sources such as, but not limited to, patient satisfaction surveys, financial data, medical/legal issues, and outcomes data.	5. ☐	☐	☐
6. Evaluation of the information and data obtained through the above data collection activities to identify the existence of unacceptable variation or results that require improvement.	6. ☐	☐	☐
C. The organization demonstrates that ongoing improvement is occurring by conducting quality improvement studies when the data collection processes described in Standard 5.I.B indicate that improvement is or may be warranted. Written descriptions of QI studies document that each study includes the following elements as applicable[1]:	C. ☐	☐	☐
1. A statement of the purpose of the QI study that includes a description of the problem and an explanation of why it is significant to the organization. (See *Analyzing Your Quality Management Program and Creating Meaningful Studies* in the *Worksheets and Forms* section in the back of this *Handbook*.)	1. ☐	☐	☐
2. Identification of the measurable performance goal against which the organization will compare its current performance in the area of study.	2. ☐	☐	☐
3. A description of the data that will be collected in order to determine the organization's current performance (i.e., study methodology).	3. ☐	☐	☐

[1] *At least one completed quality improvement study demonstrating that improvement has occurred, i.e., including Standards 5.I.C.1 - 8, 9 (if applicable) and 10 must be present in order for Standard 5.I.C. to be considered for a rating of Substantially Compliant (SC). This does not imply that conducting only one complete study per accreditation cycle is adequate or appropriate for all organizations, nor does conducting one complete study automatically result in a rating of SC for Standard 5.I.C.*

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	Compliance SC	PC	NC
4. Evidence of data collection.	4. ☐	☐	☐
5. Data analysis that describes findings about the frequency, severity, and source(s) of the problem(s).	5. ☐	☐	☐
6. A comparison of the organization's current performance in the area of study against the previously identified performance goal.	6. ☐	☐	☐
7. Implementation of corrective action(s) to resolve identified problem(s).	7. ☐	☐	☐
8. Re-measurement (a second round of data collection and analysis as described in Standard 5.I.C.4-6) to objectively determine whether the corrective actions have achieved and sustained demonstrable improvement.	8. ☐	☐	☐
9. If the initial corrective action(s) did not achieve and/or sustain the desired improved performance, implementation of additional corrective action(s) and continued re-measurement until the problem is resolved or is no longer relevant.	9. ☐	☐	☐
10. Communication of the findings of the quality improvement activities to the governing body and throughout the organization, as appropriate, and incorporation of such findings into the organization's educational activities ("closing the QI loop").	10. ☐	☐	☐
D. The organization participates in external benchmarking activities that compare key performance measures with other similar organizations, or with recognized best practices of national or professional targets or goals.	D. ☐	☐	☐
1. The organization's benchmarking activities include, but are not limited to:	1. ☐	☐	☐
a. The use of selected performance measures that are appropriate for improving the processes or outcomes of care relevant to the patients served.	a. ☐	☐	☐
b. Systematically collecting and analyzing data related to the selected performance measures.	b. ☐	☐	☐
c. Using benchmarks that are based on valid and reliable local, state, national, or published data.	c. ☐	☐	☐
d. Measuring changes in the organization's performance on the selected performance measures.	d. ☐	☐	☐
e. Demonstrating sustained performance improvement over time.	e. ☐	☐	☐
2. Results of benchmarking activities must be incorporated into other quality improvement activities of the organization.	2. ☐	☐	☐
3. Results of benchmarking activities must be reported to the organization's governing body and throughout the organization, as appropriate.	3. ☐	☐	☐

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	Compliance SC	PC	NC
Subchapter II — Risk Management: An accreditable organization develops and maintains a program of risk management, appropriate to the organization, designed to protect the life and welfare of an organization's patients and employees. Such an organization has the following characteristics:	II. ☐	☐	☐
A. The governing body of the organization is responsible for overseeing the program of risk management.	A. ☐	☐	☐
B. The governing body designates a person or committee to be responsible for implementation and ongoing management of the risk management program.	B. ☐	☐	☐
C. Education in risk management activities, and safety policies and processes, is provided to all staff within 30 days of commencement of employment, annually thereafter, and when there is an identified need.	C. ☐	☐	☐
D. Documented education in infection control policies and processes is provided to all staff within 30 days of commencement of employment, annually thereafter, and when there is an identified need.	D. ☐	☐	☐
E. Risk management program processes are consistently implemented throughout the organization, including all departments and service locations. These processes address patient safety and other important issues, including but not limited to:	E. ☐	☐	☐
1. A definition of an adverse incident, that includes, at a minimum, the events defined in Standard 5.II.F.	1. ☐	☐	☐
2. The identification, reporting, and appropriate analysis of all adverse incidents. The analysis identifies the basic or causal factors underlying the incident, and identifies potential improvements in processes or systems, if any exist, to reduce the likelihood of such incidents in the future.	2. ☐	☐	☐
3. Encouraging the reporting of near-miss events.	3. ☐	☐	☐
4. The communication of reportable events as required by law and regulation.	4. ☐	☐	☐
5. Periodic review of all litigation involving the organization and its staff and health care professionals.	5. ☐	☐	☐
6. An ongoing review of patient complaints and grievances that includes defined response times, as required by law and regulation.	6. ☐	☐	☐
7. Documentation of timely notification to the professional liability insurance carrier when adverse or reportable events occur.	7. ☐	☐	☐
8. Periodic review of clinical records and clinical record policies.	8. ☐	☐	☐
F. The organization's risk management program includes the definition of an adverse incident that incorporates, at a minimum:	F. ☐	☐	☐
1. An unexpected occurrence during a health care encounter involving patient death or serious physical or psychological injury or illness, including loss of limb or function, not related to the natural course of the patient's illness or underlying condition.	1. ☐	☐	☐
2. Any process variation for which a recurrence carries a significant chance of a serious adverse outcome.	2. ☐	☐	☐

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	Compliance SC	PC	NC
3. Events such as actual breaches in medical care, administrative procedures, or other events resulting in an outcome that is not associated with the standard of care or acceptable risks associated with the provision of care and service for a patient.	3. ☐	☐	☐
4. All events involving reactions to drugs and materials.	4. ☐	☐	☐
5. Circumstances or events that could have resulted in an adverse event (near-miss events).	5. ☐	☐	☐
G. In addition, the risk management policies address:	G. ☐	☐	☐
1. Written methods by which a patient may be dismissed from care or refused care.	1. ☐	☐	☐
2. A process for managing a situation in which a health care professional becomes incapacitated during a medical or surgical procedure.	2. ☐	☐	☐
3. A process for communicating concerns regarding an impaired health care professional.	3. ☐	☐	☐
4. Establishment of responsibility for, and documentation of, coverage after normal working hours.	4. ☐	☐	☐
5. Written policies restricting observers in patient care areas and addressing those persons authorized by the governing body to perform or assist in the procedure area.	5. ☐	☐	☐
6. A requirement for evidence of patient consent for all other persons allowed in patient care areas that are not authorized staff, including evidence of patient consent. Examples of unauthorized persons include students, interested physicians, health care industry representatives, surveyors, etc.	6. ☐	☐	☐

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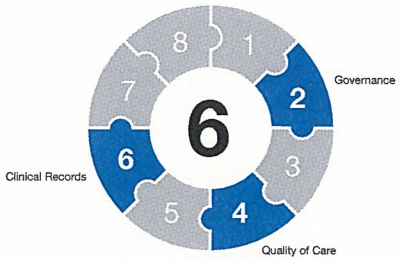
06. Clinical Records and Health Information



An accreditable organization maintains electronic and/or paper clinical records and a health information system from which information can be retrieved promptly. Clinical records are complete, comprehensive, legible, documented accurately in a timely manner, and readily accessible to health care professionals.

The *Clinical Records Worksheet*, found in the *Worksheets and Forms* section in the back of this *Handbook*, may be useful in assessing your organization's compliance with Chapter 6 Standards.

		Compliance		
		SC	PC	NC
A.	The organization develops and maintains a system for the proper collection, processing, maintenance, storage, retrieval, and distribution of clinical records.	☐	☐	☐
B.	A designated person is in charge of clinical records. This person's responsibilities include, but are not limited to:	☐	☐	☐
1.	The confidentiality, security, and physical safety of records.	☐	☐	☐
2.	The timely retrieval of individual records upon request.	☐	☐	☐
3.	The supervision of the collection, processing, maintenance, storage, and appropriate access to and usage of records.	☐	☐	☐
4.	Security of the clinical record including a method of tracking who accesses the record in order to block unauthorized access.	☐	☐	☐
C.	An individual clinical record is established for each person receiving care. Each record includes, but is not limited to:	☐	☐	☐
1.	Name.	☐	☐	☐
2.	Identification number (if appropriate).	☐	☐	☐
3.	Date of birth.	☐	☐	☐
4.	Gender.	☐	☐	☐
5.	Responsible party, if applicable.	☐	☐	☐
D.	Clinical record entries are legible and easily accessible within the record by the organization's personnel.	☐	☐	☐
E.	If a patient has had three or more visits/admissions, or the clinical record is complex and lengthy, a summary of past and current diagnoses or problems, including past procedures, is documented in the patient's record to facilitate the continuity of care.	☐	☐	☐
F.	The presence or absence of allergies and untoward reactions to drugs and materials is recorded in a prominent and consistently defined location in all clinical records. This is verified at each patient encounter and updated whenever new allergies or sensitivities are identified.	☐	☐	☐

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	Compliance SC	PC	NC
G. Except when otherwise required by law, the content and format of clinical records, including the sequence of information, are uniform. Records are organized in a consistent manner that facilitates continuity of care.	G. ☐	☐	☐
H. Documentation regarding missed and canceled appointments must be added to the patient's clinical record.	H. ☐	☐	☐
I. Entries in a patient's clinical record for each visit include, but are not limited to:	I. ☐	☐	☐
1. Date (and department, if departmentalized).	1. ☐	☐	☐
2. Chief complaint or purpose of visit.	2. ☐	☐	☐
3. Clinical findings.	3. ☐	☐	☐
4. Studies ordered, such as laboratory or x-ray studies.	4. ☐	☐	☐
5. Care rendered and therapies administered.	5. ☐	☐	☐
6. Any changes in prescription and non-prescription medication with name and dosage, when available.	6. ☐	☐	☐
7. Discharge diagnosis or impression.	7. ☐	☐	☐
8. Disposition, recommendations, and instructions given to the patient.	8. ☐	☐	☐
9. Verification of contents by health care professionals.	9. ☐	☐	☐
10. Signature of, or authentication by, the health care professional on the clinical record entries.	10. ☐	☐	☐
J. Reports, histories and physicals, progress notes, and other patient information (such as laboratory reports, x-ray readings, operative reports, and consultations) are reviewed and incorporated into the record, as required by the organization's policies.	J. ☐	☐	☐
1. The date, with or without time of entry, of this information is documented in the patient's record.	1. ☐	☐	☐
K. Significant medical advice given to a patient by text, email, or telephone, including medical advice provided after-hours, is permanently entered in the patient's clinical record and appropriately signed or initialed.	K. ☐	☐	☐
L. Any notation in a patient's clinical record indicating diagnostic or therapeutic intervention as part of clinical research is clearly contrasted with entries regarding the provision of non-research related care.	L. ☐	☐	☐
M. Discussions with the patient concerning the necessity, appropriateness, and risks of the proposed care, surgery, or procedure, as well as discussions of treatment alternatives, as applicable, are incorporated into the patient's clinical record.	M. ☐	☐	☐
N. The organization is responsible for ensuring a patient's continuity of care. If a patient's primary or specialty care provider(s) or health care organization is elsewhere, the organization ensures that timely summaries or pertinent records necessary for continuity of patient care are:	N. ☐	☐	☐

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	Compliance SC	PC	NC
1. Obtained from the other (external) provider(s) or organization and incorporated into the patient's clinical record.	1. ☐	☐	☐
2. Provided to the other (external) health care professional(s) and, as appropriate, to the organization where future care will be provided.	2. ☐	☐	☐
O. Except when otherwise required by law, any record that contains clinical, social, financial, or other data on a patient is treated as strictly confidential and is protected from loss, tampering, alteration, destruction, and unauthorized or inadvertent disclosure. Patients are given the opportunity to approve or refuse release of records, except when release is permitted or required by law.	O. ☐	☐	☐
P. All clinical information relevant to a patient is readily available to authorized personnel any time the organization is open to patients.	P. ☐	☐	☐
Q. Written policies concerning clinical records address, but are not limited to:	Q. ☐	☐	☐
1. The retention of active records.	1. ☐	☐	☐
2. The retirement of inactive records.	2. ☐	☐	☐
3. The release and security of information including accountability for editing, deletion, and access of clinical record content is clearly defined.	3. ☐	☐	☐

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07. Infection Prevention and Control and Safety

An accreditable organization provides health care services while adhering to safe practices for patients, staff, and all others. The organization maintains ongoing programs designed to (1) prevent and control infections and communicable diseases, and (2) provide a safe and sanitary environment of care.

	Compliance		
	SC	PC	NC
Subchapter I — Infection Prevention and Control: An accreditable organization maintains an active and ongoing infection prevention and control program as evidenced by the following characteristics:	I. ☐	☐	☐
A. The organization must establish a program for identifying and preventing infections, maintaining a sanitary environment, and reporting the results to appropriate authorities.	A. ☐	☐	☐
B. The infection prevention and control program includes documentation that the organization has considered, selected, and implemented nationally-recognized infection control guidelines. The program is:	B. ☐	☐	☐
1. Approved by the governing body.	1. ☐	☐	☐
2. An integral part of the organization's quality improvement program.	2. ☐	☐	☐
3. Under the direction of a designated and qualified health care professional who has training and current competence in infection control.	3. ☐	☐	☐
4. Appropriate to the organization and meets all applicable state and federal requirements.	4. ☐	☐	☐
5. Responsible for providing a plan of action for preventing, identifying, and managing infections and communicable diseases and for immediately implementing corrective and preventive measures that result in improvement.	5. ☐	☐	☐
6. Clear to include direct intervention to prevent infection, as needed.	6. ☐	☐	☐
C. The infection control and prevention program reduces the risk of health care-acquired infection as evidenced by education and active surveillance, consistent with:	C. ☐	☐	☐
1. WHO, CDC, or other nationally-recognized guidelines for hand hygiene.	1. ☐	☐	☐
2. CDC or other nationally-recognized guidelines for safe injection practices.	2. ☐	☐	☐
3. Precautions to minimize communicable disease exposure to patients, health care staff, and others.	3. ☐	☐	☐
D. The organization provides a functional and sanitary environment for the provision of services.	D. ☐	☐	☐

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Important addition to the 2013

Accreditation Handbook

This addendum is to correct an omission. The following is a sub-element of Chapter 7, Subchapter I, Standard H.

	SC	PC	NC
7.I.H.1 A mechanism to notify public health authorities of reportable conditions.	☐	☐	☐

	Compliance		
	SC	PC	NC
E. The organization adheres to professionally accepted standards of practice, manufacturer's recommendations, and state and federal guidelines, including but not limited to those related to the cleaning, disinfection, and sterilization of instruments, equipment, supplies, and implants.	E. ☐	☐	☐
F. A written sharps injury prevention program must be present in the organization. Such a program will include:	F. ☐	☐	☐
1. Documentation of new employee orientation, annual staff education, and additional education as needed.	1. ☐	☐	☐
2. Disposal of intact needles and syringes into appropriate puncture-resistant sharps containers, in accordance with current state and federal guidelines.	2. ☐	☐	☐
3. Placement of sharps containers in appropriate care areas, secured from tampering.	3. ☐	☐	☐
4. Replacement of sharps containers when the fill line is reached.	4. ☐	☐	☐
5. Handling, storage, and disposal of filled sharps containers in accordance with applicable regulations.	5. ☐	☐	☐
G. A safe environment for treating patients, including adequate safeguards to protect the patient from cross-infection, is assured through the provision of adequate space, equipment, supplies, and personnel.	G. ☐	☐	☐
H. Policies are in place for the isolation or immediate transfer of patients with a communicable disease.	H. ☐	☐	☐
I. Procedures must be available to minimize the sources and transmission of infections, including adequate surveillance techniques.	I. ☐	☐	☐
J. A written process is in place for the monitoring and documentation of the cleaning, high-level disinfection, and sterilization of medical equipment, accessories, instruments, and implants.	J. ☐	☐	☐
K. A written policy addresses the identification and processing of medical equipment and instruments that fail to meet high-level disinfection or sterilization parameters.	K. ☐	☐	☐
L. Sterile packs of equipment and instruments are handled and stored in a manner that maintains their sterility.	L. ☐	☐	☐
M. The organization's written policies address cleaning of patient treatment and care areas which, at a minimum, include:	M. ☐	☐	☐
1. Cleaning before use.	1. ☐	☐	☐
2. Cleaning between patients.	2. ☐	☐	☐
3. Terminal cleaning at the end of the day.	3. ☐	☐	☐
N. Medical devices for use with multiple patients are cleaned and disinfected between patients, following the manufacturer's recommended guidelines or nationally recognized guidelines, whichever are more stringent.	N. ☐	☐	☐

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	Compliance SC	PC	NC
Subchapter II — Safety: An accreditable organization adheres to safe practices for patients, staff, and others as evidenced by the following characteristics:	II. ☐	☐	☐
A. Elements of an organization's written safety program address the environment of care and the safety of patients, staff, and others, and must meet or exceed local, state, or federal safety requirements. The elements of the safety program include, but are not limited to:	A. ☐	☐	☐
1. Processes for the management of identified hazards, potential threats, near misses, and other safety concerns.	1. ☐	☐	☐
2. An awareness of, and a process for, reporting known adverse incidents to appropriate state and federal agencies when required by law to do so.	2. ☐	☐	☐
3. Processes to reduce and avoid medication errors.	3. ☐	☐	☐
4. Policies addressing manufacturer or regulatory agency recalls related to medications, medical equipment and devices, and food products.	4. ☐	☐	☐
5. Prevention of falls or physical injuries involving patients, staff, and others. As required by regulation or contract, the reporting of falls or physical injuries is accurate and timely.	5. ☐	☐	☐
B. There is a person or committee designated by the governing body who is responsible for the organization's safety program.	B. ☐	☐	☐
C. Medical staff members, employees, volunteers, and others abide by the program, and receive education and training to include but not necessarily be limited to:	C. ☐	☐	☐
1. Infection prevention and control program.	1. ☐	☐	☐
2. Safety program.	2. ☐	☐	☐
D. Unique patient identifiers are consistently used throughout care.	D. ☐	☐	☐
E. The organization has a comprehensive written emergency and disaster preparedness plan to address internal and external emergencies, including participating in community health emergency or disaster preparedness, when applicable. The written plan must include a provision for the safe evacuation of individuals during an emergency, especially individuals who are at greater risk.	E. ☐	☐	☐
F. Personnel trained in cardiopulmonary resuscitation and the uses of cardiac and all other emergency equipment are present in the facility to provide patient care during hours of operation.	F. ☐	☐	☐
G. The organization adopts the appropriate policies and procedures to educate medical staff members, employees, volunteers, and other providers and personnel in fire prevention and fire hazard reduction.	G. ☐	☐	☐

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	Compliance SC	PC	NC
H. Fire safety, fire prevention, and fire drills are included in the surveillance activities of personnel responsible for safety and risk management.	H. ☐	☐	☐
I. Environmental hazards associated with safety are identified and safe practices are implemented.	I. ☐	☐	☐
J. Measures are implemented to prevent skin and tissue injury from chemicals, cleaning solutions, and other hazardous exposure.	J. ☐	☐	☐
K. Evidence of compliance with local, state, and federal guidelines is present and adhered to regarding preparing, serving, disposal, and storing of food and drink for patient use.	K. ☐	☐	☐
L. Patients are educated about prescribed medical devices and associated protocols and guidelines. Patient competence with each device is verified before independent use.	L. ☐	☐	☐
M. Written policies must require documentation of the pre-cleaning, transport, and handling of medical devices intended for external vendor reprocessing, inspection, or repair.	M. ☐	☐	☐
N. Reprocessing of single-use devices must comply with FDA guidelines, and the devices must have been cleared under the FDA 510(k) process.	N. ☐	☐	☐
O. The organization has a written policy and process that addresses the recall of items including drugs and vaccines, blood and blood products, medical devices, equipment and supplies, and food products. At a minimum, the policy addresses documentation of:	O. ☐	☐	☐
1. Sources of recall information (FDA, CDC, manufacturers, and other local, state, or federal sources).	1. ☐	☐	☐
2. Methods for notification of staff that need to know.	2. ☐	☐	☐
3. Methods to determine if a recalled product is present at the organization or has been given or administered to patients.	3. ☐	☐	☐
4. Response to recalled products.	4. ☐	☐	☐
5. Disposition or return of recalled items.	5. ☐	☐	☐
6. Patient notification, as appropriate.	6. ☐	☐	☐
P. Products, including medications, reagents, and solutions, that carry an expiration date are monitored. The organization has a policy for disposal or return of expired medications and supplies that is in accordance with local, state, and federal guidelines.	P. ☐	☐	☐
Q. Prior to use, appropriate education is provided to intended operators of newly-acquired devices or products to be used in the care of patients.	Q. ☐	☐	☐
1. The organization shall designate a person to be responsible for ensuring that appropriate clinical education occurs prior to allowing the use of the device in the care of a patient. Vendor representatives are not used as the sole source for clinical education.	1. ☐	☐	☐

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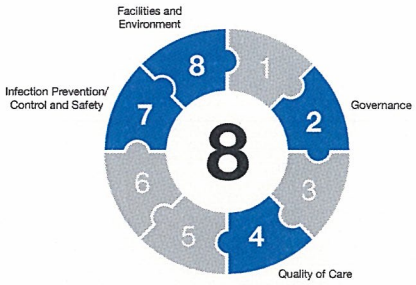
08. Facilities and Environment



An accreditable organization provides a functionally safe and sanitary environment for its patients, personnel, and visitors.

	Compliance SC	PC	NC
A. The organization provides evidence of compliance with the following:	A. ☐	☐	☐
1. Applicable state and local building codes and regulations.	1. ☐	☐	☐
2. Applicable state and local fire prevention regulations, such as the NFPA 101® *Life Safety Code*,® 2000 Edition, published by the National Fire Protection Association, Inc.[1]	2. ☐	☐	☐
3. Applicable federal regulations.	3. ☐	☐	☐
4. Periodic inspection by the local or state fire control agency, if this service is available in the community.	4. ☐	☐	☐
B. The organization ensures that its facilities:	B. ☐	☐	☐
1. Contain fire-fighting equipment to control a limited fire, including appropriately maintained and placed fire extinguishers of the proper type for each potential type of fire.	1. ☐	☐	☐
2. Have prominently displayed illuminated signs with emergency power capability at all exits, including exits from each floor or hall.	2. ☐	☐	☐
3. Have emergency lighting, as appropriate to the facility, to provide adequate illumination for evacuation of patients and staff, in case of an emergency.	3. ☐	☐	☐
4. Have stairwells protected by fire doors, when applicable.	4. ☐	☐	☐
5. Provide reception areas, toilets, and telephones in accordance with patient and visitor volume.	5. ☐	☐	☐
6. Provide examination rooms, dressing rooms, and reception areas that are constructed and maintained in a manner that ensures patient privacy during interviews, examinations, treatment, and consultation.	6. ☐	☐	☐
7. Are operated in a safe and secure manner, with written policy(ies) addressing safety and security practices.	7. ☐	☐	☐
C. The organization has the necessary personnel, equipment, and procedures to deliver safe care, and to handle medical and other emergencies that may arise.	C. ☐	☐	☐

[1] Life Safety Code *and* NFPA 101 *are registered trademarks of the National Fire Protection Association, Inc., Quincy, Massachusetts. For those organizations desiring assistance in reviewing applicable NFPA 101 code, a suitable reference is the* Physical Environment Checklist, *available from AAAHC.*

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	Compliance SC	PC	NC
D. The organization provides documented periodic instruction of all personnel in the proper use of safety, emergency, and fire-extinguishing equipment.	D. ☐	☐	☐
E. The organization conducts at least one drill each calendar quarter of the internal emergency and disaster preparedness plan.[2] One of the drills must be a documented cardiopulmonary resuscitation (CPR) technique drill, as appropriate to the organization. The organization must complete a written evaluation of each drill, and promptly implement any needed corrections or modifications to the plan.	E. ☐	☐	☐
F. Smoking is prohibited within the facility.	F. ☐	☐	☐
G. Hazards that might lead to slipping, falling, electrical shock, burns, poisoning, or other trauma are identified and addressed.	G. ☐	☐	☐
H. Provisions are made to reasonably accommodate disabled individuals.	H. ☐	☐	☐
I. Adequate lighting and ventilation are provided in all areas.	I. ☐	☐	☐
J. Facilities are clean and properly maintained.	J. ☐	☐	☐
K. A system exists for the proper identification, management, handling, transport, treatment, and disposal of hazardous materials and wastes, whether solid, liquid, or gas.	K. ☐	☐	☐
L. The space allocated for a particular function or service is adequate for the activities performed therein.	L. ☐	☐	☐
M. Appropriate emergency equipment and supplies are maintained and are readily accessible to all areas of each patient care service site.	M. ☐	☐	☐
N. Policies and procedures regarding medical equipment include its standardized use, and documented evidence of periodic testing and scheduled preventive maintenance according to manufacturer's specifications.	N. ☐	☐	☐
O. Testing of fire alarm and inspection of fire suppression systems, including verification of signal transmission, are performed and documented.	O. ☐	☐	☐
P. When an organization undergoes demolition, construction, or renovation projects, the organization performs a proactive and ongoing risk assessment for existing or potential environmental hazards.	P. ☐	☐	☐
Q. Ongoing temperature monitoring is performed for items that are frozen, refrigerated, and/or heated per product manufacturer's recommendations. Stated temperature ranges are readily available to staff performing the monitoring function.	Q. ☐	☐	☐

[2] *Appropriate to the facility's activities and environment. Examples include medical emergencies, building fires, surgical fires, tornados, hurricanes, earthquakes, bomb threats, violence, and chemical, biological, or nuclear threats.*

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Adjunct Chapters

The adjunct chapters will be applied based on the services provided by the organization seeking accreditation.

09. Anesthesia Services

Anesthesia services in an accreditable organization are provided in a safe and sanitary environment by qualified health care professionals who have been granted privileges to provide those services by the governing body.

The provisions of this chapter apply to all care involving administration of sedation and anesthesia in all ambulatory settings, including office-based settings. The following definitions are used in determining application of this chapter and the Standards thereof depending on the level of anesthesia and sedation administered by an organization:

Standards A through I of this chapter will be applied to organizations in which only local or topical anesthesia or only minimal sedation is administered.

Definitions:

Local or topical anesthesia is the application of local anesthetic agents, in appropriate doses adjusted for weight.

Minimal sedation (anxiolysis) is a drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected. Inhaled nitrous oxide in low concentrations that would not reasonably be expected to result in loss of the patient's life-preserving protective reflexes would be considered minimal sedation.

Standards A through W of this chapter will be applied to organizations that administer moderate sedation/analgesia, regional anesthesia, or deep sedation/analgesia.

Moderate sedation/analgesia (conscious sedation) is a drug-induced depression of consciousness during which patients respond purposefully[1] to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.

Regional anesthesia is the application of anesthetic medication around the nerve or nerves in a major region of the body, which supply the area that is targeted for the abolition of painful neural impulses. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.

Deep sedation/analgesia is a drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully[1] following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.

All Standards of this chapter, A through X, will be applied to organizations that administer general anesthesia.

General anesthesia is a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired.

Note: Because sedation is a continuum, it is not always possible to predict how an individual patient will respond. Individuals administering minimal or moderate sedation/analgesia or regional anesthesia should be able to support the respiratory and cardiovascular system of patients who enter a state of deep sedation/analgesia, while those administering deep sedation/analgesia should be able to support the respiratory and cardiovascular system of patients who enter a state of general anesthesia.

[1] *Reflex withdrawal from a painful stimulus is NOT considered a purposeful response.*

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	Compliance SC	PC	NC	N/A
Standards A through I will be applied at organizations involved in the administration of sedation and anesthesia as defined on page 45, including those where only local or topical anesthesia or only minimal sedation is administered.				
A. Anesthesia services provided in the facilities owned or operated by the organization are limited to those techniques that are approved by the governing body upon the recommendation of qualified professional personnel. Anesthesia services are performed only by health care professionals who have been credentialed and granted clinical privileges by the organization in accordance with Chapter 2.II.	A. ☐	☐	☐	☐
B. Adequate supervision of anesthesia services provided by the organization is the responsibility of one or more qualified physicians or dentists who are approved and have privileges for supervision granted by the governing body.	B. ☐	☐	☐	☐
C. Policies and procedures are developed for anesthesia services which include, but are not limited to:	C. ☐	☐	☐	☐
1. Education, training, and supervision of personnel.	1. ☐	☐	☐	☐
2. Responsibilities of non-physician anesthetists.	2. ☐	☐	☐	☐
3. Responsibilities of supervising physicians and dentists.	3. ☐	☐	☐	☐
D. A physician, dentist, or qualified[2] health care professional supervised by a physician or dentist, and approved by the governing body, examines the patient immediately prior to administration of the anesthetic to evaluate the risks of anesthesia relative to the procedure to be performed and develops and documents a plan of anesthesia.	D. ☐	☐	☐	☐
E. The informed consent of the patient or, if applicable, of the patient's representative, is obtained before the procedure is performed. One consent form may be used to satisfy the requirements of this Standard and Standard 10.I.U.	E. ☐	☐	☐	☐
F. Anesthesia is administered by anesthesiologists, other qualified physicians, dentists, certified registered nurse anesthetists, or other qualified[2] health care professionals approved by the governing body pursuant to Chapter 2.II. Other qualified health care professionals must be directly supervised by a physician or dentist who has been privileged for such supervision.	F. ☐	☐	☐	☐

[2] *Other qualified health care professionals are qualified by virtue of education, experience, competence, professional licensure, and state laws, rules, and regulations. Other health care professionals must be approved for the administration of anesthesia by the governing body pursuant to Chapter 2.II.*

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	Compliance SC	PC	NC	N/A
G. The facility must be established, constructed, equipped, and operated in accordance with applicable local, state, and federal laws and regulations. At a minimum, all settings in which sedation or anesthesia is administered should have the following equipment for resuscitation purposes:	G. ☐	☐	☐	☐
1. Reliable and adequate source of oxygen delivery.	1. ☐	☐	☐	☐
2. A device such as a self-inflating hand resuscitator bag capable of administering at least 90% oxygen.	2. ☐	☐	☐	☐
3. Appropriate emergency drugs, supplies, and equipment.	3. ☐	☐	☐	☐
4. Appropriate monitoring equipment for the intended anesthesia care.	4. ☐	☐	☐	☐
5. Reliable suction source and appropriate equipment to ensure a clear airway.	5. ☐	☐	☐	☐
H. All clinical support personnel with direct patient contact maintain at a minimum skills in basic cardiac life support (BCLS).	H. ☐	☐	☐	☐
I. Clinical records include entries related to anesthesia administration.	I. ☐	☐	☐	☐

Standards A through W will be applied at organizations that administer moderate sedation/analgesia, deep sedation/analgesia, regional anesthesia, or general anesthesia.

J. A patient's oxygenation, ventilation, and circulation must be continually evaluated and documented. Intra-operative physiologic monitoring must include: continuous use of a pulse oximeter, blood pressure determination at frequent intervals, and electrocardiogram (EKG) monitoring for patients during moderate sedation, and for all patients during deep sedation/analgesia or general anesthesia. Monitoring for the presence of exhaled CO_2 is required during the administration of deep sedation/analgesia. Monitoring for end tidal CO_2 is required during the administration of general anesthesia.	J. ☐	☐	☐	☐
K. The organization maintains a written policy with regard to assessment and management of acute pain.	K. ☐	☐	☐	☐
L. The patient is observed and monitored in a post-anesthesia care unit or in an area that provides equivalent care by methods appropriate to the patient's medical condition and sedation or anesthesia.	L. ☐	☐	☐	☐
M. 1. A physician or dentist is present until the medical discharge of the patient following clinical recovery from surgery/procedure and anesthesia.	M1. ☐	☐	☐	☐
2. Before medical discharge from the facility, each patient must be evaluated by a physician, dentist, or delegated, qualified[2] health care professional, supervised by a physician or dentist and approved by the governing body, to assess recovery. If medical discharge criteria have previously been set by the treating physician or dentist, and approved by the governing body, a delegated, qualified[2] health care professional may determine if the patient meets such discharge criteria, and if so, may discharge the patient when those criteria are met.	2. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
N. Health care professionals currently trained in advanced cardiac life support (ACLS), with documentation of successful completion and appropriate privileging to provide advanced resuscitative techniques, are present until all patients operated on that day have been physically discharged. When pediatric patients are served, health care professionals who are currently trained in PALS and age- and size-appropriate resuscitative equipment must be available at all times until pediatric patients operated on that day have been physically discharged. Initial ACLS and PALS training and subsequent retraining shall be obtained from the American Heart Association or another vendor that includes "hands-on" training and skills demonstration of airway management and automated external defibrillator (AED) use.	N. ☐	☐	☐	☐
O. Patients who have received moderate sedation/analgesia, deep sedation/analgesia, regional anesthesia, or general anesthesia are discharged in the company of a responsible adult.	O. ☐	☐	☐	☐
P. A safe environment for providing anesthesia services is assured through the provision of adequate space, equipment, supplies, medications, and appropriately trained personnel. Written policies must be in place for safe use of injectables and single-use syringes and needles. All equipment should be maintained, tested, and inspected according to the manufacturer's specifications. A log is kept of regular preventive maintenance.	P. ☐	☐	☐	☐
Q. Alternate power adequate for the type of surgery/service being performed is available in operative and recovery areas.	Q. ☐	☐	☐	☐
R. Education and training in the recognition and treatment of malignant hyperthermia must occur before triggering agents are made available within the organization. Education and malignant hyperthermia drills are conducted at least annually thereafter when triggering agents are present within the organization. Organizations that have anesthetic and resuscitative agents available that are known to trigger malignant hyperthermia must have written protocols to promote patient safety, such as the Malignant Hyperthermia Association of the United States (MHAUS) protocol. (See Appendix C, Malignant Hyperthermia Guidelines.) These treatment protocols must:	R. ☐	☐	☐	☐
1. Be posted and immediately available in each location where triggering agents might be used.	1. ☐	☐	☐	☐
2. Include the use of dantrolene and other medications and methods of cooling and monitoring of the patient.	2. ☐	☐	☐	☐
S. The organization has a written protocol in place for the safe and timely transfer of patients to a predetermined alternate care facility when extended or emergency services are needed to protect the health or well-being of the patient. Standard 4.I addresses medical emergencies that arise in connection with surgical procedures.	S. ☐	☐	☐	☐
Standard T will be applied to organizations that provide anesthesia services to children.				
T. If anesthesia services are provided to infants and children, the required equipment, medication, and resuscitative capabilities appropriate to pediatric patients are on site.	T. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
U. No patient shall receive moderate or deep sedation or general anesthesia unless a physician, dentist, or other qualified[2] individual supervised by a physician or dentist, in addition to the one performing the surgery, is present to monitor the patient. The operating physician or dentist may be the supervising physician or dentist. During moderate sedation, the additional individual may assist with minor, interruptible tasks.	U. ☐	☐	☐	☐
V. Organizations that provide sedative, hypnotic, or analgesic drugs that do not have an antagonist medication (for example, propofol) will identify who in the organization, as noted in Standard 9.F, is privileged to administer these drugs.	V. ☐	☐	☐	☐
W. In settings where anesthesia may be provided by other than an anesthesiologist, oral and maxillofacial surgeon, certified registered nurse anesthetist, or an anesthesiologist assistant within his/her scope of practice, the organization has a written protocol that explains how the organization will respond in the event that a deeper-than-intended level of sedation occurs.	W. ☐	☐	☐	☐
Standards A through X will be applied at organizations that administer general anesthesia.				
X. The administration of general anesthesia requires:	X. ☐	☐	☐	☐
1. End-tidal CO_2 monitoring.	1. ☐	☐	☐	☐
2. A readily available means of measuring body temperature.	2. ☐	☐	☐	☐

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10. Surgical and Related Services

Surgical and related services in an accreditable organization are performed in a safe and sanitary environment by qualified health care professionals who have been granted privileges to perform those procedures by the governing body. The Standards in this chapter apply to organizations that provide any invasive procedures, such as pain management, endoscopy procedures, cardiac catheterization, lithotripsy, and in-vitro fertilization, as well as surgery. Such an organization has the following characteristics.

In this chapter and throughout this *Handbook*, the terms "surgery," "procedure," and "operation" are used interchangeably. The use of any of these terms is to reference any such skill, method, or technique that involves cutting, abrading, suturing, laser, or otherwise physically entering or changing body tissues and organs, including invasive pain management procedures.

Note: Some Standards may not apply to organizations that only perform minor, superficial procedures without anesthesia or under local or topical anesthesia.

	Compliance			
	SC	PC	NC	N/A
Subchapter I — General Requirements: This subchapter describes general requirements for an organization that provides surgical and related services.	I. ☐	☐	☐	☐
A. Surgical procedures must be performed in a functional and sanitary environment and are limited to those procedures that are approved by the governing body upon the recommendation of qualified medical staff.	A. ☐	☐	☐	☐
B. Adequate supervision of surgery conducted by the organization is a responsibility of the governing body. It is recommended that supervision be provided by an anesthesiologist or another physician or dentist.	B. ☐	☐	☐	☐
C. Surgical procedures must be performed in a safe manner only by qualified providers who:	C. ☐	☐	☐	☐
1. Are licensed to perform such procedures within the state in which the organization is located.	1. ☐	☐	☐	☐
2. Have been granted clinical privileges to perform those procedures by the governing body in accordance with Chapter 2.II.	2. ☐	☐	☐	☐
D. An appropriate and current health history must be completed, with a list of current prescription and non-prescription medications and dosages, when available; physical examination; and pertinent pre-operative diagnostic studies incorporated into the patient's clinical record within 30 days, or according to local or state requirement, prior to the scheduled surgery/procedure.	D. ☐	☐	☐	☐
E. The use and timeliness of administration of appropriate pre-operative antibiotics is monitored to ensure maximum effectiveness.	E. ☐	☐	☐	☐
F. A written policy is in place for the risk assessment and prevention practices relating to deep vein thrombosis, when appropriate.	F. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
G. Specific instructions for discontinuation or resumption of medications prior to and after a procedure are provided to the patient.	G. ☐	☐	☐	☐
H. The necessity or appropriateness of the proposed surgery, as well as any available alternative treatment techniques, have been discussed with the patient prior to scheduling for surgery.	H. ☐	☐	☐	☐
I. Registered nurse(s) and other health care professionals assisting in the provision of surgical services are appropriately trained and supervised, and are available in sufficient numbers for the surgical and emergency care provided.	I. ☐	☐	☐	☐
J. Each operating room is designed and equipped so that the types of surgery conducted can be performed in a manner that protects the lives and ensures the physical safety of all persons in the area. At least one operating room is available for surgery. Only nonflammable agents are present in an operating room, and the room is constructed and equipped in compliance with applicable state and local fire codes.	J. ☐	☐	☐	☐
K. All clinical support staff with direct patient contact maintain at a minimum skills in basic life support (BLS).	K. ☐	☐	☐	☐
1. If moderate sedation/analgesia, deep sedation/analgesia, regional anesthesia, or general anesthesia is provided, health care professionals currently trained in advanced cardiac life support (ACLS), with documentation of successful completion and appropriate privileging to provide advanced resuscitative techniques, are present until all patients operated on that day have been physically discharged. When pediatric patients are served, health care professionals who are currently trained in PALS and age- and size-appropriate resuscitative equipment must be available at all times until all pediatric patients operated on that day have been physically discharged. Initial ACLS and PALS training and subsequent retraining shall be obtained from the American Heart Association or another vendor that includes "hands-on" training and skills demonstration of airway management and automated external defibrillator (AED) use.	1. ☐	☐	☐	☐
L. Health care professionals trained in the use of emergency equipment and BLS must be available whenever there is a patient in the facility. At least one physician or dentist is present or immediately available by telephone whenever patients are physically present in the facility.	L. ☐	☐	☐	☐
M. With the exception of those tissues exempted by the governing body after medical review, tissues removed during surgery are examined by the pathologist, whose signed report of the examination is made a part of the patient's clinical record.	M. ☐	☐	☐	☐
N. The findings and techniques of a procedure are accurately and completely documented immediately after the procedure by the health care professional who performed the procedure. This description is immediately available for patient care and becomes a part of the patient's clinical record.	N. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
O. A safe environment for treating surgical patients, including adequate safeguards to protect the patient from cross-infection, is ensured through the provision of adequate space, equipment, supplies, and personnel.	O. ☐	☐	☐	☐
1. Provisions have been made for the isolation or immediate transfer of patients with a communicable disease.	1. ☐	☐	☐	☐
2. All persons entering operating or procedure rooms are properly attired as defined by the organization's written policy.	2. ☐	☐	☐	☐
3. Acceptable aseptic techniques are used by all persons in the surgical area.	3. ☐	☐	☐	☐
4. A written policy outlines the appropriate and timely surgical hand antisepsis (scrub) using either an antimicrobial soap or an alcohol-based hand rub according to product manufacturer's recommended guidelines.	4. ☐	☐	☐	☐
5. Only authorized persons are allowed in the surgical or treatment areas, including laser rooms.	5. ☐	☐	☐	☐
6. Environmental controls are implemented to ensure a safe and sanitary environment.	6. ☐	☐	☐	☐
7. Suitable equipment is provided for the regular cleaning of all interior surfaces.	7. ☐	☐	☐	☐
8. Operating/procedure rooms are appropriately cleaned before each procedure.	8. ☐	☐	☐	☐
9. Freshly laundered attire is donned in an area inside of the organization prior to entry into areas designated as restricted.	9. ☐	☐	☐	☐
10. Attire used for personal protective equipment (PPE) or attire contaminated with blood or body fluid is laundered by a laundry that adheres to CDC or other nationally recognized guidelines and is approved by the organization.	10. ☐	☐	☐	☐
11. As needed to minimize the potential contamination of the surgical environment and surgical staff, patient clothing is removed or covered prior to the patient's entry into a surgical area.	11. ☐	☐	☐	☐
12. Measures are implemented to prevent skin and tissue injury from chemicals, cleaning solutions, and other hazardous exposure, and to minimize the risk of fire.	12. ☐	☐	☐	☐
13. Policies are in place for pre-procedure site antisepsis, as appropriate to service(s) provided and patient requirements and needs.	13. ☐	☐	☐	☐
P. Suitable equipment for immediate use and routine sterilization is available to ensure that operating room materials are sterile. Sterilized materials are packaged, labeled, and stored in a consistent manner to maintain sterility and identify sterility dates.	P. ☐	☐	☐	☐
1. The processes for cleaning and sterilization of supplies and equipment adhere to manufacturer's instructions and recommendations.	1. ☐	☐	☐	☐
2. Internal and external indicators are used to demonstrate the safe processing of items undergoing high-level disinfection and sterilization.	2. ☐	☐	☐	☐

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		Compliance			
		SC	PC	NC	N/A
Q.	Reprocessing of single-use devices must comply with FDA guidelines, and the devices must have been cleared under the FDA 510(k) process.	Q. ☐	☐	☐	☐
R.	Organizations that perform procedures where blood loss and subsequent blood replacement is a potential have policies and procedures to address this type of situation and/or need.	R. ☐	☐	☐	☐
S.	Alternate power adequate for the type of surgery performed is available in operative and recovery areas.	S. ☐	☐	☐	☐
T.	Periodic calibration and/or preventive maintenance of equipment is provided.	T. ☐	☐	☐	☐
U.	The informed consent of the patient or, if applicable, of the patient's representative, is obtained before the procedure is performed.	U. ☐	☐	☐	☐
V.	The organization utilizes a process to identify and/or designate the surgical procedure to be performed and the surgical site, and involves the patient in that process. The person performing the procedure marks the site. For dental procedures, the operative tooth may be marked on a radiograph or a dental diagram.	V. ☐	☐	☐	☐
W.	Immediately prior to beginning a procedure, the operating team verifies the patient's identification, intended procedure, and correct surgical site, and that all equipment routinely necessary for performing the scheduled procedure, along with any implantable devices to be used, are immediately available in the operating/procedure room. The provider performing the procedure is personally responsible for ensuring that all aspects of this verification have been satisfactorily completed immediately prior to beginning the procedure.	W. ☐	☐	☐	☐
X.	The organization has a procedure to address when sponge, sharps, and instrument counts will occur, the items that will be counted, and the types of procedures requiring counts, when applicable. When appropriate, there is a process to ensure that counts are done before and after the procedure.	X. ☐	☐	☐	☐
Y.	A process is in place for the observation, care, and communication of such care in all perioperative areas of the patient's facility experience. The organization must define and implement a process in which information about the patient's care is communicated consistently. The process must include means to educate the staff and medical care providers about the process and support implementation consistently throughout the organization.	Y. ☐	☐	☐	☐
Z.	The organization follows established protocols for instructing patients in self-care after surgery, including the provision of written instructions to patients who receive moderate sedation/analgesia, deep sedation/ analgesia, regional anesthesia, or general anesthesia.	Z. ☐	☐	☐	☐

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Important addition to the 2013

Accreditation Handbook

This addendum is to correct omissions. The following are additional Standards of Chapter 10, Sub I.

	SC	PC	NC
10.I.AC The organization has written policies regarding procedures and treatments that are offered to patients, which include criteria for patient selection, the need for anesthesia support, and post-procedural care.	☐	☐	☐
10.I.AD Written policies must clearly require documentation of the pre-cleaning, transport, and handling of medical devices intended for external vendor reprocessing, inspection, or repair.	☐	☐	☐

	Compliance SC	PC	NC	N/A
Standard AA will be applied to organizations that provide surgical, diagnostic, and/or therapeutic services to children.				
AA. The organization defines pediatric patients, and has policies addressing the care provided and ensuring a safe environment through the provision of adequate space, equipment, supplies, medications, and personnel.	AA. ☐	☐	☐	☐
AB. Organizations that receive/store/issue blood and blood products for transfusion or human cells or tissues for transplantation must have written protocols for handling, maintenance, and storage, consistent with those of a nationally-recognized authority, such as the American Association of Tissue Banks (AATB) or the U.S. Food and Drug Administration (FDA).	AB. ☐	☐	☐	☐
Subchapter II — Laser, Light-Based Technologies, and Other Energy-Emitting Equipment: This subchapter addresses surgery or procedures that involve laser, light-based technologies, or other energy-emitting equipment.	II. ☐	☐	☐	☐
A. Policies and procedures should be established and implemented for these devices. Policies and procedures include, but are not limited to:	A. ☐	☐	☐	☐
1. Safety programs.	1. ☐	☐	☐	☐
2. Education and training of personnel, including a requirement for all personnel working with these devices to be adequately trained in the safety and use of each type of device utilized in patient care.	2. ☐	☐	☐	☐
B. The organization ensures that its facility is a safe environment, including:	B. ☐	☐	☐	☐
1. Granting privileges for each specific device.	1. ☐	☐	☐	☐
2. Ensuring that only authorized persons are allowed in treatment areas.	2. ☐	☐	☐	☐
3. Utilization of door and window coverings, where appropriate.	3. ☐	☐	☐	☐
4. Prominently displayed warning signs being present only during procedures at the entrance to treatment areas.	4. ☐	☐	☐	☐
5. When necessary, utilization of protective eyewear by personnel in treatment areas as recommended by the device manufacturer.	5. ☐	☐	☐	☐
6. When appropriate, utilization of smoke evacuators and utilization of appropriate devices to control tissue debris, and high filtration masks and/or wall suction with filters to minimize laser plume inhalation.	6. ☐	☐	☐	☐
7. Utilization of appropriate disinfectant or sterilization of components that have direct patient contact.	7. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
8. Ensuring appropriate fire protection, including:	8. ☐	☐	☐	☐
a. The immediate availability of electrical-rated fire extinguishers for equipment fires.	a. ☐	☐	☐	☐
b. The maintenance of a wet environment around the operative field and the immediate availability of an open container of saline or water where ignition of flammable materials is possible.	b. ☐	☐	☐	☐
c. The use of safe equipment and/or techniques, especially for procedures in and around the airway.	c. ☐	☐	☐	☐
d. The utilization of noncombustible materials, supplies, and solutions as appropriate.	d. ☐	☐	☐	☐
e. That drape material is not positioned in front of the laser beam; drapes should be checked prior to use of laser to ensure that material has not shifted during the procedure.	e. ☐	☐	☐	☐
9. Documenting that maintenance logs are present that confirm the inspection and testing of these devices.	9. ☐	☐	☐	☐
C. The organization ensures patient safety, including:	C. ☐	☐	☐	☐
1. Assurance that procedures are done in accordance with device manufacturer's guidelines and are consistent with the current version of the ANSI Standard for Safe Use of Lasers in Health Care Facilities.	1. ☐	☐	☐	☐
2. Protection of the patient's eyes, skin, hair, and other exposed areas.	2. ☐	☐	☐	☐
3. When available, the use of non-reflective surgical instruments and supplies.	3. ☐	☐	☐	☐
4. Appropriate patient education regarding procedure risks and potential complications.	4. ☐	☐	☐	☐
Subchapter III — Renal Lithotripsy Services: Renal lithotripsy services made available by the organization meet the needs of the patients and are provided in accordance with ethical and professional practices as well as legal requirements.	III. ☐	☐	☐	☐
A. Lithotripsy services provided by the organization are directed by a urologist who is qualified to assume clinical responsibility for the quality of services rendered.	A. ☐	☐	☐	☐
B. Radiation safety and quality control policies and procedures are established, specifically as they relate to patients, staff exposure, and lithotripsy, and are reviewed periodically by a qualified individual.	B. ☐	☐	☐	☐
C. The organization establishes its own written policies and procedures to provide trained and experienced allied health care personnel who are able to conduct duties necessary to assist in the provision of lithotripsy. These include, at a minimum:	C. ☐	☐	☐	☐
1. Meeting state and federal licensure requirements for operation of radiation equipment.	1. ☐	☐	☐	☐
2. Staff education, including orientation.	2. ☐	☐	☐	☐

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	Compliance			
	SC	PC	NC	N/A
D. The organization must have written policies and procedures providing guidelines, adequate supplies, and equipment to provide appropriate treatment in accordance with manufacturer's guidelines. The organization's written guidelines include:	D. ☐	☐	☐	☐
1. Indications.	1. ☐	☐	☐	☐
2. Contraindications.	2. ☐	☐	☐	☐
3. Maximum power setting.	3. ☐	☐	☐	☐
4. Maximum number of shocks.	4. ☐	☐	☐	☐
5. Position of patient.	5. ☐	☐	☐	☐
6. Patient size and weight.	6. ☐	☐	☐	☐
7. Utilization of equipment.	7. ☐	☐	☐	☐
E. The organization has written policies addressing:	E. ☐	☐	☐	☐
1. A recognized methodology for diagnosis and treatment, including pre-procedure evaluation (lab work, x-rays, etc.).	1. ☐	☐	☐	☐
2. That a provider shall perform the treatment and be present during treatment.	2. ☐	☐	☐	☐
3. Criteria for patient selection.	3. ☐	☐	☐	☐
4. The requirement that signed consent forms be obtained prior to treatment.	4. ☐	☐	☐	☐
5. Administration of anesthesia/medication. (A wide choice of anesthetic methods is available and appropriate. Successful lithotripsy requires the appropriate administration of anesthesia/ medication for patient comfort and compliance. A patient's health, habits, and history must be such that he/she can safely undergo anesthesia/analgesia for lithotripsy.)	5. ☐	☐	☐	☐
6. Appropriate monitoring during treatment must be provided using American Society of Anesthesiologists (ASA) guidelines.	6. ☐	☐	☐	☐
7. Correction of medication-related and other medical conditions contributing to coagulopathy and the relationship to lithotripsy.	7. ☐	☐	☐	☐
8. Pre- and post-procedure teaching.	8. ☐	☐	☐	☐
F. The organization has written policies addressing the safety aspects of the treatment, including:	F. ☐	☐	☐	☐
1. Log of daily lithotripter calibration/equipment checks on days when lithotripsy is provided.	1. ☐	☐	☐	☐
2. Preventive maintenance logs and maintenance records including malfunctions and current documentation from the service contract provider that malfunctions have been corrected.	2. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
G. The organization has documentation from contracted vendors that perform calibration and equipment preventative maintenance that work has been completed according to the contract.	G. ☐	☐	☐	☐
H. In addition to the applicable clinical record requirements in Chapter 6, the following elements must be included:	H. ☐	☐	☐	☐
1. History and physical indicate presence, location, size of urinary stone, and patient symptoms.	1. ☐	☐	☐	☐
2. Method of determining location and confirmation of presence of stone immediately prior to treatment.	2. ☐	☐	☐	☐
3. Operative treatment record.	3. ☐	☐	☐	☐
a. Selection of treatment modality.	a. ☐	☐	☐	☐
b. Number of shocks.	b. ☐	☐	☐	☐
c. Energy level.	c. ☐	☐	☐	☐
d. Radiation exposure.	d. ☐	☐	☐	☐
I. The organization confirms that outside providers of lithotripsy services ensure that their equipment and personnel are appropriate for the services provided. This includes the following:	I. ☐	☐	☐	☐
1. Equipment is properly maintained and maintenance records are available to the organization when the equipment is at the organization.	1. ☐	☐	☐	☐
2. The lithotripsy vendor provides the organization with documentation that the personnel provided are properly trained, licensed, and receive ongoing education and annual competency evaluation for the services they provide.	2. ☐	☐	☐	☐

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11. Pharmaceutical Services

Pharmaceutical services provided or made available by an accreditable organization meet the needs of the patients and are provided in accordance with ethical and professional practices and legal requirements. Such an organization has the following characteristics.

Note: This chapter applies to any organization that uses drugs or pharmaceutical medical supplies, regardless of the presence or absence of an on-site pharmacy.

		Compliance			
		SC	PC	NC	N/A
A.	Pharmaceutical services are provided or made available in a safe and effective manner, in accordance with accepted professional practice and under the direction of an individual designated responsible for pharmaceutical services in accordance with Standard 11.J.	A. ☐	☐	☐	☐
B.	Pharmaceutical services are provided in accordance with ethical and professional practice and applicable federal and state laws.	B. ☐	☐	☐	☐
C.	Staff demonstrates knowledge of applicable state and federal pharmaceutical laws.	C. ☐	☐	☐	☐
D.	Records and security are maintained to ensure the control and safe dispensing of drugs, including samples, in compliance with federal and state laws.	D. ☐	☐	☐	☐
E.	Staff informs patients concerning safe and effective use of medications consistent with legal requirements and patient needs.	E. ☐	☐	☐	☐
F.	Measures have been implemented to ensure that prescription pads are controlled and secured from unauthorized patient access, and pre-signed and/or postdated prescription pads are prohibited.	F. ☐	☐	☐	☐
G.	All medications, including vaccines and samples, are checked for expiration dates on a regular basis; expired items are disposed of in a manner that prevents unauthorized access, protects safety, and meets state and federal requirements.	G. ☐	☐	☐	☐
H.	All injectable medications drawn into syringes and oral medications removed from the packaging identified by the original manufacturer must be appropriately labeled if not administered immediately.	H. ☐	☐	☐	☐
I.	The organization must have policies in place for safe use of injectables and single-use syringes and needles that at minimum include the CDC or comparable guidelines for safe injection practices.	I. ☐	☐	☐	☐
J.	Pharmaceutical services provided by the organization are directed by a licensed pharmacist or, when appropriate, by a physician or dentist who is qualified to assume professional, organizational, and administrative responsibility for the quality of services rendered.	J. ☐	☐	☐	☐
K.	Providers or other health care professionals who prescribe, dispense, administer, and provide patient education on medications have easy access to current drug information and other decision support resources.	K. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
L. If look-alike or sound-alike medications are present, the organization identifies and maintains a current list of these medications, and actions to prevent errors are evident.	L. ☐	☐	☐	☐
M. Procedures are established by the organization for maintenance, cleaning, distribution, and use of devices such as nebulizer units, intravenous infusion pumps, or any other mechanical device used in the medication delivery process.	M. ☐	☐	☐	☐
N. A pharmacy owned or operated by the organization is supervised by a licensed pharmacist.	N. ☐	☐	☐	☐
O. Pharmaceutical services made available by the organization through a contractual agreement are provided in accordance with the same ethical and professional practices and legal requirements that would be required if such services were provided directly by the organization.	O. ☐	☐	☐	☐
P. Patients are not required to use a pharmacy owned or operated by the organization.	P. ☐	☐	☐	☐

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12. Pathology and Medical Laboratory Services

Pathology and medical laboratory services provided or made available by an accreditable organization meet the needs of the patients and are provided in accordance with ethical and professional practices and legal requirements. Such an organization has the following characteristics.

	Compliance			
	SC	PC	NC	N/A
Subchapter I — CLIA-Waived Tests: This subchapter applies only to health care organizations providing services that meet the Clinical Laboratory Improvement Amendments (CLIA) of 1988 requirements for waived tests.	I. ☐	☐	☐	☐
A. An accreditable organization:	A. ☐	☐	☐	☐
1. Meets the requirements for waived tests under CLIA (part 493 of Title 42 of the Code of Federal Regulations) if it performs its own laboratory services, performs only waived tests, and has obtained a certificate of waiver, and/or	1. ☐	☐	☐	☐
2. Has procedures for obtaining routine and emergency laboratory services from a certified laboratory in accordance with CLIA if it does not perform its own laboratory services.	2. ☐	☐	☐	☐
B. Pathology and medical laboratory services provided or made available are appropriate to the needs of the patients and adequately support the organization's clinical capabilities.	B. ☐	☐	☐	☐
C. Pathology and medical laboratory services include, but are not limited to:	C. ☐	☐	☐	☐
1. Conducting laboratory procedures that are appropriate to the needs of the patients.	1. ☐	☐	☐	☐
2. Performing tests in a timely manner.	2. ☐	☐	☐	☐
3. Distributing test results after completion of a test and maintaining a copy of the results.	3. ☐	☐	☐	☐
4. Performing and documenting appropriate quality control procedures, including, but not limited to, calibrating equipment periodically and validating test results.	4. ☐	☐	☐	☐
5. Ensuring that staff performing tests has adequate training and competence to perform the tests.	5. ☐	☐	☐	☐
D. The organization has a policy that ensures that test results are reviewed appropriately and that documents that test results are reviewed by the ordering physician or another privileged provider.	D. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
Subchapter II — CLIA Laboratories: This subchapter applies only to health care organizations providing laboratory services that require certification under the Clinical Laboratory Improvement Amendments (CLIA) of 1988.	II. ☐	☐	☐	☐
A. An accreditable organization providing laboratory services meets the requirements of CLIA (part 493 of Title 42 of the Code of Federal Regulations) and has obtained a CLIA certificate.	A. ☐	☐	☐	☐
B. Pathology and medical laboratory services provided or made available are appropriate to the needs of the patients and adequately support the organization's clinical capabilities.	B. ☐	☐	☐	☐
C. Pathology and medical laboratory services include, but are not limited to:	C. ☐	☐	☐	☐
1. Conducting laboratory procedures that are appropriate to the needs of the patients.	1. ☐	☐	☐	☐
2. Performing tests in a timely manner.	2. ☐	☐	☐	☐
3. Distributing test results after completion of a test and maintaining a copy of the results in the laboratory.	3. ☐	☐	☐	☐
4. Performing and documenting appropriate quality assurance procedures, including, but not limited to, calibrating equipment periodically and validating test results through use of standardized control specimens or laboratories.	4. ☐	☐	☐	☐
D. The organization has a policy that ensures that test results are reviewed appropriately and that documents that test results are reviewed by the ordering physician or another privileged provider.	D. ☐	☐	☐	☐
E. Pathology and medical laboratory services provided by the organization are directed by a pathologist or another physician who is qualified to assume professional, organizational, and administrative responsibility for the quality of services rendered.	E. ☐	☐	☐	☐
F. Sufficient adequately trained and experienced personnel are available to supervise and conduct the work of the laboratory.	F. ☐	☐	☐	☐
G. Established procedures are followed in obtaining, identifying, storing, and transporting specimens.	G. ☐	☐	☐	☐
H. Complete descriptions are available of each test procedure performed by the laboratory, including sources of reagents, standards, and calibration procedures, and information concerning the basis for the listed "normal" ranges is also available.	H. ☐	☐	☐	☐
I. Sufficient space, equipment, and supplies are provided to perform the volume of work with optimal accuracy, precision, efficiency, and safety.	I. ☐	☐	☐	☐
J. Requirements of the Department of Health & Human Services (HHS) certification for medical review officer drug testing are met if the lab is testing for Department of Transportation (DOT) regulated industries or federal agency employees.	J. ☐	☐	☐	☐

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13. Diagnostic and Other Imaging Services

Imaging services, including those used for diagnosing, monitoring, or assisting with procedures provided or made available by an accreditable organization, meet the needs of the patients and are provided in accordance with ethical and professional practices and legal requirements. Such an organization has the following characteristics.

	Compliance			
	SC	PC	NC	N/A
Standards A through F will be applied to organizations providing only diagnostic imaging services. Standards A through L will be applied to organizations that provide imaging services used for diagnosing, monitoring, or assisting with procedures.				
A. Imaging services provided or made available by the organization are appropriate to the needs of the patient and adequately support the organization's capabilities.	☐	☐	☐	☐
B. Imaging services include, but are not limited to:	☐	☐	☐	☐
1. Providing radiographic, fluoroscopic, ultrasonic, or other imaging services that are appropriate to the organization's function.	☐	☐	☐	☐
2. Interpreting images and ensuring appropriate documentation in a timely manner.	☐	☐	☐	☐
3. Maintaining appropriate records or reports of services provided.	☐	☐	☐	☐
4. Providing adequate space, equipment, and supplies to ensure the provision of quality services.	☐	☐	☐	☐
C. Health care professionals providing imaging services and/or interpreting results:	☐	☐	☐	☐
1. Have appropriate training and credentials.	☐	☐	☐	☐
2. Have been granted privileges to provide these services.	☐	☐	☐	☐
3. Have appropriate safety training and provide their services in a safe manner.	☐	☐	☐	☐
D. Policies that address the safety aspects of the imaging services include, but are not limited to:	☐	☐	☐	☐
1. Regulation of the use, removal, handling, and storage of potentially hazardous materials.	☐	☐	☐	☐
2. Precautions against electrical, mechanical, magnetic, ultrasonic, radiation, and other potential hazards.	☐	☐	☐	☐
3. Proper shielding where radiation, magnetic field, and other potentially hazardous energy sources are used.	☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
4. Acceptable monitoring devices or processes to ensure the safety of all personnel who might be exposed to radiation, magnetic fields, or otherwise harmful energy; if radiation exposure is not monitored, documentation exists within the organization to support this decision.	4. ☐	☐	☐	☐
5. Maintenance of appropriate exposure records.	5. ☐	☐	☐	☐
6. Instructions to personnel in safety precautions and in dealing with accidental hazardous energy field exposure.	6. ☐	☐	☐	☐
7. Periodic evaluation by qualified personnel of energy sources and of all safety measures followed, including calibration of equipment and testing the integrity of personal protective devices in compliance with federal, state, and local laws and regulations.	7. ☐	☐	☐	☐
E. Proper warning signs are in place, alerting the public and personnel to the presence of hazardous energy fields, emphasizing concern for particularly susceptible individuals, including:	E. ☐	☐	☐	☐
1. Pregnant females.	1. ☐	☐	☐	☐
2. In cases of magnetic resonance imaging:	2. ☐	☐	☐	☐
a. Patients with metal implantations.	a. ☐	☐	☐	☐
b. Patients or personnel with magnetically inscribed credit cards, where appropriate.	b. ☐	☐	☐	☐
c. Patients or personnel wearing metallic objects capable of potentially dangerous motion.	c. ☐	☐	☐	☐
d. Patients with pacemakers or internal defibrillators.	d. ☐	☐	☐	☐
F. The organization implements a process to identify the correct site and correct service that is to be performed and involves the patient in the process.	F. ☐	☐	☐	☐
G. A radiologist authenticates all examination reports, except reports of specific procedures that may be authenticated by specialist physicians or dentists who have been granted privileges by the governing body or its designee to authenticate such reports.	G. ☐	☐	☐	☐
H. Authenticated, dated reports of all examinations performed are made a part of the patient's clinical record.	H. ☐	☐	☐	☐
I. Diagnostic imaging services provided by the organization are directed by a physician or dentist who is qualified to assume professional, organizational, and administrative responsibility for the quality of the services rendered.	I. ☐	☐	☐	☐
J. Diagnostic imaging tests are performed only upon the order of a health care professional. Such orders are accompanied by a concise statement of the reason for the examination.	J. ☐	☐	☐	☐
K. Diagnostic images are maintained in a readily accessible location for the time required by applicable laws and policies of the organization.	K. ☐	☐	☐	☐
L. A policy addresses the storage and retention of diagnostic images.	L. ☐	☐	☐	☐

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14. Dental Services

Dental services provided or made available by an accreditable organization meet the needs of the patients and are provided in accordance with ethical and professional practices and legal requirements.

	Compliance SC	PC	NC	N/A
Subchapter I — Dental Services: This chapter will be applied to organizations that provide primary dental care and general dentistry and/or oral maxillofacial services. For multi-specialty ASCs in which dentistry and oral maxillofacial surgery are some of the specialties provided, this chapter will not be applicable. For those multi-specialty ASCs, Chapters 9 and 10 will be applied.	I. ☐	☐	☐	☐
A. Dental services provided or made available are appropriate to the needs of the patients and are consistent with the definition of dentistry according to state regulation.	A. ☐	☐	☐	☐
B. Dental services performed in the facilities owned and operated by the organization are limited to those procedures that are approved by the governing body upon the recommendation of qualified dental personnel.	B. ☐	☐	☐	☐
C. Dental procedures are performed only by dental health professionals who:	C. ☐	☐	☐	☐
1. Are licensed to perform such procedures within the state or jurisdiction in which the organization is located.	1. ☐	☐	☐	☐
2. Have been granted privileges to perform those procedures by the governing body of the organization, in accordance with Chapter 2.II.	2. ☐	☐	☐	☐
D. Personnel assisting in the provision of dental services are appropriately qualified and available in sufficient numbers for the dental procedures provided.	D. ☐	☐	☐	☐
E. An appropriate history and physical is conducted and periodically updated, which includes an assessment of the hard and soft tissues of the mouth.	E. ☐	☐	☐	☐
F. The organization develops policies and procedures related to the identification, treatment, and management of pain.	F. ☐	☐	☐	☐
G. The necessity or appropriateness of the proposed dental procedure(s), as well as alternative treatments and the order of care, have been discussed with the patient prior to delivery of services.	G. ☐	☐	☐	☐
H. The informed consent of the patient is obtained and incorporated into the dental record prior to the procedure(s).	H. ☐	☐	☐	☐
I. Clinical records are maintained according to the requirements found in Chapter 6.	I. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
J. The organization develops policies and procedures to evaluate dental laboratories to ensure that they meet the needs of the patient and adequately support the organization's clinical capabilities.	J. ☐	☐	☐	☐
K. Anesthesia provided or made available meets the Standards contained in Chapter 9.	K. ☐	☐	☐	☐
L. Surgical and related services provided or made available meet the Standards contained in Chapter 10.	L. ☐	☐	☐	☐
M. Imaging services provided or made available meet the Standards contained in Chapter 13.	M. ☐	☐	☐	☐
1. The organization has guidelines to address the type, frequency, and indications for diagnostic radiographs.	1. ☐	☐	☐	☐
N. Health care professionals providing dental, surgical, or anesthesia services are prepared to evaluate, stabilize, and transfer medical emergencies that may occur or arise in conjunction with services provided by the organization. All clinical support staff with direct patient contact maintain at a minimum skills in basic life support (BLS).	N. ☐	☐	☐	☐
O. The organization has a mechanism in place to evaluate and monitor dental products that the organization makes available for sale to patients to ensure that such practices are done in an ethical manner.	O. ☐	☐	☐	☐

Subchapter II — Dental Home: The Dental Home subchapter will apply to organizations that choose this subchapter in the *Application for Survey*.

The services provided by an accreditable Dental Home are patient-centered, dentist-directed, comprehensive, accessible, continuous, and organized to meet the needs of the individual patient served. The foundation of a Dental Home is the relationship between the patient, his/her family, as appropriate, and the Dental Home. As used in these Standards, a Dental Home is the primary point of care for the patient.

The Dental Home will be assessed from the perspective of the patient on the following characteristics as evidenced by:	II. ☐	☐	☐	☐
A. Relationship – communication, understanding, and collaboration. (In this context, "dentist" refers to the dentist or the physician- or dentist-directed health care team.)	A. ☐	☐	☐	☐
1. The patient can identify his/her dentist and patient care team members.	1. ☐	☐	☐	☐
2. The dentist explains information in a manner that is easy to understand (to include Standard 1.D).	2. ☐	☐	☐	☐
3. The dentist listens carefully to the patient and, when appropriate, the patient's personal caregiver(s). Caregivers may include a parent, legal guardian, or person with the patient's power of attorney.	3. ☐	☐	☐	☐
4. The dentist speaks to the patient about his/her health problems and concerns.	4. ☐	☐	☐	☐

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		Compliance SC	PC	NC	N/A
5.	The dentist provides easy-to-understand instructions about taking care of health concerns.	5. ☐	☐	☐	☐
6.	The dentist knows important facts about the patient's health history.	6. ☐	☐	☐	☐
7.	The dentist spends sufficient time with the patient.	7. ☐	☐	☐	☐
8.	The dentist is as thorough as the patient feels is needed.	8. ☐	☐	☐	☐
9.	The staff keeps the patient informed with regard to his/her appointment when delayed.	9. ☐	☐	☐	☐
10.	The dentist addresses specific principles to prevent dental-related diseases.	10. ☐	☐	☐	☐
11.	The dentist speaks with the patient about making lifestyle changes to help prevent dental-related disease.	11. ☐	☐	☐	☐
12.	The dentist inquires as to the patient's concerns/worries/stressors regarding his/her dental health.	12. ☐	☐	☐	☐
13.	The Dental Home provides services within a team framework, and that "team" provider concept has been conveyed to the patient.	13. ☐	☐	☐	☐
14.	The family is included, as appropriate, in patient care decisions, treatment, and education.	14. ☐	☐	☐	☐
15.	The Dental Home treats its patients with cultural sensitivity.	15. ☐	☐	☐	☐
B.	Continuity of Care	B. ☐	☐	☐	☐
1.	A significant number (more than 50%) of the Dental Home visits of any patient are with the same dentist/dental care team.	1. ☐	☐	☐	☐
2.	If a consultation is ordered for the patient, it is documented in the clinical record.	2. ☐	☐	☐	☐
3.	Referrals for services (external to the Dental Home) are documented in the clinical record.	3. ☐	☐	☐	☐
4.	Consultations (medical or dental opinions obtained from other health care professionals) are recorded in the clinical record.	4. ☐	☐	☐	☐
5.	Referrals are disease- or procedure-specific.	5. ☐	☐	☐	☐
6.	The patient's results of a referral are recorded in the clinical record. Follow-up procedures exist and the results of the referral are appropriately reported to the Dental Home as they are made available.	6. ☐	☐	☐	☐
7.	Follow-up appointments are documented in the clinical record.	7. ☐	☐	☐	☐
8.	After-hour encounters are documented in the clinical record.	8. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
9. Missed appointments are documented in the clinical record and managed appropriately depending on the patient's care need and diagnosis.	9. ☐	☐	☐	☐
10. Critical referrals, critical consultations, and critical diagnostic studies are tracked and appropriate follow-up is made when the results are not received within a timely manner.	10. ☐	☐	☐	☐
11. Transition of care (e.g., pediatric to adult or adult to geriatric) is proactively planned, coordinated, and documented in the clinical record when indicated or when appropriate.	11. ☐	☐	☐	☐
12. Electronic data management is continually assessed as a tool for facilitating the above-mentioned Standards, including consultations, referrals, and lab results.	12. ☐	☐	☐	☐
C. Comprehensiveness of Care	C. ☐	☐	☐	☐
1. If the Dental Home limits the population served, those limitations are disclosed to prospective patients.	1. ☐	☐	☐	☐
2. The Dental Home scope of service includes, but is not limited to:	2. ☐	☐	☐	☐
a. Preventive care (including surveillance and screening for special needs or assessment).	a. ☐	☐	☐	☐
b. Wellness care (healthy lifestyle issues—appropriate diet, tobacco cessation, home care, etc.).	b. ☐	☐	☐	☐
c. Acute pain and injury care.	c. ☐	☐	☐	☐
d. Chronic disease management.	d. ☐	☐	☐	☐
e. Advanced geriatric care.	e. ☐	☐	☐	☐
3. Patient education and self-management resources are provided.	3. ☐	☐	☐	☐
4. Knowledge of community resources that support the patient's (and family's, as appropriate) needs are known by the Dental Home.	4. ☐	☐	☐	☐
5. The community's service limitations are known and alternate sources are coordinated by the Dental Home.	5. ☐	☐	☐	☐
6. Referrals are appropriate to the patient's needs. When referrals occur, the Dental Home collaborates with the specialist.	6. ☐	☐	☐	☐
7. The needs of the patient's personal caregiver (in 14.II.A.3), when known, are assessed and addressed to the extent that they impact the care of the patient.	7. ☐	☐	☐	☐
8. Electronic data management is continually assessed as a tool for facilitating the above-mentioned Standards.	8. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
D. Accessibility	D. ☐	☐	☐	☐
1. The Dental Home establishes standards in writing to support patient access (e.g., provider availability, information, clinical record contents, advice, routine care, and urgent care). The Dental Home's data support that they meet those standards.	1. ☐	☐	☐	☐
2. Patients are routinely and continuously assessed for their perceptions about access to the Dental Home (e.g., provider availability, information, clinical record contents, advice, routine care, and urgent care).	2. ☐	☐	☐	☐
3. Patients are provided information about how to obtain dental care at any time (365/24/7).	3. ☐	☐	☐	☐
4. The Dental Home ensures on-call coverage (pre-arranged access to a clinician) when the Dental Home is not open.	4. ☐	☐	☐	☐
5. Electronic data management is continually assessed as a tool for facilitating the above-mentioned Standards.	5. ☐	☐	☐	☐
E. Quality	E. ☐	☐	☐	☐
1. Patient care is dentist-directed.	1. ☐	☐	☐	☐
2. The Dental Home incorporates evidence-based guidelines and performance measures in delivering clinical services including:	2. ☐	☐	☐	☐
a. Preventive care (including surveillance and screening for special needs or assessment).	a. ☐	☐	☐	☐
b. Wellness care (healthy lifestyle issues—(appropriate diet, tobacco cessation, home care, etc.).	b. ☐	☐	☐	☐
c. Acute pain and injury care.	c. ☐	☐	☐	☐
d. Chronic disease management.	d. ☐	☐	☐	☐
e. Advanced geriatric care.	e. ☐	☐	☐	☐
3. The Dental Home periodically assesses its application of available evidence-based guidelines and/or performance measures to ensure that they are being used effectively and appropriately.	3. ☐	☐	☐	☐
4. Patient care is supervised by the Dental Home as evidenced by:	4. ☐	☐	☐	☐
a. Appropriate ordering of diagnostic radiographs (avoidance of redundancies and unnecessary exposure).	a. ☐	☐	☐	☐
b. Appropriate management of patient referrals (avoidance of unnecessary referrals).	b. ☐	☐	☐	☐
5. The Dental Home assesses and continuously improves the services they provide. Measurements, quality studies, data trending, and benchmarking are key tools in a quality improvement/management program.	5. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
6. In addition to the Standards presented in Chapter 5.I, the Dental Home's quality improvement program should include at least one study every three years on each of the following topics:	6. ☐	☐	☐	☐
a. Patient/dentist relationship.	a. ☐	☐	☐	☐
b. Continuity of care.	b. ☐	☐	☐	☐
c. Comprehensiveness of care.	c. ☐	☐	☐	☐
d. Accessibility to care.	d. ☐	☐	☐	☐
e. Clinical study.	e. ☐	☐	☐	☐
7. Electronic data management is continually assessed as a tool for facilitating the above-mentioned Standards.	7. ☐	☐	☐	☐

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15. Other Professional and Technical Services

Professional and technical services provided or made available by an accreditable organization, even though they are not specifically mentioned in the *Handbook*, meet the needs of the patients and are provided in accordance with ethical and professional practices and legal requirements. Such an organization has the following characteristics.

	Compliance			
	SC	PC	NC	N/A
Subchapter I — General Services: This subchapter applies to organizations that provide other professional and technical services.	I. ☐	☐	☐	☐
A. Such services may include, but are not limited to: various medical services, rehabilitation services (physical, occupational, vocational therapy), massage therapy, acupuncture, registered dieticians, aestheticians, audiologists, and other individuals who provide services to patients and may submit separate charges for their services.	A. ☐	☐	☐	☐
B. Such services provided or made available are appropriate to the needs of the patients and adequately support the organization's clinical capabilities.	B. ☐	☐	☐	☐
C. Such services are provided by allied health professionals who have been credentialed/privileged in accordance with Standard 2.II.F or who have job descriptions outlined by the organization.	C. ☐	☐	☐	☐
D. Such services are provided in accordance with ethical and professional practices and applicable federal and state laws and regulations.	D. ☐	☐	☐	☐
E. Such services will be evaluated using applicable Standards from other chapters of the *Handbook*.	E. ☐	☐	☐	☐
Subchapter II — Travel Medicine: This subchapter applies only to organizations that provide travel medicine services.	II. ☐	☐	☐	☐
A. Organizations providing travel medicine services will ensure that these services are appropriate to the needs of the patient and are adequately supported by the organization's clinical capabilities.	A. ☐	☐	☐	☐
1. Travel medicine services are provided by personnel who have appropriate training, skills, and resource materials to provide quality services.	1. ☐	☐	☐	☐
2. Travel medicine programs include:	2. ☐	☐	☐	☐
a. Appropriate medical oversight.	a. ☐	☐	☐	☐
b. Clearly defined standing orders and protocols, including management of adverse reactions to immunizations.	b. ☐	☐	☐	☐
c. Access to current Centers for Disease Control (CDC) and U.S. Department of State travel recommendations.	c. ☐	☐	☐	☐
d. Appropriate storage and management of vaccines.	d. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
3. Travel medicine services include:	3. ☐	☐	☐	☐
a. Comprehensive travel destination-specific risk assessment.	a. ☐	☐	☐	☐
b. Appropriate preventive medicine interventions.	b. ☐	☐	☐	☐
c. Education in risk and risk reduction.	c. ☐	☐	☐	☐
4. Entries in a patient's clinical record include:	4. ☐	☐	☐	☐
a. Travel destination and current health status.	a. ☐	☐	☐	☐
b. Immunization and vaccine name(s), dosage form, dosage administered, lot number, and quantity.	b. ☐	☐	☐	☐
c. Prescription medications given, quantity and date, dosage, and directions for use.	c. ☐	☐	☐	☐
d. Preventive health education.	d. ☐	☐	☐	☐

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16. Health Education and Health Promotion

AAAHC encourages all health care organizations to provide or make available health education and health promotion services to meet the needs of the population served. These services should be provided in accordance with ethical and professional practices and legal requirements. Such an organization has the following characteristics.

	Compliance			
	SC	PC	NC	N/A
Standards A through G will be applied to all health education and health promotion services. Standards A through J will be applied to organizations providing comprehensive health education and disease prevention programs.				
A. Services provided or made available by the organization are appropriate to the needs of the population served.	☐	☐	☐	☐
B. Health education and health promotion services are provided by personnel that:	☐	☐	☐	☐
1. Have necessary and appropriate training, education, credentials, and skills to carry out their responsibilities.	☐	☐	☐	☐
2. Have access to and utilize consultative services, as appropriate.	☐	☐	☐	☐
3. Have ready access to appropriate reference materials in health education and health promotion.	☐	☐	☐	☐
4. Participate in continuing professional education in health education and wellness.	☐	☐	☐	☐
C. Health education and health promotion programs should include, but may not be limited to:	☐	☐	☐	☐
1. Clearly defined educational goals and objectives.	☐	☐	☐	☐
2. Evaluation of whether the goals or objectives have been met.	☐	☐	☐	☐
D. The organization should have adequate resources for the health education and health promotion services available.	☐	☐	☐	☐
E. Marketing or advertising regarding the health education and health promotion activities accurately reflects the services provided by the organization.	☐	☐	☐	☐
F. Policies and procedures are established to assess satisfaction with the health education and health promotion services.	☐	☐	☐	☐
G. When appropriate, health education and health promotion services, whether they occur within the context of a clinical visit or not, should be referenced or documented in the patient's clinical record.	☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
H. Health education and disease prevention programs should be based on a complete needs assessment for the population served, which:	H. ☐	☐	☐	☐
1. Considers relevant health risks and health education needs.	1. ☐	☐	☐	☐
2. Uses a variety of data or data sources.	2. ☐	☐	☐	☐
3. Quantifies risk whenever possible.	3. ☐	☐	☐	☐
4. Uses data to direct programming.	4. ☐	☐	☐	☐
I. Health education and disease prevention programs should be comprehensive and consider the medical, psychological, social, and cultural needs of the population. Topics that should be considered include:	I. ☐	☐	☐	☐
1. Disease-specific screening and educational programs.	1. ☐	☐	☐	☐
2. Substance abuse prevention and education, including programs related to alcohol, tobacco, and other drugs.	2. ☐	☐	☐	☐
3. Promotion of healthy eating.	3. ☐	☐	☐	☐
4. Promotion of physical fitness.	4. ☐	☐	☐	☐
5. Sexuality education and skill building for healthy relationships.	5. ☐	☐	☐	☐
6. Sexual, physical, and emotional violence prevention.	6. ☐	☐	☐	☐
7. Promotion of and education about stress management and relaxation.	7. ☐	☐	☐	☐
J. Health education and disease prevention programs should be included in quality management and improvement activities.	J. ☐	☐	☐	☐

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17. Behavioral Health Services

Behavioral health services are provided or made available by an accreditable organization to meet the needs of its clients and the population served. Behavioral health services are provided in accordance with all ethical practices, professional practices, and legal requirements. Behavioral health services are designed to improve and enhance the emotional, mental, and behavioral health of the organization's targeted client population. Such an organization has the following characteristics.

	Compliance			
	SC	PC	NC	N/A
A. Behavioral health services are limited to those services that are approved by the governing body, consistent with the overall mission of the organization, and are responsive and specific to the diverse needs of the population being served. Behavioral health services may include but are not limited to the following:	A. ☐	☐	☐	☐
1. Counseling or psychotherapy services.	1. ☐	☐	☐	☐
2. Crisis intervention and emergency services.	2. ☐	☐	☐	☐
3. Consultative and outreach services.	3. ☐	☐	☐	☐
4. Referral services.	4. ☐	☐	☐	☐
B. When behavioral health services are provided by an organization, those services are under the direction of a licensed professional who has been designated by the organization's governing body to provide such oversight.	B. ☐	☐	☐	☐
C. Behavioral health services are provided only by health care professionals who are competent to perform such services. Such services are provided in accordance with AAAHC Standards and adhere to all applicable federal, state, and local requirements, and to appropriate professional ethics standards.	C. ☐	☐	☐	☐
D. Other personnel assisting in the provision or administration of behavioral health services are carefully selected and are subject to supervision by a licensed professional.	D. ☐	☐	☐	☐
E. The organization has appropriate and adequate resources to provide quality behavioral health services. These resources include but are not limited to facilities, equipment, providers, and clinical and administrative support staff.	E. ☐	☐	☐	☐
F. An initial behavioral health history and medical history of each client is present in the clinical record.	F. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
G. The clinical record is periodically updated, and may include assessment and management of:	G. ☐	☐	☐	☐
1. Risk of harm to self or others.	1. ☐	☐	☐	☐
2. Known or potential addictive behaviors and substance abuse.	2. ☐	☐	☐	☐
3. Client self-understanding, motivation, and decision-making.	3. ☐	☐	☐	☐
H. The written and signed informed consent of the client is obtained and incorporated into the treatment plan, which may include but is not limited to procedures, therapies, medication management, and other modalities of care and treatment.	H. ☐	☐	☐	☐
I. The organization develops and adopts written policies and procedures regarding:	I. ☐	☐	☐	☐
1. Consistent client confidentiality and privacy assurances.	1. ☐	☐	☐	☐
2. Maintenance of client records according to AAAHC Standards.	2. ☐	☐	☐	☐
3. Client flow and case assignment.	3. ☐	☐	☐	☐
4. Situations arising from outreach programs (when provided) such as identification of individuals who need immediate services.	4. ☐	☐	☐	☐
5. Management of referrals and transfers to and from the facility.	5. ☐	☐	☐	☐
6. Cooperation with and coordination of medical care with behavioral health care.	6. ☐	☐	☐	☐
7. Safety and security of staff, clients, and the organization.	7. ☐	☐	☐	☐

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18. Teaching and Publication Activities

If staff is involved in teaching or publishing, an accreditable organization has policies governing those activities that are consistent with its mission, goals, and objectives. Such an organization has the following characteristics.

	Compliance			
	SC	PC	NC	N/A
A. Policies concerning teaching activities address the formal relationship and responsibilities between the organization and the training institution and its trainees. Such policies include but are not limited to:	A. ☐	☐	☐	☐
1. The terms and conditions of reimbursement or other compensation.	1. ☐	☐	☐	☐
2. The reasonableness of the time spent away from direct patient care and administrative activities.	2. ☐	☐	☐	☐
3. The training of all students and postgraduate trainees, including the extent of their involvement in patient care activities.	3. ☐	☐	☐	☐
4. The requirement or non-requirement for liability coverage.	4. ☐	☐	☐	☐
5. Adherence by trainees to organizational policies, including state and federal guidelines such as The Health Insurance Portability and Accountability Act (HIPAA) and OSHA.	5. ☐	☐	☐	☐
B. The policy concerning the provision of health care by personnel in any student or postgraduate trainee status provides for close and adequate supervision and for informing the patient of the status of the health care professional.	B. ☐	☐	☐	☐
C. Policies concerning publishing activities address:	C. ☐	☐	☐	☐
1. The need for governing body approval when the views, policies, and procedures expressed in the publication are attributed to the organization.	1. ☐	☐	☐	☐
2. The terms and conditions of compensation from publication and the cost of publication.	2. ☐	☐	☐	☐

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19. Research Activities

If research is conducted, an accreditable organization establishes and implements policies governing research that are consistent with its mission, goals, and objectives, and with its clinical capabilities. Such an organization has the following characteristics.

		Compliance			
		SC	PC	NC	N/A
A.	Research activities are performed in accordance with ethical and professional practices and legal requirements, and these activities are periodically monitored. Such activities include, but are not limited to, clinical trials of drugs and other biologicals, devices, implants, or instruments that are classified as investigational or experimental, and techniques that are new, experimental, innovative, or otherwise not yet accepted as standard medical or dental practice.	A. ☐	☐	☐	☐
B.	The written protocols for conducting research are approved by the governing body or its designee after medical (or dental) and legal review.	B. ☐	☐	☐	☐
C.	Any research activities carried out within the organization are appropriate to the expertise of staff and the resources in the organization.	C. ☐	☐	☐	☐
D.	Individuals engaged in research are provided with adequate facilities.	D. ☐	☐	☐	☐
E.	Provisions are made to ensure that the rights and welfare of all research subjects are adequately protected and that the informed consent of each subject is obtained by adequate and appropriate methods in the language spoken by him or her.	E. ☐	☐	☐	☐
F.	All professional staff is informed of the organization's research policies.	F. ☐	☐	☐	☐

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20. Overnight Care and Services

If an accreditable organization provides overnight care (i.e., has patients that are not discharged from the facility on the day they were admitted to the facility) and related services, such care and services meet the needs of the patients served and are provided in accordance with ethical and professional practices and legal requirements.

Note: This chapter applies to organizations, or sub-units thereof, that provide care, including overnight accommodations, for patients who do not require the full range of services of an acute care hospital. Such patients may be recovering from surgery and require observation by medical personnel, receiving treatment for non-critical illnesses, or need only short-term or custodial care.

	Compliance			
	SC	PC	NC	N/A
A. The scope and limitations of overnight care and services are clearly specified. Such information is communicated to:	A. ☐	☐	☐	☐
1. Physicians who refer and admit patients to the program.	1. ☐	☐	☐	☐
2. Staff who provide the care and services.	2. ☐	☐	☐	☐
3. Potential patients in advance of their referral to the program.	3. ☐	☐	☐	☐
4. Other health care professionals and relevant community agencies.	4. ☐	☐	☐	☐
B. A patient is admitted or discharged only upon the order of a physician who is responsible for the medical care of that patient.	B. ☐	☐	☐	☐
C. Adequate supervision of overnight care and services is the responsibility of one or more qualified physicians who are approved by the governing body upon the recommendation of qualified medical staff.	C. ☐	☐	☐	☐
1. At least one physician is present or immediately available by telephone whenever patients are present.	1. ☐	☐	☐	☐
D. Providers may admit patients to this program if they:	D. ☐	☐	☐	☐
1. Are licensed to treat patients or supervise care and services in this setting.	1. ☐	☐	☐	☐
2. Have been granted such privileges by the governing body of the organization, in accordance with Chapter 2.II.	2. ☐	☐	☐	☐
E. Policies and procedures are clearly specified that include, but are not limited to:	E. ☐	☐	☐	☐
1. Clinical criteria for determining eligibility for admission.	1. ☐	☐	☐	☐
2. Clinical responsibilities for each patient during his/her stay.	2. ☐	☐	☐	☐
3. Arrangements for emergency services.	3. ☐	☐	☐	☐
4. Arrangements for transfer to other health care services as needed.	4. ☐	☐	☐	☐

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	Compliance			
	SC	PC	NC	N/A
F. The organization has a written transfer agreement with a nearby hospital or grants admitting privileges only to physicians who have admitting privileges at a nearby hospital.	F. ☐	☐	☐	☐
G. The overnight care unit meets applicable local and state codes, including licensing requirements if the state licenses such units.	G. ☐	☐	☐	☐
H. Registered nurses and other health care professionals are appropriately trained and supervised and are available in sufficient numbers to meet patient needs.	H. ☐	☐	☐	☐
I. At least one registered nurse is on duty at all times when patients are present.	I. ☐	☐	☐	☐
J. Treatment rooms are provided or made available to meet patient needs and physician requirements.	J. ☐	☐	☐	☐
K. Emergency power adequate for the size of the unit is available to protect the life and safety of patients.	K. ☐	☐	☐	☐
L. Appropriate isolation procedures are followed when any patient is admitted with a suspected or diagnosed communicable disease.	L. ☐	☐	☐	☐
M. Food service and refreshments are provided to meet the needs of patients.	M. ☐	☐	☐	☐
1. Evidence of compliance with local, state, and federal guidelines is present and adhered to regarding preparing, serving, disposal, and storing of food and drink for patient use.	1. ☐	☐	☐	☐
2. Special dietary requirements for patient care are met.	2. ☐	☐	☐	☐
3. Personnel providing food services meet local health department requirements.	3. ☐	☐	☐	☐
N. In addition to the applicable clinical records and health information requirements found in Chapter 6, the records for overnight care and services include:	N. ☐	☐	☐	☐
1. A current history and physical examination.	1. ☐	☐	☐	☐
2. Treatment orders.	2. ☐	☐	☐	☐
3. Nursing notes.	3. ☐	☐	☐	☐
4. Follow-up instructions to patients.	4. ☐	☐	☐	☐
O. If overnight care is the only service provided by the organization, that organization meets all other applicable Standards contained in the *Handbook*.	O. ☐	☐	☐	☐
P. If overnight care is only one of many services provided by the organization, these services shall be functionally integrated to ensure compliance with all other applicable Standards contained in the *Handbook*.	P. ☐	☐	☐	☐
Q. Overnight care and services are reviewed as part of the organization's quality improvement program.	Q. ☐	☐	☐	☐

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21. Occupational Health Services

Occupational medicine is a specialty devoted to the prevention and management of occupational and environmental injury, illness, and disability, and promotion of health and productivity of workers, their families, and communities. This chapter will apply if an organization provides extensive services, complex services, or markets itself as an occupational health center. If an organization provides basic employee health services to its own employees, Standards 3.B-F will be used to evaluate these services.

	Compliance			
	SC	PC	NC	N/A
A. Individuals who agree to laboratory testing or medical examinations at the request of their employer are afforded the patient rights noted in Chapter 1. In addition, they are informed of:	A. ☐	☐	☐	☐
1. The purpose and scope of the evaluation and the role of the examiner.	1. ☐	☐	☐	☐
2. Confidentiality protections and information that may be conveyed to the employer.	2. ☐	☐	☐	☐
3. Whether medical follow-up is necessary.	3. ☐	☐	☐	☐
B. Occupational health services are accurately portrayed to patients, employees, and purchasers of the services.	B. ☐	☐	☐	☐
C. Occupational health services are provided by personnel who:	C. ☐	☐	☐	☐
1. Have access to and utilize, as appropriate, consultative services associated with evaluating workplace hazards such as industrial hygiene, ergonomics, toxicology, occupational health nursing, epidemiology, and occupational medicine physicians.	1. ☐	☐	☐	☐
2. Have ready access to appropriate reference materials in occupational health and participate in occupational health continuing medical education.	2. ☐	☐	☐	☐
D. The provision of high-quality occupational health services is demonstrated by the following, as appropriate:	D. ☐	☐	☐	☐
1. An understanding of the specific workplace hazards for each employee/patient served.	1. ☐	☐	☐	☐
2. An understanding of the relationship of the condition or finding to workplace conditions and exposures.	2. ☐	☐	☐	☐
3. Determination of whether the individual is able to perform essential functions of the job and whether accommodations are needed.	3. ☐	☐	☐	☐
4. Preventive counsel concerning measures to reduce occupational exposures and hazards, including use of protective equipment.	4. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
5. Compliance with occupational regulations such as the Occupational Safety and Health Act (OSHA), Americans with Disabilities Act (ADA), and state Workers' Compensation statutes concerning the organization's:	5. ☐	☐	☐	☐
a. Training and credentials of personnel.	a. ☐	☐	☐	☐
b. Policies, procedures, and forms.	b. ☐	☐	☐	☐
c. Equipment, including calibration and maintenance.	c. ☐	☐	☐	☐
d. Clinical records and record management.	d. ☐	☐	☐	☐
E. Entries in a patient's clinical record for each visit include, as appropriate:	E. ☐	☐	☐	☐
1. An occupational and exposure history, including essential job functions, conditions of work, and hazards of the job.	1. ☐	☐	☐	☐
2. The individual's current functional abilities.	2. ☐	☐	☐	☐
3. Whether the individual is able to perform essential job functions and suggestions for accommodations or restrictions.	3. ☐	☐	☐	☐
4. The relationship of medical conditions or abnormal findings to workplace conditions and exposures.	4. ☐	☐	☐	☐
5. Preventive counsel concerning reduction of workplace exposures and use of personal protective equipment.	5. ☐	☐	☐	☐
6. Relevant communications concerning the patient, work activities, or exposures, including communications with employers, insurance carriers, union representatives, and attorneys.	6. ☐	☐	☐	☐
F. Medical management of injury or illness minimizes disability and promotes functional recovery, directing special attention to cases in which:	F. ☐	☐	☐	☐
1. Recovery has been delayed.	1. ☐	☐	☐	☐
2. Functional abilities have decreased during treatment.	2. ☐	☐	☐	☐
3. Injury or illness is recurrent.	3. ☐	☐	☐	☐
4. There is permanent impairment, disability, or restriction.	4. ☐	☐	☐	☐
G. Work placement evaluations such as preplacement, transfer, or fitness for duty examinations assess current health and ability to perform the job as well as the extent and duration of recent health changes affecting job performance.	G. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
H. Organizations providing medical surveillance evaluations of employees to identify adverse effects from exposure to workplace hazards ensure that:	H. ☐	☐	☐	☐
1. The health professionals performing or interpreting these evaluations have specific knowledge about the hazardous agent, including its effects, permissible and actual exposure levels, biologic monitoring, and regulatory requirements.	1. ☐	☐	☐	☐
2. Whenever possible, surveillance data is statistically analyzed for health trends and effects of exposure.	2. ☐	☐	☐	☐
3. The results of workplace data for similar workers with similar exposures are considered in the evaluation of the employee.	3. ☐	☐	☐	☐
I. Organizations providing certification examinations mandated under state or federal statutes ensure that:	I. ☐	☐	☐	☐
1. The health care professional performing the evaluation has access to the Standard and related materials.	1. ☐	☐	☐	☐
2. The health care professional understands the statute as it relates to the exam.	2. ☐	☐	☐	☐
J. Organizations providing occupational health testing and ancillary service programs such as urine collection for drugs of abuse, breath alcohol content testing, blood lead determinations, audiograms, or chest x-rays ensure that these programs are administered under appropriate written protocols, which are:	J. ☐	☐	☐	☐
1. Specific to the service provided, addressing all relevant topics such as specimen collection, handling, transportation, receipt and report of results, record management, equipment, equipment calibration, and maintenance.	1. ☐	☐	☐	☐
2. Under the supervision of a licensed physician or, if allowed, another health care professional.	2. ☐	☐	☐	☐
3. Reviewed and updated periodically.	3. ☐	☐	☐	☐
K. Organizations providing consulting services ensure that the role and responsibilities of the consultant are clearly defined.	K. ☐	☐	☐	☐
L. Organizations providing training and educational programs ensure that each program:	L. ☐	☐	☐	☐
1. Has written objectives.	1. ☐	☐	☐	☐
2. Is tailored to the specific worker population and work conditions.	2. ☐	☐	☐	☐
3. Includes an evaluation process and uses the results to improve program quality.	3. ☐	☐	☐	☐

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		Compliance			
		SC	PC	NC	N/A
M.	If the organization is responsible for emergency and/or community preparedness planning, it ensures that:	M. ☐	☐	☐	☐
1.	The disaster plan:	1. ☐	☐	☐	☐
a.	Includes likely worksite scenarios for disasters, estimating potential morbidity and mortality.	a. ☐	☐	☐	☐
b.	Includes appropriate plans for medical segregation, decontamination, evacuation, and transportation in collaboration with local emergency planning committees.	b. ☐	☐	☐	☐
2.	The toxicologic exposure plan:	2. ☐	☐	☐	☐
a.	Provides counsel on the identification, decontamination, and evacuation of potentially exposed individuals or communities.	a. ☐	☐	☐	☐
b.	Ensures appropriate emergency treatment protocols for potentially acute exposures to toxic agents handled by employees.	b. ☐	☐	☐	☐
c.	Provides appropriate medical expertise for the case management of individual acute toxic exposures.	c. ☐	☐	☐	☐
d.	Provides sufficient training and exercises to ensure that the plan will be effective.	d. ☐	☐	☐	☐

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22. Immediate/Urgent Care Services

If an accreditable organization implies by its activities, advertising, or practices that its ***primary*** mission is to provide medical care of an urgent or immediate nature on a non-appointment basis, such care meets the needs of the patients it intends to serve. Such immediate care and urgent care is provided in accordance with ethical and professional practices and adheres to applicable local, state, and federal requirements. Such an organization has the following characteristics.

	Compliance SC	PC	NC	N/A
A. The range of services offered by the organization and its hours of operation are clearly defined and communicated to the public and relevant organizations.	A. ☐	☐	☐	☐
B. Such organizations, unless they also provide emergency services, do not solicit patients with life-threatening conditions.	B. ☐	☐	☐	☐
C. Patients seeking immediate/urgent care services are seen without prior appointments.	C. ☐	☐	☐	☐
D. Immediate/urgent care services are performed only by health care professionals who are licensed to perform such procedures within the state in which the organization is located and who have been granted privileges to perform those procedures by the governing body of the organization, upon the recommendations of qualified medical staff and after medical review of the health care professional's documented education, training, experience, and current competence.	D. ☐	☐	☐	☐
E. During hours of operation, at least one qualified physician is present or immediately available.	E. ☐	☐	☐	☐
F. The organization is prepared in terms of personnel, equipment, and procedures to evaluate, stabilize, and transfer medical emergencies that may present themselves or arise in conjunction with services provided by the organization.	F. ☐	☐	☐	☐
G. Equipment, drugs, and other agents necessary to provide immediate/urgent care services are available.	G. ☐	☐	☐	☐
H. Communications are maintained with local police departments, fire departments, community social service agencies, ambulance services, poison control centers, and hospitals as needed to ensure high-quality patient care.	H. ☐	☐	☐	☐
I. Laboratory and imaging services described in Chapters 12 and 13 are available to meet the needs of patients receiving immediate/urgent care.	I. ☐	☐	☐	☐
J. Arrangements have been made to ensure that adequate specialty consultation services are available.	J. ☐	☐	☐	☐
K. Health care professionals who maintain skills in advanced cardiac life support (ACLS) or advanced trauma life support (ATLS) are present.	K. ☐	☐	☐	☐
L. All clinical support staff with direct patient contact maintain at a minimum skills in basic life support (BLS).	L. ☐	☐	☐	☐

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23. Emergency Services

If an accreditable organization implies by its activities, advertising, or practice that it provides emergency services on a regular basis to meet life-, limb-, or function-threatening conditions, such services meet the needs of the patients and are provided in accordance with ethical and professional practices and legal requirements. Such an organization has the following characteristics.

		Compliance			
		SC	PC	NC	N/A
A.	Emergency services are provided 24 hours per day, every day of the year.	A. ☐	☐	☐	☐
B.	Emergency services are performed only by health care professionals who are licensed to perform such procedures within the state in which the organization is located and who have been granted privileges to perform those procedures by the governing body of the organization, upon the recommendations of qualified medical staff and after medical review of the health care professional's documented education, training, experience, and current competence.	B. ☐	☐	☐	☐
C.	At least one qualified physician is present at all times.	C. ☐	☐	☐	☐
D.	Health care professionals assisting in the provision of emergency services are appropriately qualified, trained, and supervised and are available in sufficient numbers for the emergency services provided.	D. ☐	☐	☐	☐
E.	Unless otherwise provided for by the governing body, equipment, drugs, and other agents recommended by the *Emergency Care Guidelines* of the American College of Emergency Physicians are available.	E. ☐	☐	☐	☐
F.	Laboratory and imaging services described in Chapters 12 and 13 are immediately available.	F. ☐	☐	☐	☐
G.	Communications are maintained with local police departments, fire departments, community social service agencies, ambulance services, poison control centers, and hospitals as needed to ensure high-quality patient care.	G. ☐	☐	☐	☐
H.	Adequate specialty consultation services are immediately available.	H. ☐	☐	☐	☐
I.	All clinical support staff with direct patient contact maintain at a minimum skills in basic life support (BLS). Medical personnel currently trained in ACLS or ATLS and privileged to provide advanced resuscitative techniques are present when patients are present. When pediatric patients are served, medical personnel who are currently trained in pediatric advanced life support (PALS) and age- and size-appropriate resuscitative equipment must be available at all times. Initial ACLS, ATLS, and PALS training and subsequent retraining is obtained from the American Heart Association or another vendor that includes "hands-on" training and skills demonstration of airway management and automated external defibrillator (AED) use.	I. ☐	☐	☐	☐

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24. Radiation Oncology Treatment Services

Radiation oncology treatment services provided or made available by an accreditable organization meet the needs of the patients and are provided in accordance with ethical and professional practices and legal requirements. Such an organization has the following characteristics.

	Compliance			
	SC	PC	NC	N/A
A. Radiation oncology treatment services that are provided or made available by the organization are appropriate to the needs of the patient and are adequately supported by the organization's capabilities.	A. ☐	☐	☐	☐
B. Radiation oncology services appropriate to the organization's function include, but are not limited to:	B. ☐	☐	☐	☐
1. Consultation services.	1. ☐	☐	☐	☐
2. Simulation of treatment.	2. ☐	☐	☐	☐
3. Treatment planning.	3. ☐	☐	☐	☐
4. Clinical treatment management including but not limited to the use of teletherapy and brachytherapy.	4. ☐	☐	☐	☐
5. Maintenance of reports of services and radiographic images appropriate to the therapy, for the time required by applicable laws and policy of the organization.	5. ☐	☐	☐	☐
6. Appropriate follow-up care of all patients.	6. ☐	☐	☐	☐
C. Radiation oncology services provided by the organization are directed by a physician who is qualified to assume professional, organizational, and administrative responsibility for the quality of services rendered.	C. ☐	☐	☐	☐
D. The radiation oncology service has written safety and quality control policies and procedures, including policies and procedures for teletherapy and brachytherapy, that must be reviewed at least annually by a qualified medical physicist. The policies and procedures include, but are not limited to:	D. ☐	☐	☐	☐
1. The designation of a radiation safety officer and committee that meets on a periodic basis.	1. ☐	☐	☐	☐
2. A program to maintain personnel exposure records.	2. ☐	☐	☐	☐
3. Annual calibration of teletherapy units.	3. ☐	☐	☐	☐
4. Annual review of the radiation safety program by a qualified medical physicist.	4. ☐	☐	☐	☐
5. A program to inspect interlock systems of all treatment units.	5. ☐	☐	☐	☐
6. Maintenance of the records of machine performance, maintenance, and malfunctions.	6. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
7. Periodic testing of all sealed sources, satisfying all pertinent radiation regulations.	7. ☐	☐	☐	☐
8. A program for maintenance and repair of equipment.	8. ☐	☐	☐	☐
9. Quality control procedures for all therapeutic equipment.	9. ☐	☐	☐	☐
10. Regulation of the acquisition, use, removal, handling, and storage of potentially hazardous materials.	10. ☐	☐	☐	☐
E. The radiation oncology treatment service maintains sufficient adequately trained and qualified health care professionals who are available and able to supervise and conduct work of the service, including the following:	E. ☐	☐	☐	☐
1. A radiation technologist certified by the American Registry of Radiologic Technologists (ARRT), or state-licensed technologist.	1. ☐	☐	☐	☐
2. Dosimetrist.	2. ☐	☐	☐	☐
3. Qualified radiation physicist.	3. ☐	☐	☐	☐
4. Such other appropriately trained health care professionals as may be in keeping with local practice and legal requirements, such as oncology nurses, nutritionists, and medical social workers.	4. ☐	☐	☐	☐
F. The radiation oncology service should have adequate facilities and equipment to provide appropriate treatments and related treatments, which include:	F. ☐	☐	☐	☐
1. Supervoltage or megavoltage machine(s) capable of producing x-ray, gamma-ray, or proton beams for external beam treatments (includes isocentric and non-isocentric linear accelerators, GammaKnife, TomoTherapy, and cobalt-60 machines).	1. ☐	☐	☐	☐
2. A kilovoltage x-ray source or electron-beam for skin lesions.	2. ☐	☐	☐	☐
3. Access to computerized dosimetry.	3. ☐	☐	☐	☐
4. Access to simulation and/or CT imaging equipment.	4. ☐	☐	☐	☐
5. Access to patient transport.	5. ☐	☐	☐	☐
6. Personal immobilization devices with procedures to ensure proper identification to match each device to the proper patient.	6. ☐	☐	☐	☐
7. Technologies for shaping dose distributions, including but not limited to multi-leaf collimators, metal alloy, or sheet lead; procedures for proper identification of each device (or electronic file) to the patient and radiation field; and established procedures for identification, handling, storage, and removal of devices made of metal alloys.	7. ☐	☐	☐	☐
8. If High Dose Rate (HDR) brachytherapy, Low Dose Rate (LDR) brachytherapy, or similar procedures using radioactive seeds or other devices that are implanted or injected are used, appropriate storage containers are used and equipment is available and used to test the procedure room and storage containers in order to ensure that no potentially harmful residual radiation is present on site.	8. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
G. The radiation oncology service has policies addressing the quality of care, including but not limited to policies providing for the following:	G. ☐	☐	☐	☐
1. A recognized methodology for diagnosis and treatment, including but not limited to the use of teletherapy and brachytherapy.	1. ☐	☐	☐	☐
2. The performance of therapeutic services on the written order of a radiation oncologist.	2. ☐	☐	☐	☐
3. A physician is present or immediately available during treatment; in those situations in which the physician is not present but is immediately available, qualified support personnel are present.	3. ☐	☐	☐	☐
4. Weekly chart and port film review for on-going therapies.	4. ☐	☐	☐	☐
5. Periodic new patient review.	5. ☐	☐	☐	☐
6. Signed informed consent obtained prior to treatment.	6. ☐	☐	☐	☐
7. Photo documentation of treatment setups.	7. ☐	☐	☐	☐
8. Access to emergency treatment.	8. ☐	☐	☐	☐
H. The facility has access to appropriate supporting facilities, including diagnostic laboratories and imaging facilities.	H. ☐	☐	☐	☐
I. In addition to the applicable clinical records and health information requirements found in Chapter 6, the following characteristics indicate good-quality patient care in the radiation oncology setting and are documented:	I. ☐	☐	☐	☐
1. Confirmation of the presence of malignancy by histopathology or a statement of benign condition.	1. ☐	☐	☐	☐
2. Definition of tumor location, extent, and stage.	2. ☐	☐	☐	☐
3. Definition of treatment volume.	3. ☐	☐	☐	☐
4. Selection of dose.	4. ☐	☐	☐	☐
5. Selection of treatment modality.	5. ☐	☐	☐	☐
6. Selection of treatment technique.	6. ☐	☐	☐	☐
7. Dosimetry calculations.	7. ☐	☐	☐	☐
8. Supervision of treatment and record of patient progress and tolerance.	8. ☐	☐	☐	☐
9. Summary of completion with statement of follow-up plan.	9. ☐	☐	☐	☐

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25. Medical Home

The services provided by an accreditable Medical Home are patient-centered, physician-, nurse practitioner-[1] or physician assistant-[1]directed, comprehensive, accessible, continuous, and organized to meet the needs of the individual patients served. The foundation of a Medical Home is the relationship between the patient, his/her family, as appropriate, and the Medical Home. Within the patient-centered Medical Home, patients are empowered to be responsible for their own health care. As used in these Standards, a Medical Home is the primary point of care for the patient. The Medical Home chapter will apply to organizations that choose the chapter in the *Application for Survey*. The Medical Home will be assessed from the perspective of the patient on the following characteristics.

	Compliance			
	SC	PC	NC	N/A
A. Relationship – communication, understanding, and collaboration. (In this context, "physician" refers to the physician or the physician-, nurse practitioner-, or physician assistant-directed health care team).	A. ☐	☐	☐	☐
1. The patient can identify his/her physician and patient care team members.	1. ☐	☐	☐	☐
2. Patients are fully empowered to participate in decisions involving their health care, except when such participation is contraindicated for medical reasons.	2. ☐	☐	☐	☐
3. The patients are provided with information and explanation regarding the Medical Home approach to care.	3. ☐	☐	☐	☐
4. The physician explains information in a manner that is easy to understand.	4. ☐	☐	☐	☐
5. The physician listens carefully to the patient and, when appropriate, the patient's personal caregiver(s). Caregivers may include a parent, legal guardian, or person with the patient's power of attorney.	5. ☐	☐	☐	☐
6. The physician speaks to the patient about his/her health problems and concerns.	6. ☐	☐	☐	☐
7. The physician provides easy-to-understand instructions about taking care of health concerns.	7. ☐	☐	☐	☐
8. The physician knows important facts about the patient's health history.	8. ☐	☐	☐	☐
9. The physician spends sufficient time with the patient.	9. ☐	☐	☐	☐
10. The physician is as thorough as the patient feels is needed.	10. ☐	☐	☐	☐
11. The staff keeps the patient informed with regard to his/her appointment when delayed.	11. ☐	☐	☐	☐
12. The physician addresses specific principles to prevent illness.	12. ☐	☐	☐	☐
13. The physician speaks with the patient about making lifestyle changes to help prevent illness.	13. ☐	☐	☐	☐

[1]*As permitted by state law/regulation*

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	Compliance SC	PC	NC	N/A
14. The physician inquires as to the patient's concerns, worries, and stressors.	14. ☐	☐	☐	☐
15. The physician inquires as to the patient's mental health status (*e.g.*, sad, empty, or depressed).	15. ☐	☐	☐	☐
16. The Medical Home provides services within a team framework, and that "team" provider concept has been conveyed to the patient.	16. ☐	☐	☐	☐
17. The family is included, as appropriate, in patient care decisions, treatment, and education.	17. ☐	☐	☐	☐
18. The Medical Home treats its patients with cultural sensitivity.	18. ☐	☐	☐	☐
B. Accessibility	B. ☐	☐	☐	☐
1. The Medical Home establishes standards in writing to support patient access, such as provider availability, treatment plan information, clinical record contents, advice, routine care, and urgent care; the Medical Home's data supports that they meet those standards.	1. ☐	☐	☐	☐
2. Patients are routinely and continuously assessed for their perceptions about access to the Medical Home (provider availability, treatment plan information, clinical record contents, advice, routine care, and urgent care).	2. ☐	☐	☐	☐
3. Patients are provided information about how to obtain medical care at any time, 24 hours per day, every day of the year.	3. ☐	☐	☐	☐
4. The Medical Home ensures on-call coverage (pre-arranged access to a clinician) when the Medical Home is not open.	4. ☐	☐	☐	☐
5. Electronic data management is continually assessed as a tool for facilitating the above-mentioned Standards.	5. ☐	☐	☐	☐
C. Comprehensiveness of care	C. ☐	☐	☐	☐
1. If the Medical Home limits the population served, those limitations are disclosed to prospective patients.	1. ☐	☐	☐	☐
2. The Medical Home scope of service includes, but is not limited to:	2. ☐	☐	☐	☐
a. Preventive care including surveillance, anticipatory medical and oral health care guidance, and age-appropriate screening including well baby care.	a. ☐	☐	☐	☐
b. Wellness care including healthy lifestyle issues such as appropriate sleep, stress relief, weight management, healthy diet, oral care, and others, as appropriate.	b. ☐	☐	☐	☐
c. Health risk appraisal and health risk assessment and discussions with the patient.	c. ☐	☐	☐	☐
d. Acute illness and injury care.	d. ☐	☐	☐	☐
e. Chronic illness management.	e. ☐	☐	☐	☐
f. End-of-life care.	f. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
3. Patient education and self-management resources are provided.	3. ☐	☐	☐	☐
4. Knowledge of community resources that support the patient's (and family's, as appropriate) needs are known by the Medical Home.	4. ☐	☐	☐	☐
5. The community's service limitations are known and alternate sources are coordinated by the Medical Home.	5. ☐	☐	☐	☐
6. Referrals are appropriate to the patient's needs; when referrals occur, the Medical Home collaborates with the specialist.	6. ☐	☐	☐	☐
7. The needs of the patient's personal caregiver (see definition in Standard 25.A.5), when known, are assessed and addressed to the extent that they impact the care of the patient.	7. ☐	☐	☐	☐
8. Electronic data management is continually assessed as a tool for facilitating the above-mentioned Standards.	8. ☐	☐	☐	☐
D. Continuity of care	D. ☐	☐	☐	☐
1. A significant number (more than 50%) of the Medical Home visits of any patient are with the same physician/physician team.	1. ☐	☐	☐	☐
2. If a consultation is ordered for the patient, it is documented in the clinical record.	2. ☐	☐	☐	☐
3. Referrals for services (external to the Medical Home) are documented in the clinical record.	3. ☐	☐	☐	☐
4. Consultations (medical opinions obtained from other health care professionals) are recorded in the clinical record.	4. ☐	☐	☐	☐
5. Referrals are disease- or procedure-specific.	5. ☐	☐	☐	☐
6. The results of a patient referral are recorded in the clinical record; follow-up procedures exist, and the results of the referral are appropriately reported to the Medical Home as they are made available.	6. ☐	☐	☐	☐
7. Follow-up appointments are documented in the clinical record.	7. ☐	☐	☐	☐
8. After-hour encounters are documented in the clinical record.	8. ☐	☐	☐	☐
9. Missed appointments are documented in the clinical record and managed appropriately depending on the patient's care needs and diagnosis.	9. ☐	☐	☐	☐
10. Critical referrals, critical consultations, and critical diagnostic studies are tracked, and appropriate follow-up is made when the results are not received within a timely manner.	10. ☐	☐	☐	☐
11. Transition of care (e.g., pediatric to adult or adult to geriatric) is proactively planned, coordinated, and documented in the clinical record when indicated or when appropriate.	11. ☐	☐	☐	☐
12. Electronic data management is continually assessed as a tool for facilitating the above-mentioned Standards, including consultations, referrals, and lab results.	12. ☐	☐	☐	☐

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	Compliance SC	PC	NC	N/A
E. Quality	E. ☐	☐	☐	☐
1. Patient care is directed by a physician, nurse practitioner, or physician assistant.	1. ☐	☐	☐	☐
2. The Medical Home incorporates evidence-based guidelines and performance measures in delivering clinical services.	2. ☐	☐	☐	☐
3. The Medical Home periodically assesses its use of evidence-based guidelines and performance measures to ensure that they are current and being used effectively and appropriately.	3. ☐	☐	☐	☐
4. Supervision of patient care by the Medical Home, as evidenced by:	4. ☐	☐	☐	☐
a. Appropriate and timely diagnosis based on findings of the current history and physical examination.	a. ☐	☐	☐	☐
b. Medication review and update including prescription, over-the-counter, and diet supplements, and if indicated, use of recreational drugs and substances.	b. ☐	☐	☐	☐
c. Appropriate ordering of diagnostic tests.	c. ☐	☐	☐	☐
d. Absence of clinically unnecessary diagnostic or therapeutic procedures.	d. ☐	☐	☐	☐
e. Appropriate management of patient referrals (avoidance of unnecessary referrals).	e. ☐	☐	☐	☐
5. The Medical Home assesses and continuously improves the services it provides; measurements, quality studies, data trending, and benchmarking are key tools in a quality improvement/ management program.	5. ☐	☐	☐	☐
6. In addition to the Standards presented in Chapter 5.I, the Medical Home's quality improvement program includes at least one study every three years on each of the following topics:	6. ☐	☐	☐	☐
a. Patient/primary care provider relationship.	a. ☐	☐	☐	☐
b. Accessibility to care.	b. ☐	☐	☐	☐
c. Comprehensiveness of care.	c. ☐	☐	☐	☐
d. Continuity of care.	d. ☐	☐	☐	☐
e. Clinical study.	e. ☐	☐	☐	☐
NOTE: A single quality improvement study may include more than one of the five topic areas listed above.				
7. Electronic data management is continually assessed as a tool for facilitating the above-mentioned Standards.	7. ☐	☐	☐	☐

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Draft

TRANSFER AGREEMENT BETWEEN

MIDSTATE MEDICAL CENTER
("Hospital")

AND

HHC SOUTHINGTON SURGERY CENTER, LLC
("Facility")

To facilitate continuity of care and the timely transfer of patients and records between the Hospital and the Facility, the parties named above agree as follows:

1. That both parties shall make their facilities available to receive and care for all patients who in the professional opinion of the patient's physician would receive more appropriate treatment or care in the receiving institution; provided that at the time of the proposed transfer, the receiving institution shall have the facilities available for the proper care for the transferring patient, in accordance with federal and state laws and regulations.

2. The transferring institution will send with each patient at the time of transfer and whenever possible with the driver of the vehicle which transports the patient, or in the case of emergency, as promptly as possible the completed transfer and referral forms mutually agreed upon to provide the medical and administrative information necessary to determine the appropriateness of the placement and to enable continuing care to the patient. The transfer and referral forms will include such information as current medical findings, diagnoses, a brief summary of the course of treatment followed in the transferring institution, nursing and dietary information, discharge medication list, ambulation status, and pertinent administrative and social information, as appropriate.

3. The Hospital shall make available its diagnostic and therapeutic services for emergency care, on an outpatient basis, as ordered or referred by the attending physician subject to federal and state laws and regulations and the Hospital's policies and procedures.

4. The transferring institution will be responsible for the transfer or other appropriate disposition of personal effects, particularly money and valuables, and information related to these items.

5. The transferring institution will be responsible for affecting the transfer of the patient, including arranging for appropriate and safe transportation and care of the patient during the transfer in accordance with applicable federal and state laws and regulations.

6. The receiving institution will have responsibility for the care of the patient upon acceptance of admission.

7. Each institution shall be solely responsible for billing and collecting charges which result from services it rendered to the patient. Charges for services performed by either facility shall be collected by the institution rendering such services, directly from the patient, third-party payer, or other sources normally billed by the institution. Neither facility shall have any liability to the other for such charges. However, the transferring institution will provide the receiving institution with

appropriate information it possesses pertinent to the financial status of the patient, the responsible party for the patient and any applicable information on benefit or insurance coverage.

8. The governing body of each facility shall have exclusive control of policies, management, assets, and affairs of its respective institutions. Neither institution shall assume any liability by virtue of the agreement for any debts or other obligations of either a financial or legal nature incurred by the other party to this agreement.

9. Nothing in this agreement shall be construed as limiting the rights of either institution to contract with any other facility on a limited or general basis.

10. This agreement shall be in effect from the effective date identified below and shall remain in force unless terminated by (i) either facility providing thirty (30) days prior written notice; or (ii) immediately upon the revocation of either party's license to operate by the State of Connecticut or the failure of either party to be properly certified to participate in Medicare or Medicaid..

11. Any dispute arising under this agreement shall be discussed directly by the Administrator of the Facility and the director of Case Management at Hartford Hospital. If no agreement is reached, the Director of Case Management will bring the matter to the attention of the Hartford Hospital Administration.

12. This agreement may be modified or amended by mutual agreement of the parties in writing.

13. Nothing in this agreement shall be construed as allowing the use of the other party's name in any promotional or advertising material without the prior written approval of the institution whose name is to be used.

IN WITNESS THEREFORE, the parties hereto are duly authorized to execute this agreement to be effective on the __ day of _____, 2013.

MIDSTATE MEDICAL CENTER	**HHC SOUTHINGTON SURGERY CENTER, LLC**
By:_____	By: _____
Printed Name: _____	Printed Name: _____
Its: _____	Its: _____
Date: _____	Date: _____

Draft

TRANSFER AGREEMENT BETWEEN

HOSPITAL OF CENTRAL CONNECTICUT
("Hospital")

AND

HHC SOUTHINGTON SURGERY CENTER, LLC
("Facility")

To facilitate continuity of care and the timely transfer of patients and records between the Hospital and the Facility, the parties named above agree as follows:

1. That both parties shall make their facilities available to receive and care for all patients who in the professional opinion of the patient's physician would receive more appropriate treatment or care in the receiving institution; provided that at the time of the proposed transfer, the receiving institution shall have the facilities available for the proper care for the transferring patient, in accordance with federal and state laws and regulations.

2. The transferring institution will send with each patient at the time of transfer and whenever possible with the driver of the vehicle which transports the patient, or in the case of emergency, as promptly as possible the completed transfer and referral forms mutually agreed upon to provide the medical and administrative information necessary to determine the appropriateness of the placement and to enable continuing care to the patient. The transfer and referral forms will include such information as current medical findings, diagnoses, a brief summary of the course of treatment followed in the transferring institution, nursing and dietary information, discharge medication list, ambulation status, and pertinent administrative and social information, as appropriate.

3. The Hospital shall make available its diagnostic and therapeutic services for emergency care, on an outpatient basis, as ordered or referred by the attending physician subject to federal and state laws and regulations and the Hospital's policies and procedures.

4. The transferring institution will be responsible for the transfer or other appropriate disposition of personal effects, particularly money and valuables, and information related to these items.

5. The transferring institution will be responsible for affecting the transfer of the patient, including arranging for appropriate and safe transportation and care of the patient during the transfer in accordance with applicable federal and state laws and regulations.

6. The receiving institution will have responsibility for the care of the patient upon acceptance of admission.

7. Each institution shall be solely responsible for billing and collecting charges which result from services it rendered to the patient. Charges for services performed by either facility shall be collected by the institution rendering such services, directly from the patient, third-party payer, or other sources normally billed by the institution. Neither facility shall have any liability to the other for such charges. However, the transferring institution will provide the receiving institution with

appropriate information it possesses pertinent to the financial status of the patient, the responsible party for the patient and any applicable information on benefit or insurance coverage.

8. The governing body of each facility shall have exclusive control of policies, management, assets, and affairs of its respective institutions. Neither institution shall assume any liability by virtue of the agreement for any debts or other obligations of either a financial or legal nature incurred by the other party to this agreement.

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10. This agreement shall be in effect from the effective date identified below and shall remain in force unless terminated by (i) either facility providing thirty (30) days prior written notice; or (ii) immediately upon the revocation of either party's license to operate by the State of Connecticut or the failure of either party to be properly certified to participate in Medicare or Medicaid..

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12. This agreement may be modified or amended by mutual agreement of the parties in writing.

13. Nothing in this agreement shall be construed as allowing the use of the other party's name in any promotional or advertising material without the prior written approval of the institution whose name is to be used.

IN WITNESS THEREFORE, the parties hereto are duly authorized to execute this agreement to be effective on the __ day of _____, 2013.

HOSPITAL OF CENTRAL CONNECTICUT	**HHC SOUTHINGTON SURGERY CENTER, LLC**
By:_____	By: _____
Printed Name: _____	Printed Name: _____
Its: _____	Its: _____
Date: _____	Date: _____

Hardaway
Associates Inc.
Architects

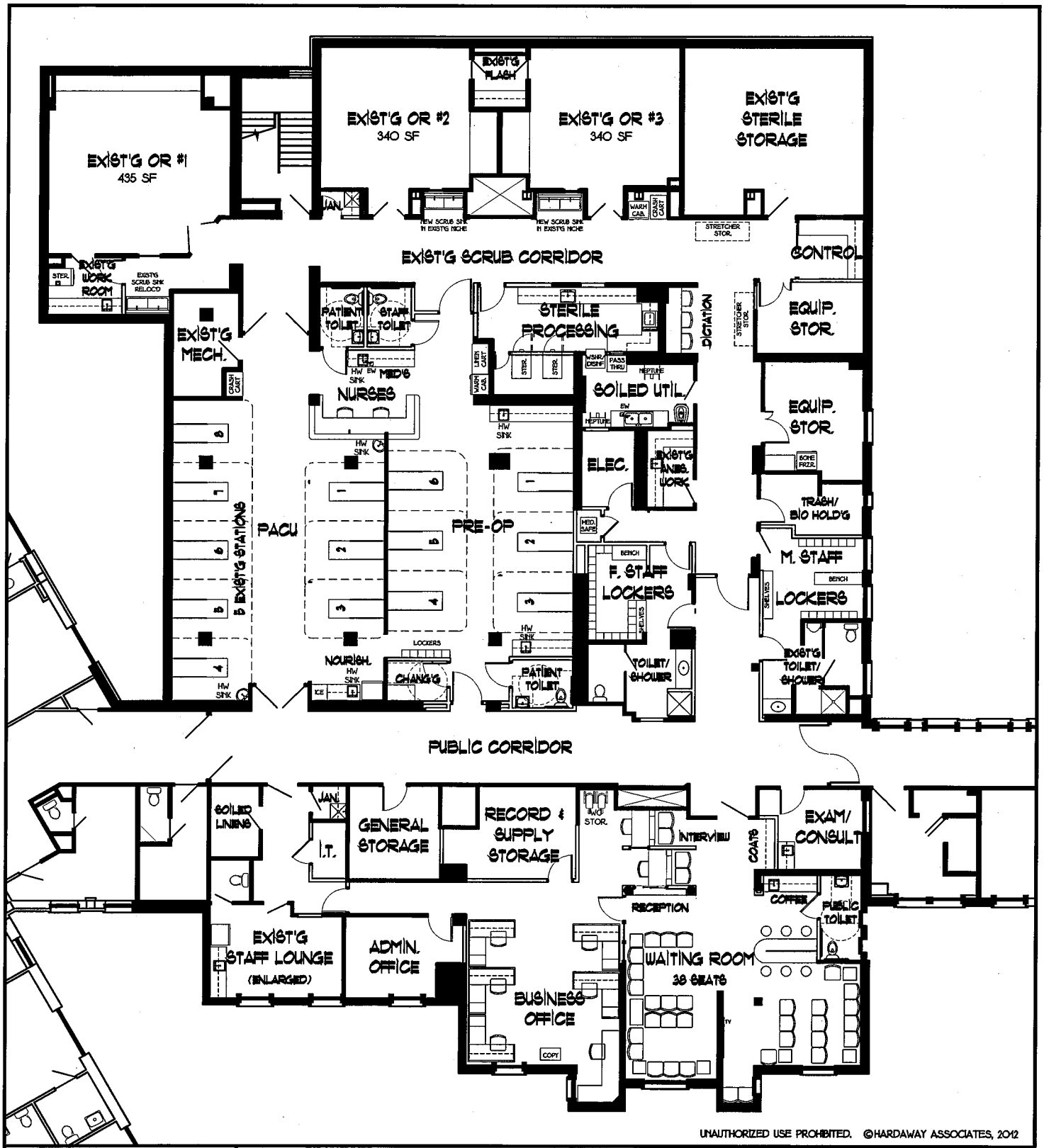
47 River Street
Suite 200
Wellesley, MA
02481

Bradley Memorial - Ambulatory Surgery Center

Meeting Agenda (Conference Call)
25 April 2013

1. Plan changes.
2. Hospital input on plan.
3. MEP systems update
   a. EES
   b. HVAC
4. Equipment inventory.
5. Miscellaneous systems.
6. Hazardous materials analysis update.
7. Potential budget impacts.
8. Schedule.

781-235-5339
781-235-5329 (Fax)



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Hardaway Associates
Architects

47 River Street, Suite 200
Wellesley, Massachusetts
02481

Phone 781-235-5339
FAX 781-235-5329

Project Name: Bradley ASC

Southington, CT

Drawing Title: Floor Plan

Sheet No.:

Project No.: 12.17

Date: 4-12-13

Scale: 1/16"=1'-0"

Drawn by: JT

Checked by: JJS

Drawing No.: SKA-1r

Hardaway
Associates Inc.
Architects

47 River Street
Suite 200
Wellesley, MA
02481

Bradley Memorial - Ambulatory Surgery Center

Preliminary Equipment Inventory
3/15/13 **revised 4/24/13**

This list represents preliminary assumptions regarding existing and new equipment for discussion.

Existing Equipment

1. Surgical light - OR #1 - To be replaced - OFI (GC to provide power and modify existing mounting plate)

2. Surgical light - OR #2 - Existing to remain (ETR)

3. Surgical light - OR #3 - ETR

4. Castle steam sterilizer - Sub-sterile, OR #1 - ETR

5. Castle sterilizer - Sub-sterile, OR's 2/3 - Remove

6. Amsco blanket warmer - Sub-sterile, OR #1 - Remove

7. Castle blanket warmer - Sub-sterile, OR's 2/3 - Remove

8. Small warming cabinet - PACU - Remove

9. Small warming cabinet - Scrub Corr. - Remove

10. Gas column - OR #1 - ETR

11. Gas column - OR #3 - Demo.

12. Pharmacy unit - Scrub Corr. - Remove

13. Bone Freezer - Equipment Storage - Remove

14. Head wall units - ICU - **(Removal by hospital or GC?)**

15. Patient care modules - ICU - **(Removal by hospital or GC?)**

16. X-ray viewers - OR #1 - ETR

17. X-ray viewers - OR #2 - ETR

18. X-ray viewers - OR #3 - ETR

19. Line isolation monitor - OR #1 - ETR

20. Line isolation monitor - OR #2 - Demo.

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21. Line isolation monitor - OR #3 - Demo.

22. Monitors - PACU - **Remove?**

23. Monitor brackets - PACU - **Reuse?**

24. Ice maker - ICU - Remove.

25. Undercounter refrig. - ICU - Remove.

26. Scrub sink: OR #1 - Relocate existing.

27. Scrub sink: OR #2 - Demo.

28. Scrub sink: OR #3 - Demo.

29. Staff lounge appliances: **Reuse?**

New Equipment

1. Steam sterilizers, Qty. 2 - Ster. Processing - OFI (GC to provide utilities to location, typ.).

2. Washer/disinfector - Soiled Util.: OFI

3. Neptune docking stations, Qty. 2 - Soiled Util. - OFI

4. Scrub sink - OR #2: OFI (note 62-inch alcove)

5. Scrub sink - OR #3: OFI (note 62-inch alcove)

6. Warming cabinet - Scrub Corr.: OFI

7. Warming cabinet - Pre-op: OFI

8. Bone Freezer - Equip. Stor.: OFI

9. Patient monitors- Pre-op, PACU: OFI

10. Monitor brackets - Pre-op, PACU: **OFI?**

11. Line isolation monitor - OR #2 - CFI

12. Line isolation monitor - OR #3 - CFI

13. TV's - Waiting, other loc's?: OFCI

14. Refrigerators - Nourish., Nurse Stat., Staff Lg.: OFCI

15. Microwaves - Nourish., Staff Lg.: OFCI

16. Ice maker - Nourishment: OFCI

17. Dishwasher - Staff Lounge: **Required?**

18. Future pharmacy unit - near Nurse Station - **Need cut sheet to confirm dimensions and connections.**

19. Future countertop sterilizer: Work Rm. OR 2/3: (GC to provide utilities to location).

Notes:
1. OR #'s reference Hardaway Assoc. plans.
2. Refer also to Room Data sheets.
3. OFI = Owner furnished and installed.
4. OFCI = Owner furnished, contractor installed.
5. CFI = Contractor furnished and installed.
6. Hospital to remove equipment noted "Remove".
7. "Demo." Identifies items to be removed by GC.

Hardaway
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Wellesley, MA
02481

Bradley Memorial - Ambulatory Surgery Center

Miscellaneous Systems
4/24/13

This list identifies miscellaneous systems for discussion and coordination of responsibilities.

1. HVAC controls - existing pneumatic control system to remain; proving DDC controls for new equipment.

2. WAGD - must be provided in OR's to meet reg's.

3. Medical air - required for hospital; not required for ASC. Outlets to be provided and piped to ceiling for future tie in to central manifold.

4. Telephone/data - GC will provide drops to outlet locations; CD's will cover pathways; Owner's vendor to design system and provide installation.

5. Line isolation - Replacing panels in OR's 2 & 3. Providing only conduit and back boxes for additional 220V panel for future lasers in three OR's.

6. Nurse call - replacing existing system with current system to match/integrate with hospital system.

7. Monitoring
   a. Equipment - data drops to be provided at desired locations. ASC/hospital to mark up plan.
   b. Patient tracking system required (future)?

8. Hospital paging - system/tie-in required? Provide vendor.

9. Other sound/intercom?

10. Security - doors, motion, cameras?

11. Clocks - Remove existing clocks; preserve back boxes?; ASC to provide battery operated, atomic clocks.

12. TV - locations, system.

13. Wi-Fi - We will call for protection of existing access points. Please locate on plan for coordination.

14. Other?

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781-235-5329 (Fax)

Hartford Healthcare
Financial Assistance Policy

Update Date: 12/16/2010

Purpose: The purpose of this Policy is to set forth the policy of Hartford Healthcare Corporation (sometimes referred to as the "System") governing the provision of free or discounted Health Care Services to patients who meet the System's criteria for Financial Assistance. Specifically, this Policy will describe: (i) the eligibility criteria for Financial Assistance, and whether such assistance includes free or discounted care; (ii) the basis for calculating amounts charged to patients; (iii) the method for applying for Financial Assistance from the System's Hospitals; (iv) the actions the System may take in the event of non-payment, including collections action and reporting to credit agencies for patients that qualify for Financial Assistance; and (v) the System measures to widely publicize this Policy within the community served by Hartford Healthcare.

Scope: This Policy applies to all Hartford Health facilities Health Care Services regardless of the location at which they are being provided by the System.

Definitions:

"Charges" means for a Health Care Service for a patient who is either Uninsured or Underinsured and who is eligible for Financial Assistance, the average of the System's facility three best negotiated commercial payor rates for the Health Care Services.

"Eligibility Criteria" means the criteria set forth in this Policy to determine whether a patient qualifies for Financial Assistance for the Health Care Services provided by the System's facility.

"EMTALA" means the Emergency Medical Treatment and Labor Act, 42 USC 1395dd, as amended from time to time.

"Family" means pursuant to the Census Bureau definition, a group of two or more people who reside together and who are related by birth, marriage, civil union or adoption. For purposes of this Policy, if the patient claims someone as a dependent on their income tax return, they may be considered a dependent for purposes of the provision of financial assistance.

"Family Income" means the following income when calculating Federal Poverty Level Guidelines of liquid assets: earnings, unemployment compensation, workers' compensation, Social Security, Supplemental Security Income, public assistance, veterans' payments, survivor benefits, pension or retirement income, interest, dividends, rents, royalties, income from estates, trusts, educational assistance, alimony, child support, assistance from outside the household, and other miscellaneous sources of income. If a person lives with a Family, Family Income includes the income of all Family members.

"Federal Poverty Level Guidelines" means the federal poverty level guidelines established by the United States Department of Health and Human Services.

"Financial Assistance" means free or discounted Health Care Services provided to persons who, pursuant to the Eligibility Criteria, the Hospital has determined to be unable to pay for all or a portion of the Health Care Services.

"Free Bed Funds" means any gift of money, stock, bonds, financial instruments or other property made by any donor to Hartford Healthcare facilities for the purpose of establishing a fund to provide medical care to an inpatient or outpatient of Hartford Healthcare.

"Health Care Services" means Hartford Healthcare facilities (i) emergency medical services as defined by EMTALA; (ii) services for a condition which, if not promptly treated, will result in adverse change in the health status of the individual; (iii) non-elective services provided in response to life-threatening circumstances in a non-emergency department setting; and (iv) medically necessary services as determined by the System facility on a case-by-case basis at the facility's discretion.

"Medically Indigent" means persons whom the System facility has determined to be unable to pay some or all of their medical bills because their medical bills exceed a certain percentage of their Family Income or Family assets even though they have income or assets that otherwise exceed the generally applicable Eligibility Criteria for free or discounted care under the Policy.

"Uninsured" means a patient who has no level of insurance or third party assistance to assist in meeting his or her payment obligations for Health Care Services and is not covered by Medicare, Medicaid or Champus or any other health insurance program of any nation, state, territory or commonwealth, or under any other governmental or privately sponsored health or accident insurance or benefit program including, but not limited to workers' compensation and awards, settlements or judgments arising from claims, suits or proceedings involving motor vehicle accidents or alleged negligence.

"Underinsured" means the patient has some level of insurance or third-party assistance but still has out-of-pocket expenses such as high deductible plans that exceed his or her level of financial resources.

Policy: It is Hartford Healthcare's policy to provide Financial Assistance to all eligible individuals who are Uninsured, Underinsured, ineligible for a government program, or otherwise unable to pay for Health Care Services due to their limited financial resources. It is also the System's policy to provide without discrimination care for emergency medical conditions (as defined by EMTALA) to individuals regardless of their eligibility for Financial Assistance under this Policy or for government assistance.

I. Determining Eligibility.

In determining eligibility for Financial Assistance, it is important that both the System facility and the patient work collaboratively. Specifically, the System facilities

will do its best to apply the Eligibility Criteria in a flexible and reasonable manner and the patient will do its best in responding to Hartford Healthcare requests for information in a timely manner.

1. **Eligibility for Financial Assistance.** Individuals who are Uninsured, Underinsured, ineligible for any government health care benefit program and unable to pay for their Health Care Services may be eligible for Financial Assistance pursuant to this Policy. The granting of Financial Assistance shall be based upon an individualized determination of financial need, and shall not take into account age, gender, race, color, national origin, marital status, social or immigrant status, sexual orientation or religious affiliation.

2. **Process for Determining Eligibility for Financial Assistance.** In connection with determining eligibility for Financial Assistance, the System (i) will require that the patient complete an application for Financial Assistance along with providing other financial information and documentation relevant to making a determination of financial eligibility; (ii) may rely upon publicly available information and resources to determine the financial resources of the patient or a potential guarantor; (iii) may pursue alternative sources of payment from public and private payment benefit programs; (iv) may review the patient's prior payment history; and (v) may consider the patient's receipt of state-funded prescription programs, participation in Women, Infants and Children programs, food stamps, subsidized school lunches, subsidized housing, or other public assistance as presumptive eligibility when there is insufficient information provided by the patient to determine eligibility.

3. **Processing Requests.** Hartford Healthcare will use its best efforts to facilitate the determination process prior to rendering services so long as the determination process does not interfere with the provision of emergency medical services as defined under federal law. However, eligibility determinations can be made at any time during the revenue cycle. During the eligibility determination process, the System facilities will at all times treat the patient or their authorized representative with dignity and respect and in accordance with all state and federal laws.

4. **Financial Assistance Guidelines.** Eligibility criteria for Financial Assistance may include, but is not limited to, such factors as Family size, liquid and non-liquid assets, employment status, financial obligations, amount and frequency of healthcare expense (i.e. Medically Indigent) and other financial resources available to the patient. Family size is determined based upon the number of dependents living in the household. In particular, eligibility for Financial Assistance will be determined in accordance with the following guidelines:

(a) ***Uninsured Patients:***

(i) If Family income is at or below 250% of the Federal Poverty Level Guidelines, the patient may qualify for up to a 100% discount against the System facility's Charges for Health Care Services;

(ii) If Family income is between 250% and 400% of the Federal Poverty Level Guidelines, the patient may qualify for up to a 50% discount against the System facility's Charges for Health Care Services;

(iii) Patients may also qualify for Free Bed Funds in accordance with the Hartford Healthcare Free Bed Funds Policy; and

(iv) Patients may have presumptive eligibility if they are homeless and have no assets or qualify for other means-tested government programs.

(b) ***Underinsured Patients:***

(i) Payment plans will be extended for any patient liability (including without limitation to amounts due under high deductible plans) identified in a manner consistent with the System's Payment Plan Policy;

(ii) If Family Income is at or below 250% of the Federal Poverty Level Guidelines, the patient may qualify for up to a 100% discount against the lesser of (a) the account balance after insurance payments from third-party payors are applied; or (b) the Charges for the Health Care Services;

(iii) If Family Income is between 250% and 400% of the Federal Poverty Level Guidelines, the patient may qualify for up to 50% discount against the lesser of (a) the account balance after insurance payments from third-party payors are applied; or (b) the Charges for the Health Care Services;

(v) Patients may also qualify for Free Bed Funds in accordance with Hartford Healthcare Free Bed Funds Policy; and

(vi) Patients may have presumptive eligibility if they are homeless and have no assets or qualify for other means-tested government programs.

(c) ***Medically Indigent****:* Patients will be required to submit a Financial Assistance application along with other supporting documentation, such as medical bills, drug and medical device bills and other evidence relating to high-dollar medical liabilities, so that the Hartford Healthcare System Hardship Committee can determine whether the patient qualifies for Financial Assistance due to the patient's medical expenses and liabilities.

II. Method for Applying for Financial Assistance. Patients may ask any nurse, physician, chaplain, or staff member from Patient Registration, Patient Accounts, Office of Professional Services, Case Coordination, or Social Services about initiating the Financial Assistance application process. Information about applying for Financial Assistance is

also available online at www.hartfordhealthcare.org. Signage and written information regarding how to apply for Financial Assistance will be available in Hartford Healthcare facilitiesl emergency service and patient registration areas. Once a patient or his or her legal representative requests information about Financial Assistance, a Financial Counselor will provide the patient or his or her legal representative with the Financial Assistance application along with a list of the required documents that must be provided to process the application. If the patient or his or her legal representative does not provide the necessary documentation and information required to make a Financial Eligibility determination within fourteen (14) calendar days of the Hartford Healthcare facility's request, the Financial Assistance application will be deemed incomplete and rendered void. However, if an application is deemed complete by the System facility, the System facility will provide to the patient or his or her legal representative a written determination of financial eligibility within five (5) business days. Decisions by the System facilities that the patient does not qualify for Financial Assistance may be appealed by the patient or his or her legal representative within fourteen (14) calendar days of the determination. If the patient or his or her legal representative appeals the determination, the Director of Patient Access will review the determination along with any new information and render a final decision within five (5) business days.

III. Relationship to Hartford Healthcare Collection Practices. In the event a patient fails to qualify for Financial Assistance or fails to pay their portion of discounted Charges pursuant to this Policy, and the patient does not pay timely their obligations to Hartford Healthcare, the System reserves the right to institute and pursue collection actions and to pursue any remedies available at law or in equity, including but not limited to, imposing wage garnishments or filing and foreclosing on liens on primary residences or other assets, instituting and prosecuting legal actions and reporting the matter to one or more credit rating agencies. For those patients who qualify for Financial Assistance and who, in the System's sole determination, are cooperating in good faith to resolve the System's outstanding accounts, the System facilities may offer extended payment plans to eligible patients, will not impose wage garnishments or liens on primary residences, will not send unpaid bills to outside collection agencies and will cease all collection efforts.

IV. Publication and Education. Hartford Healthcare facilities will disseminate information about its Financial Assistance Policy as follows: (i) provide signage regarding this Policy and written summary information describing the Policy along with financial assistance contact information in the Emergency Department, Labor and Delivery areas and all other System patient registration areas; (ii) directly provide to each patient written summary information describing the Policy along with financial assistance contact information in all admission, patient registration, discharge, billing and collection written communications; (iii) post the Policy on the System's web site with clear linkage to the Policy on the System's home page; (iv) educate all admission and registration personnel regarding the Policy so that they can serve as an informational resource to patients regarding the Policy; and (v) include the tag line "Please ask about our Financial Assistance Policy" in all Hartford Healthcare written advertisements.

V. Relation to Free Bed Funds. If a patient applies for Financial Assistance, Hartford Healthcare facilities will determine his or her eligibility for Financial Assistance and or Free Bed Funds.

VI. Regulatory Compliance. The System will comply with all state and federal laws, rules and regulations applicable to the conduct described in this Policy.

Reviewed By:	Niobus Queiro, Revenue Cycle Director, Hartford Healthcare Corporation
	Shelly McCafferty, PFS Director, Hartford Healthcare Corporation
	Becky Peters, PAS Director, Hartford Hospital
	Joan Feldman, Legal Counsel to Hartford Healthcare Corporation
Approved By:	**_____ Thomas Marchozzi, EVP & CFO Hartford Healthcare Corp.**
Date:	**_____October 1, 2010_____**

Issued Date: 08/16/2010

MidState Medical Center / HHC Southington ASC
Financial Schedules

Attachment A

12. C (i). Please provide one year of actual results and three years of projections of **Total Facility** revenue, expense and volume statistics without, incremental to and with the CON proposal in the following reporting format:

Total Facility: / Description	FY 2012 Actual Results	FY2014 Projected W/out CON	FY2014 Projected Incremental	FY2014 Projected With CON	FY2015 Projected W/out CON	FY2015 Projected Incremental	FY2015 Projected With CON	FY2016 Projected W/out CON	FY2016 Projected Incremental	FY2016 Projected With CON
NET PATIENT REVENUE										
Non-Government	$115,267,966	$112,835,000	($2,048,220)	$110,786,780	$114,088,000	($1,318,295)	$112,769,705	$115,577,000	($1,395,556)	$114,181,444
Medicare	$77,225,155	$78,494,000	$563,223	$79,057,223	$78,182,000	$1,005,194	$79,187,194	$77,433,000	$1,009,795	$78,442,795
Medicaid and Other Medical Assistance	$25,550,883	$24,760,000	$32,367	$24,792,367	$24,924,000	$153,989	$25,077,989	$25,088,000	$150,014	$25,238,014
Other Government	$309,744	$350,000		$350,000	$350,000		$350,000	$350,000		$350,000
Total Net Patient Patient Revenue	$218,353,748	$216,439,000	($1,452,630)	$214,986,370	$217,544,000	($159,112)	$217,384,888	$218,448,000	($235,747)	$218,212,253
Other Operating Revenue	$27,846,850	$8,000,000	$1,100,000	$9,100,000	$8,100,000	$1,200,000	$9,300,000	$8,300,000	$1,200,000	$9,500,000
Revenue from Operations	$246,200,598	$224,439,000	($352,630)	$224,086,370	$225,644,000	$1,040,888	$226,684,888	$226,748,000	$964,253	$227,712,253
OPERATING EXPENSES										
Salaries and Fringe Benefits	$104,027,713	$97,571,000	($103,200)	$97,467,800	$98,835,000	$312,600	$99,147,600	$101,168,000	$261,000	$101,429,000
Professional / Contracted Services	$50,385,547	$51,396,000		$51,396,000	$52,856,000		$52,856,000	$53,672,000		$53,672,000
Supplies and Drugs	$29,954,294	$31,943,000	($122,800)	$31,820,200	$33,380,000	$208,400	$33,588,400	$34,733,000	$174,000	$34,907,000
Bad Debts	$6,461,499	$5,600,000	$54,000	$5,654,000	$5,800,000	$99,000	$5,899,000	$6,100,000	$101,000	$6,201,000
Other Operating Expense	$13,519,012	$7,386,000	$0	$7,386,000	$7,646,000	$0	$7,646,000	$7,915,000	$0	$7,915,000
Subtotal	$204,348,065	$193,896,000	($172,000)	$193,724,000	$198,517,000	$620,000	$199,137,000	$203,588,000	$536,000	$204,124,000
Depreciation/Amortization	$12,961,930	$14,198,000	$0	$14,198,000	$14,589,000	$0	$14,589,000	$15,088,000	$0	$15,088,000
Interest Expense	$3,996,300	$4,187,000		$4,187,000	$4,167,000		$4,167,000	$4,137,000		$4,137,000
Lease Expense	$0	$0		$0	$0		$0	$0		$0
Total Operating Expense	$221,306,295	$212,281,000	($172,000)	$212,109,000	$217,273,000	$620,000	$217,893,000	$222,813,000	$536,000	$223,349,000
Gain/(Loss) from Operations	$24,894,303	$12,158,000	($180,630)	$11,977,370	$8,371,000	$420,888	$8,791,888	$3,935,000	$428,253	$4,363,253
Plus: Non-Operating Revenue	$1,222,491	$1,000,000	$0	$1,000,000	$1,000,000	$0	$1,000,000	$1,000,000	$0	$1,000,000
Revenue Over/(Under) Expense	$26,116,794	$13,158,000	($180,630)	$12,977,370	$9,371,000	$420,888	$9,791,888	$4,935,000	$428,253	$5,363,253
FTEs	1,054.60	1,000.00	0	1,000.00	1,000.00	0	1,000.00	1,000.00	0	1,000.00
Discharges	10,330	10,054		10,054	10,054		10,054	10,054		10,054

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MidState Medical Center / HHC Southington ASC
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13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2014 **FY Projected Incremental** Total Incremental Expenses:	(1) **($172,000)**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Total Facility by Payer Category:										
Medicare		($141,715)	(11)	$1,558,865	$995,642			$563,223	$474,000	$89,223
Medicaid		($39,206)	(10)	$392,060	$359,693			$32,367	$107,000	($74,633)
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			(21)	$1,950,925	$1,355,335	$0	$0	$595,590	$581,000	$14,590
Commercial Insurers		$5,805	(658)	($3,819,690)	($1,700,524)			($2,119,166)	($826,000)	($1,293,166)
Uninsured		$44,473	2	$88,946		$18,000	$54,000	$16,946	$19,000	($2,054)
Total NonGovernment			(656)	($3,730,744)	($1,700,524)	$18,000	$54,000	($2,102,220)	($807,000)	($1,295,220)
Total All Payers		$2,629	(677)	(1,779,819)	(345,189)	18,000	54,000	(1,506,630)	(226,000)	(1,280,630)

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13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

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Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2015 **FY Projected Incremental** Total Incremental Expenses:	(1) **$620,000**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Total Facility by Payer Category:										
Medicare		$86,387	32	$2,764,384	$1,759,190			$1,005,194	$802,000	$203,194
Medicaid		$42,929	22	$944,438	$790,449			$153,989	$239,000	($85,011)
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			54	$3,708,822	$2,549,639	$0	$0	$1,159,183	$1,041,000	$118,183
Commercial Insurers		$4,911	(589)	($2,892,579)	($1,444,536)			($1,448,043)	($553,000)	($895,043)
Uninsured		$26,958	6	$161,748		$32,000	$99,000	$30,748	$33,000	($2,252)
Total NonGovernment			(583)	($2,730,831)	($1,444,536)	$32,000	$99,000	($1,417,295)	($520,000)	($897,295)
Total All Payers		($1,849)	(529)	977,991	1,105,103	32,000	99,000	(258,112)	521,000	(779,112)

13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

MidState Medical Center / HHC Southington ASC
Financial Schedules

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Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2016 **FY Projected Incremental** Total Incremental Expenses:	(1) **$536,000**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Total Facility by Payer Category:										
Medicare		$122,834	23	$2,825,182	$1,815,387			$1,009,795	$800,000	$209,795
Medicaid		$50,658	19	$962,502	$812,488			$150,014	$233,000	($82,986)
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			42	$3,787,684	$2,627,875	$0	$0	$1,159,809	$1,033,000	$126,809
Commercial Insurers		$5,355	(628)	($3,362,940)	($1,832,784)			($1,530,156)	($632,000)	($898,156)
Uninsured		$28,100	6	$168,600		$34,000	$101,000	$33,600	$34,000	($400)
Total NonGovernment			(622)	($3,194,340)	($1,832,784)	$34,000	$101,000	($1,496,556)	($598,000)	($898,556)
Total All Payers		($1,023)	(580)	593,344	795,091	34,000	101,000	(336,747)	435,000	(771,747)

The Hospital Of Central Connecticut / HHC Southington ASC **Attachment A**
Financial Schedules

12. C (i). Please provide one year of actual results and three years of projections of **Total Facility** revenue, expense and volume statistics without, incremental to and with the CON proposal in the following reporting format:

Total Facility: Description	FY 2012 Actual Results	FY2014 Projected W/out CON	FY2014 Projected Incremental	FY2014 Projected With CON	FY2015 Projected W/out CON	FY2015 Projected Incremental	FY2015 Projected With CON	FY2016 Projected W/out CON	FY2016 Projected Incremental	FY2016 Projected With CON
NET PATIENT REVENUE										
Non-Government	$187,212,598	$180,079,310	($3,415,375)	$176,663,935	$188,452,048	($3,529,774)	$184,922,274	$194,597,961	($3,648,191)	$190,949,770
Medicare	$134,604,625	$133,687,063	($1,091,023)	$132,596,040	$137,997,485	($1,127,567)	$136,869,918	$140,818,098	($1,165,395)	$139,652,703
Medicaid and Other Medical Assistance	$57,018,212	$65,630,685	($237,179)	$65,393,506	$65,904,136	($245,123)	$65,659,013	$66,294,274	($253,347)	$66,040,927
Other Government	$510,853	$242,184		$242,184	$243,821		$243,821	$246,115		$246,115
Total Net Patient Patient Revenue	$379,346,288	$379,639,242	($4,743,577)	$374,895,665	$392,597,490	($4,902,464)	$387,695,026	$401,956,448	($5,066,932)	$396,889,515
Other Operating Revenue	$15,343,000	$17,081,000	$1,850,000	$18,931,000	$16,958,000	$1,850,000	$18,808,000	$12,292,000	$1,850,000	$14,142,000
Revenue from Operations	$394,689,288	$396,720,242	($2,893,577)	$393,826,665	$409,555,490	($3,052,464)	$406,503,026	$414,248,448	($3,216,932)	$411,031,515
OPERATING EXPENSES										
Salaries and Fringe Benefits	$205,545,000	$208,546,643	($1,781,643)	$206,765,000	$212,807,865	($1,877,865)	$210,930,000	$214,723,736	($1,968,736)	$212,755,000
Professional / Contracted Services	$83,679,000	$76,636,000		$76,636,000	$78,274,000		$78,274,000	$79,016,000		$79,016,000
Supplies and Drugs	$49,434,000	$39,894,049	($873,049)	$39,021,000	$40,987,342	($916,342)	$40,071,000	$4,984,446	($961,446)	$40,230,000
Bad Debts	$5,259,000	$25,489,872	($94,872)	$25,395,000	$29,313,049	($98,049)	$29,215,000	$29,251,339	($101,339)	$29,150,000
Other Operating Expense	($519,000)	$4,270,054	($141,054)	$4,129,000	$4,341,392	($109,392)	$4,232,000	$4,423,574	($85,574)	$4,338,000
Subtotal	$343,398,000	$354,836,618	($2,890,618)	$351,946,000	$365,723,648	($3,001,648)	$362,722,000	$332,399,095	($3,117,095)	$365,489,000
Depreciation/Amortization	$19,251,000	$19,263,000	$185,000	$19,448,000	$20,079,000	$390,000	$20,469,000	$21,101,000	$390,000	$21,491,000
Interest Expense	$1,954,000	$1,981,000		$1,981,000	$2,559,000		$2,559,000	$2,758,000		$2,758,000
Lease Expense	$4,192,000	$4,043,000		$4,043,000	$4,896,000		$4,896,000	$5,252,000		$5,252,000
Total Operating Expense	$368,795,000	$380,123,618	($2,705,618)	$377,418,000	$393,257,648	($2,611,648)	$390,646,000	$361,510,095	($2,727,095)	$394,990,000
Gain/(Loss) from Operations	$25,894,288	$16,596,624	($187,959)	$16,408,665	$16,297,842	($440,816)	$15,857,026	$52,738,353	($489,838)	$16,041,515
Plus: Non-Operating Revenue	$10,068,000	$6,072,000	$0	$6,072,000	$6,471,000		$6,471,000			$6,897,000
Revenue Over/(Under) Expense	$35,962,288	$21,505,665	($187,959)	$22,480,665	$22,768,842	($440,816)	$22,328,026	$52,738,353	($489,838)	$22,938,515
FTEs	2,268.60	2,288.70	-9	2,279.70	2,297.40	-9	2,288.40	2,297.40	-9	2,288.40
Discharges	18,252	17,656		17,656	17,506		17,506	17,431		17,431

Hospital of Central Connecticut / HHC Southington Surgery Center **Attachment A Support**

Financial Schedules

13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2013 - 6 MONTH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
FY Projected Incremental		Rate	Units	Gross Revenue Col. 2 * Col. 3	Allowances/ Deductions	Charity Care	Bad Debt	Net Revenue Col.4 - Col.5 -Col.6 - Col.7	Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	Gain/(Loss) from Operations Col. 8 - Col. 9
Total Incremental Expenses:	**$2,705,618**									
Total Facility by Payer Category:										
Medicare		$7,874	290	$2,285,586	$1,194,563			$1,091,023	$622,292	$468,730
Medicaid		$5,434	63	$342,854	$105,675			$237,179	$135,281	$101,898
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			353	$2,628,439	$1,300,238	$0	$0	$1,328,201	$757,573	$570,628
Commercial Insurers		$7,616	846	$6,439,616	$3,051,628			$3,387,988	$1,636,724	$1,751,264
Uninsured		$2,334	63	$147,260		$25,000	$94,872	$27,388	$216,449	($189,062)
Total NonGovernment			909	$6,586,875	$3,051,628	$25,000	$94,872	$3,415,375	$1,853,173	$1,562,202
Total All Payers		$7,302	1,262	9,215,315	4,351,866	25,000	94,872	4,743,577	2,610,746	2,132,830

13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

Hospital of Central Connecticut / HHC Southington Surgery Center **Attachment A Support**

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Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2014 **FY Projected Incremental** Total Incremental Expenses: **Total Facility by Payer Category:**	(1) **$2,611,648**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Medicare		$8,032	296	$2,375,633	$1,248,066			$1,127,567	$578,128	$549,439
Medicaid		$5,542	64	$356,362	$111,239			$245,123	$125,680	$119,443
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			360	$2,731,994	$1,359,305	$0	$0	$1,372,689	$703,808	$668,881
Commercial Insurers		$7,768	862	$6,696,292	$3,206,239			$3,490,053	$1,684,111	$1,805,942
Uninsured		$2,381	64	$153,078		$15,308	$98,049	$39,721	$125,680	($85,959)
Total NonGovernment			926	$6,849,370	$3,206,239	$15,308	$98,049	$3,529,774	$1,809,791	$1,719,983
Total All Payers		$7,448	1,286	9,581,364	4,565,544	15,308	98,049	4,902,463	2,513,599	2,388,864

13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

Hospital of Central Connecticut / HHC Southington Surgery Center **Attachment A Support**

Financial Schedules

Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2015 **FY Projected Incremental** Total Incremental Expenses:	(1) **$2,727,095**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Total Facility by Payer Category:										
Medicare		$8,192	301	$2,468,367	$1,302,972			$1,165,395	$603,924	$561,471
Medicaid		$5,653	66	$370,272	$116,925			$253,347	$131,288	$122,060
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			367	$2,838,640	$1,419,897	$0	$0	$1,418,743	$735,212	$683,531
Commercial Insurers		$7,924	868	$6,877,760	$3,272,470			$3,605,290	$1,759,256	$1,846,034
Uninsured		$2,428	66	$160,267		$16,027	$101,339	$42,902	$131,288	($88,386)
Total NonGovernment			934	$7,038,027	$3,272,470	$16,027	$101,339	$3,648,191	$1,890,544	$1,757,647
Total All Payers		$7,593	1,301	9,876,667	4,692,367	16,027	101,339	5,066,934	2,625,756	2,441,178

13. B i. Please provide one year of actual results and three years of projections of **Total Facility** revenue, expense and volume statistics without, incremental to and with the CON proposal in the following reporting format:

Total Facility: Description	FY 2012 Actual Results	FY2014 Projected W/out CON	FY2014 Projected Incremental	FY2014 Projected With CON	FY2015 Projected W/out CON	FY2015 Projected Incremental	FY2015 Projected With CON	FY2016 Projected W/out CON	FY2016 Projected Incremental	FY2016 Projected With CON
NET PATIENT REVENUE										
Non-Government	$0	$0	$8,982,769	$8,982,769	$0	$9,368,810	$9,368,810	$0	$9,772,661	$9,772,661
Medicare	$0	$0	$827,491	$827,491	$0	$863,053	$863,053	$0	$900,256	$900,256
Medicaid and Other Medical Assistance	$0	$0	$159,516	$159,516	$0	$166,372	$166,372	$0	$173,543	$173,543
Other Government	$0	$0		$0	$0		$0	$0		$0
Total Net Patient Patient Revenue	$0	$0	$9,969,776	$9,969,776	$0	$10,398,235	$10,398,235	$0	$10,846,460	$10,846,460
Other Operating Revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Revenue from Operations	$0	$0	$9,969,776	$9,969,776	$0	$10,398,235	$10,398,235	$0	$10,846,460	$10,846,460
OPERATING EXPENSES										
Salaries and Fringe Benefits	$0	$0	$1,318,911	$1,318,911	$0	$1,396,568	$1,396,568	$0	$1,479,049	$1,479,049
Professional / Contracted Services	$0	$0	$898,709	$898,709	$0	$936,440	$936,440	$0	$975,878	$975,878
Supplies and Drugs	$0	$0	$1,670,401	$1,670,401	$0	$1,765,739	$1,765,739	$0	$1,866,722	$1,866,722
Bad Debts	$0	$0	$99,698	$99,698	$0	$103,982	$103,982	$0	$108,465	$108,465
Other Operating Expense	$0	$0	$498,741	$498,741	$0	$518,118	$518,118	$0	$545,038	$545,038
Subtotal	$0	$0	$4,486,460	$4,486,460	$0	$4,720,847	$4,720,847	$0	$4,975,152	$4,975,152
Depreciation/Amortization	$0	$0	$240,000	$240,000	$0	$240,000	$240,000	$0	$240,000	$240,000
Interest Expense	$0	$0	$88,431	$88,431	$0	$70,745	$70,745	$0	$53,059	$53,059
Lease Expense	$0	$0	$350,000	$350,000	$0	$350,000	$350,000	$0	$350,000	$350,000
Total Operating Expense	$0	$0	$5,164,891	$5,164,891	$0	$5,381,592	$5,381,592	$0	$5,618,211	$5,618,211
Gain/(Loss) from Operations	$0	$0	$4,804,885	$4,804,885	$0	$5,016,643	$5,016,643	$0	$5,228,249	$5,228,249
Non-Operating Income				$0			$0			$0
Income before provision for income taxes	$0	$0	$4,804,885	$4,804,885	$0	$5,016,643	$5,016,643	$0	$5,228,249	$5,228,249
Provision for income taxes/distributions			$4,804,885	$4,804,885		$5,016,643	$5,016,643		$5,228,249	$5,228,249
Net Income	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Retained earnings, beginning of year			$0	$0		$0	$0		$0	$0
Retained earnings, end of year	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FTEs			23.4	23.4		23.8	23.8		24.1	24.1
*Volume Statistics: Surgical Cases			2,415	2,415		2,478	2,478		2,544	2,544

Provide projected inpatient and/or outpatient statistics for any new services and provide actual and projected inpatient and/or outpatient statistics for any existing services which will change due to the proposal.

000402

HHC Southington ASC Joint Venture
Financial Schedules

Attachment B Support

13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2014 **FY Projected Incremental** Total Incremental Expenses: **Total Facility by Payer Category:**	(1) **$5,164,891**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Medicare		$7,200	455	$3,276,000	$2,448,509			$827,491	$954,339	($126,848)
Medicaid		$7,200	89	$640,800	$481,284			$159,516	$186,725	($27,209)
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			544	$3,916,800	$2,929,793	$0	$0	$987,007	$1,141,064	($154,057)
Commercial Insurers		$7,200	1,863	$13,413,600	$4,445,431		$99,698	$8,868,471	$3,907,351	$4,961,120
Uninsured		$7,200	8	$57,600		$43,000	$0	$14,600	$16,778	($2,178)
Total NonGovernment			1,871	$13,471,200	$4,445,431	$43,000	$99,698	$8,883,071	$3,924,129	$4,958,942
Total All Payers		$7,200	2,415	17,388,000	7,375,224	43,000	99,698	9,870,078	5,065,193	4,804,885

HHC Southington ASC Joint Venture
Financial Schedules

Attachment B Support

13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2014 **FY Projected Incremental** Total Incremental Expenses:	(1) **$5,164,891**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Total Facility by Payer Category:										
Medicare		$7,200	455	$3,276,000	$2,448,509			$827,491	$954,339	($126,848)
Medicaid		$7,200	89	$640,800	$481,284			$159,516	$186,725	($27,209)
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			544	$3,916,800	$2,929,793	$0	$0	$987,007	$1,141,064	($154,057)
Commercial Insurers		$7,200	1,863	$13,413,600	$4,445,431		$99,698	$8,868,471	$3,907,351	$4,961,120
Uninsured		$7,200	8	$57,600		$43,000	$0	$14,600	$16,778	($2,178)
Total NonGovernment			1,871	$13,471,200	$4,445,431	$43,000	$99,698	$8,883,071	$3,924,129	$4,958,942
Total All Payers		$7,200	2,415	17,388,000	7,375,224	43,000	99,698	9,870,078	5,065,193	4,804,885

13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

HHC Southington ASC Joint Venture
Financial Schedules

Attachment B Support

Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2015 **FY Projected Incremental** Total Incremental Expenses: **Total Facility by Payer Category:**	(1) **$5,381,592**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Medicare		$7,560	467	$3,530,520	$2,667,467			$863,053	$994,600	($131,547)
Medicaid		$7,560	91	$687,960	$521,588			$166,372	$193,855	($27,483)
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			558	$4,218,480	$3,189,055	$0	$0	$1,029,425	$1,188,455	($159,030)
Commercial Insurers		$7,560	1,911	$14,447,160	$5,095,390		$103,982	$9,247,788	$4,069,978	$5,177,810
Uninsured		$7,560	9	$68,040		$51,000	$0	$17,040	$19,177	($2,137)
Total NonGovernment			1,920	$14,515,200	$5,095,390	$51,000	$103,982	$9,264,828	$4,089,155	$5,175,673
Total All Payers		$7,560	2,478	18,733,680	8,284,445	51,000	103,982	10,294,253	5,277,610	5,016,643

13.C(ii). Please provide **three** years of projections of incremental revenue, expense and volume statistics **attributable to the proposal** in the following reporting format:

HHC Southington ASC Joint Venture
Financial Schedules

Attachment B Support

Type of Service Description	Outpatient
Type of Unit Description:	Surgical Cases
# of Months in Operation	12

FY 2016 **FY Projected Incremental** Total Incremental Expenses:	(1) **$5,618,211**	(2) Rate	(3) Units	(4) Gross Revenue Col. 2 * Col. 3	(5) Allowances/ Deductions	(6) Charity Care	(7) Bad Debt	(8) Net Revenue Col.4 - Col.5 -Col.6 - Col.7	(9) Operating Expenses Col. 1 Total * Col. 4 / Col. 4 Total	(10) Gain/(Loss) from Operations Col. 8 - Col. 9
Total Facility by Payer Category:										
Medicare		$7,938	479	$3,802,302	$2,902,046			$900,256	$1,037,418	($137,162)
Medicaid		$7,938	93	$738,234	$564,691			$173,543	$201,422	($27,879)
CHAMPUS/TriCare		$0		$0				$0	$0	$0
Total Governmental			572	$4,540,536	$3,466,737	$0	$0	$1,073,799	$1,238,840	($165,041)
Commercial Insurers		$7,938	1,962	$15,574,356	$5,821,075		$108,465	$9,644,816	$4,249,189	$5,395,627
Uninsured		$7,938	10	$79,380		$60,000	$0	$19,380	$21,717	($2,337)
Total NonGovernment			1,972	$15,653,736	$5,821,075	$60,000	$108,465	$9,664,196	$4,270,906	$5,393,290
Total All Payers		$7,938	2,544	20,194,272	9,287,812	60,000	108,465	10,737,995	5,509,746	5,228,249

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Office of Health Care Access

August 14, 2013

Via Fax Transmission

Barbara A. Durdy
Director, Strategic Planning
Hartford HealthCare Corporation
181 Patricia Genova Drive
Newington, CT 06111

RE: Certificate of Need; Docket Number 13-31852-CON
Establishment of an Outpatient Surgical Center at 81 Meriden Avenue in Southington
HHC Southington Surgical Center, LLC

Dear Ms. Durdy:

On July 15, 2013, the Office of Health Care Access ("OHCA") received your initial Certificate of Need ("CON") submission filed on behalf of HHC Southington Surgical Center, LLC ("Applicant"), to establish a licensed outpatient surgery center dedicated to orthopedic outpatient surgical services at the Bradley Memorial Campus of The Hospital of Central Connecticut, 81 Meriden Avenue in Southington. This limited liability company has been organized by The Hospital of Central Connecticut ("HOCC") and MidState Medical Center ("MidState") as a joint venture to own the proposed outpatient surgery center.

OHCA has reviewed the CON application and requests the following additional information pursuant to General Statutes §19a-639a(c):

Clear Public Need

1. Page 6 of the CON submission states that HOCC and MidState are proposing to jointly establish an ambulatory surgical center along with a group of regional physicians who specialize in orthopedic surgery (the "Physicians"), and Constitution Surgery Centers, LLC, a management company with expertise in the management of ambulatory surgery centers. Please respond to each of the following questions
    a. Identify the names of the regional orthopedic physician groups that have committed to performing their outpatient surgical procedures at the proposed HHC Southington Surgical Center ("ASC").
    b. Specifically describe any and all plans related to the sale of Physician ownership.

c. Provide a copy of any plans, agreements or memorandum of understanding that addresses the Physicians' ownership interest in the proposed ASC that are separate and apart from the Operating Agreement within the CON application.
d. Report the number of orthopedic surgeons that have performed surgeries at HOCC and MidState in the past year that will not be performing their surgical cases at the proposed ASC.
e. In addition to the desire to joint venture with HOCC and MidState, please explain why the physician groups would prefer to own the proposed ambulatory surgery facility. List incentives and explain how current and upcoming changes in payment structures and payment sources provide an incentive or disincentive for Physicians to joint venture.
f. Provide the latest annual report for Constitution Surgery Centers, LLC ("CSC").
g. HOCC and MidState will collectively own a 51% controlling interest. Identify the percentage ownership currently held by each of the two hospitals. Will this individual membership interest change after membership shares are offered to CSC and the Physicians?
h. Identify the ownership interest that CSC will have in the proposed ASC.
i. Provide a chart of organization for the proposed ASC.
j. Provide a description of the make-up of the governing body of the proposed ASC.

2. Clarify whether this ASC will be available for use by only the Physicians who purchase ownership shares or whether non-owner physicians will be able to obtain surgical privileges at the ASC.

3. Describe how OR time will be blocked between the Physicians with surgical privileges at the ASC.

4. Provide a draft of the management agreement with CSC.

5. On page 26 of the CON submission, within the draft operating agreement, the ASC is described as "specializing primarily in musculoskeletal procedures, including, but not limited to, orthopedics, neurosurgery and pain management." The CON application as filed describes the center as an orthopedic surgery center. Please discuss the role of neurosurgery and pain management in the planned operational structure for this ASC.

6. Provide a discussion of the development of this ownership and operational structure in relationship to upcoming health care reform, changes in payment and payer structures, value-based purchasing and other major changes affecting the industry. How have these changes specifically been taken into account in this proposal and how will this joint venture help the two hospitals in regard to these upcoming changes.

7. Page 6 of the CON submission states that the patients in the Central Connecticut region desire and would benefit from access to outpatient surgical facilities. What evidence can the Applicant provide that demonstrates the level of interest that patients residing in the Central Connecticut have toward the establishment of the proposed outpatient surgical facility. How

would a patient differentiate this separately licensed and owned center located within the hospital setting from a hospital outpatient department structure?

8. Pages 6 & 7 of the CON submission states that HOCC's Bradley campus has four operating rooms of which it utilizes two of the four operating rooms with one of the rooms being shelled. Use the following table below to identify the number of surgical procedures, by inpatient, outpatient and total surgical cases actually performed by HOCC's Bradley surgical facility.

Table 1: Actual Number of Surgical Procedures Performed at the Bradley Surgical Facility

Surgical Procedures Performed	**Actual Cases by Fiscal Year***			
	2010	**2011**	**2012**	**2013****
Inpatient Cases				
Outpatient Cases				
Total Number of Cases				

* October 1 through September 31.

** For the period October 1 through last month_____.

9. Page 6 of the CON submission states that HOCC's existing operating rooms at the Bradley campus are currently underutilized and in need of renovation. Please respond to the following:
    a. Referencing the number of surgical procedures identified in response to Table 1 above, provide an explanation as to why the HOCC's Bradley surgical department has become underutilized. Include any issues related to physical plant, patient or physician preferences, the current location of services/beds between the two HOCC campuses, etc.
    b. Provide a brief description of the type of renovation work that will be accomplished to prepare the surgical space for the proposed ASC.

10. The Applicant reports that if it were to build a new freestanding ambulatory surgery center, the cost estimate for construction would be between six and seven million dollars. Provide evidence that supports this contention.

11. Page 6 of the CON submission states that existing space will be allocated for the fourth operating room that will remain separate from the ASC's leased space and will be used by HOCC for the surgeries that will continue to be performed by HOCC at the Bradley surgical facility. Please respond to the following:
    a. Please explain how the fourth operating room will be utilized. Will the fourth operating room perform inpatient as well as outpatient surgical procedures?
    b. Provide the projected total number of inpatient and outpatient surgical procedures that are anticipated to be accomplished in the fourth operating room from FYs 2014 through 2016.
    c. Explain how the fourth operating room will remain separate from the proposed orthopedic ambulatory surgery center. Include in you explanation a description of the

planned separation of staffing, ancillary services, etc. between the separately owned and licensed services within the same space.

12. Did the Hospitals perform their own respective patient satisfaction surveys in conjunction with the planning of the proposal? If so, please provide the results of the surveys accomplished.

13. On page 9 of the CON submission, the Applicant states that the service area of the proposed ASC includes the following towns: Berlin, Newington, New Britain, Plainville, Southington, Meriden, Wallingford and Cheshire. Provide a listing of FY 2012 orthopedic surgery patients' town of origin for HOCC and MidState, totaling to 100% and listing the towns with the highest percentage first for each Hospital. Use this listing to further explain the designated services area for this proposal.

14. On page 10 of the CON submission, the Applicant states that an aging population and a rise in the incidence of obesity are two factors contributing the most to the overall projected growth in orthopedic surgery. Provide specific demographic data, on a national, state and regional level, that provides evidence supporting this statement.

15. On page 12 of the CON submission, the Applicant states that in FY 2012 HOCC at the New Britain General campus operated 23 ORs, HOCC at the Bradley Memorial campus operated 2 ORs and MidState operated 9 ORs. For the ORs that are **dedicated to outpatient surgery only**, provide the following:
    a. Historical outpatient volume by OR for FYs 2010, 2011, 2012 and FY to date 2013 ;
    b. Types of surgeries performed in each OR and the average times of usage by type of outpatient surgery;
    c. Capacity for each OR for FYs 2010, 2011, 2012 and FY to date 2013. Be sure to provide an explanation as to how the capacity for each OR was derived.
    d. Provide FYs 2014, 2015 and 2016 projected outpatient volume for each of the ORs and provide annual capacity. Provide all assumptions utilized for projected volume and annual capacity.

    Note: Whenever discussing capacity in this application, be sure to include the following: minutes between cases for cleanup, number of hours per day, number of days per week, number weeks per year, optimal utilization for an operating room (%), and average time per case.

16. The Applicant has added Exhibits 3 through 10 in support of its CON application, but has not provided any explanation regarding the relevance of the selected articles to the proposal. Please provide the requested explanations which demonstrate relevance to the creation of a separately owned and operated surgery center.

Financial

17. Provide estimates for the completion date of the proposed renovation work and commencement date of the proposed ASC operations.

18. The operations of the ASC will be funded though capital contributions by the members, income from operations and lender financing at market rates. Please expand your response in addressing how each component cited will be utilized in the funding of the proposed ASC's operations.

19. Provide the rate schedule for the proposed ASC's services. Provide a comparison of the rates or charges for orthopedic surgical procedures for the proposed center and the orthopedic surgical procedures at the two hospitals.

20. On page 18 of the CON submission, the Applicant provides a Patient Population mix and indicates that it is based on the current patient population mix of the two hospitals. The projected Medicaid mix is 3.8%. However, both MidState and HOCC have a Medicaid population as a percentage of total discharges of approximiately 21% and 24 %, respectively. Explain how the proposed Medicaid percentage was determined in light of this.

21. On page 18 of the CON submission, in response to 5(j), the Applicant indicates that this proposal will contribute to the financial strength of the system because of its high quality and low cost services. Please provide an expanded response and demonstrate that the proposed model will increase quality and lower cost as opposed to the hospital outpatient department model or structure.

22. Regarding MidState's incremental financial projections, please indicate why there an increase in Medicare and Medicaid revenue for MidState due to this project when HOCC is showing a projected decrease.

In responding to the questions contained in this letter, please repeat each question before providing your response. Paginate and date your response, i.e., each page in its entirety. Information filed after the initial CON application submission (i.e. completeness letter, late file submissions, and the like must be numbered sequentially from the Applicant document preceding it. As the current submission for the application concludes with page 406, please begin with the completeness response with page 407. Reference Docket Number: 13-31852-CON and submit one (1) original and six (6) hard copies of your response in its entirety, including any supporting documentation. Submit a scanned copy of your response in Adobe format, an electronic copy in MS Word format and any worksheets in MS Excel, including all attachments, on CD.
OHCA must receive your response letter no later than October 13, 2013. Should your response letter be received by OHCA after October 13, 2013, the record regarding your request will be closed and considered withdrawn.

If you have any questions concerning this letter, please contact me by email or at (860) 418-7069, my direct line at OHCA.

Sincerely,

Jack A. Huber

Jack A. Huber
Health Care Analyst

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	3646
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ST. TIME	08/14 16:24
TIME USE	01'23
PAGES SENT	7
RESULT	OK

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH
OFFICE OF HEALTH CARE ACCESS

FAX SHEET

TO: BARBARA A. DURDY

FAX: (860) 972-4650

AGENCY: HARTFORD HEALTHCARE CORPORATION
HHC SOUTHINGTON SURGERY CENTER

FROM: JACK A. HUBER

DATE: 8/14/2013 **Time:** ~4:15 pm

NUMBER OF PAGES: 7
(including transmittal sheet)

Transmitted: Completeness Letter for Docket Number: 13-31852-CON
The Establishment of the HHC Southington Surgery Center, LLC,
A Licensed Orthopedic Outpatient Surgery Facility
Located at 81 Meriden Avenue in Southington, CT

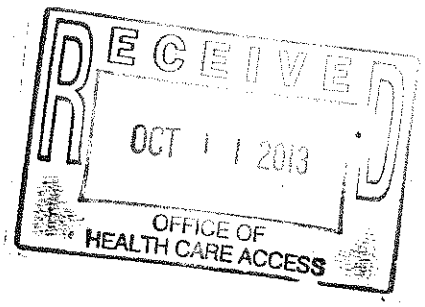
PLEASE PHONE Jack A. Huber at (860) 418-7069
IF THERE ARE ANY TRANSMISSION PROBLEMS.

SHIPMAN & GOODWIN LLP®

COUNSELORS AT LAW

Joan W. Feldman
Phone: 860-251-5104
Fax: 860-251-5211
jfeldman@goodwin.com

October 11, 2013



Jack A. Huber
Health Care Analyst
Department of Public Health
Office of Health Care Access
410 Capitol Avenue, MS#13HCA
P.O. Box 340308
Hartford, CT 06134-0308

RE: HHC Southington Surgery Center, LLC
Completeness Letter Responses; Docket Number 13-31852-CON

Dear Mr. Huber:

On behalf of HHC Southington Surgery Center, LLC (the "Applicant"), enclosed please find the original and 6 hard copies of the Applicant's responses to your Certificate of Need Completeness Letter dated August 14, 2013. As requested, I have also included a CD with a scanned copy of the Applicant's entire response (including attachments or exhibits), and electronic versions of any Microsoft Word or Excel documents, as applicable.

Please do not hesitate to contact me at 860-251-5104 if you have any questions.

Sincerely,

Joan W. Feldman

Enclosures

000407 (10/11/13)

Clear Public Need

1. Page 6 of the CON submission states that HOCC and MidState are proposing to jointly establish an ambulatory surgical center along with a group of regional physicians who specialize in orthopedic surgery (the "Physicians"), and Constitution Surgery Centers, LLC, a management company with expertise in the management of ambulatory surgery centers. Please respond to each of the following questions
    a. Identify the names of the regional orthopedic physician groups that have committed to performing their outpatient surgical procedures at the proposed HHC Southington Surgical Center ("ASC").

    As indicated in the Application, this Proposal is based upon the request from medical staff physicians at both MidState and HOCC (the "Hospitals") who have expressed a desire for the Hospitals to offer an efficiently run ambulatory surgical facility dedicated to orthopedics. The following two physician groups have committed to performing their outpatient surgical procedures at the proposed HHC Southington Surgery Center (the "Proposed ASC"):

    1) **Comprehensive Orthopaedics and Musculoskeletal Center, LLC ("COMC"); and**
    2) **Orthopedic Associates of Harford, P.C. ("OAH").**

    Please see Exhibit 20 attached hereto for commitment letters from OAH and COMC.

    b. Specifically describe any and all plans related to the sale of Physician ownership.

    Ownership interests in the Proposed ASC will be available to COMC and OAH and to certain other orthopedic surgeons (other than any MidState or HOCC employed orthopedic surgeon) who will be performing surgery at the Proposed ASC. A holding company will be formed for the sole purpose of holding a 49% interest in the Proposed ASC (the "Holding Company"). Physician owners of the Holding Company shall have an 85% interest in the Holding Company and CSC shall have a 15% interest in the Holding Company. The ownership interests in the Holding Company will be the equivalent of the Physicians having an approximately 42% interest and CSC having an approximately 7% interest in the Proposed ASC. Physician ownership interests in the Holding Company will be offered to those physicians who will be performing orthopedic surgery at the Proposed ASC in accordance with all applicable federal regulatory requirements.

    Please also see Exhibit 21 for the Proposed ASC's organizational chart.

c. Provide a copy of any plans, agreements or memorandum of understanding that addresses the Physicians' ownership interest in the proposed ASC that are separate and apart from the Operating Agreement within the CON application.

The agreement relating to the Holding Company will be finalized upon OHCA's approval of this Proposal, consistent with the terms referenced in this Application, actual financial requirements for the Proposed ASC, OHCA's CON order and all other applicable regulatory requirements.

d. Report the number of orthopedic surgeons that have performed surgeries at HOCC and MidState in the past year that will not be performing their surgical cases at the proposed ASC.

There are 2 orthopedic surgeons at MidState who will not be performing surgery at the Proposed ASC. Both physicians are employed by Hartford HealthCare Medical Group and will continue to perform surgery in the MidState operating rooms.

There are an additional 12 orthopedic surgeons at HOCC that plan to continue to perform their orthopedic surgeries at HOCC's New Britain campus (the "New Britain Campus").

e. In addition to the desire to joint venture with HOCC and MidState, please explain why the physician groups would prefer to own the proposed ambulatory surgery facility. List incentives and explain how current and upcoming changes in payment structures and payment sources provide an incentive or disincentive for Physicians to joint venture.

Most orthopedic surgeons prefer to perform outpatient orthopedic surgery in an ambulatory surgery center that they have an ownership interest in simply because an ownership interest will offer the physician greater control with respect to clinical and operational issues and ultimately, their work environment. Please see Exhibit 22 attached hereto for an article describing the specific benefits to physicians when they have an ownership interest in an ambulatory surgery center. In addition, physicians with an ownership interest will be eligible to receive a proportionate interest (related to their ownership interest) in any profits associated with the Proposed ASC facility fees. Thus, in addition to receiving their professional fees for the surgery, the physician owners may be eligible to receive additional reimbursement relating to the facility fee.

Many physicians often are dissatisfied and complain about hospitals running operations inefficiently. By having additional control as an owner, physician owners can more effectively achieve greater efficiencies in the Proposed ASC and focus more attention on quality improvement and being responsive to patient preferences. As physician reimbursement for professional services

continues to decrease, the ownership interest in the Proposed ASC offers the physician owners additional reimbursement which will offset the inevitable reductions in their professional fees that they are likely to experience under health care reform. In addition, because surgery is more expensive to provide in a hospital setting rather than in an ambulatory surgery center, the Proposed ASC will be able to offer greater value to payers and patients alike.

f. Provide the latest annual report for Constitution Surgery Centers, LLC ("CSC").

CSC is privately held and does not produce an annual report. CSC is a regional leader in ambulatory surgery with particular expertise in orthopedics and the Connecticut market. CSC also has a strong track record of operating successful joint venture collaborations between physicians and hospitals. Founded in 1997, CSC currently manages 15 outpatient centers, including 10 free-standing ambulatory surgery centers and 5 hospital outpatient departments. These operations encompass 66 operating rooms, where hundreds of surgeons perform over 75,000 cases annually. Information on CSC and its senior management team is available at http://www.cscus.net. CSC's ownership and management team does not include any physicians in a position to utilize or refer to the Proposed ASC.

g. HOCC and MidState will collectively own a 51% controlling interest. Identify the percentage ownership currently held by each of the two hospitals. Will this individual membership interest change after membership shares are offered to CSC and the Physicians?

The Proposed ASC will be organized as a Connecticut Limited Liability Company with HOCC and MidState collectively owning a 51% controlling membership interest (HOCC will own a 26% membership interest and MidState will own a 25% membership interest in the Proposed ASC). The remaining 49% membership interest will be held by the Physicians and CSC through the Holding Company. At all times, the Hospitals will collectively hold a majority ownership interest in the Proposed ASC. The Hospitals also will have governance control over the Proposed ASC as provided in the Proposed ASC's Operating Agreement. The Hospitals will maintain a majority ownership interest so that they can ensure that their charitable purposes and missions are not compromised by way of their ownership interest in the Proposed ASC. By way of example, the Proposed ASC will operate pursuant to the same Financial Assistance Policy as the Hospitals'.

h. Identify the ownership interest that CSC will have in the proposed ASC.

CSC will have approximately a 7% ownership interest in the Proposed ASC. CSC will have approximately a 15% ownership interest in the Holding

Company. The Holding Company will hold a 49% ownership interest in the Proposed ASC.

i. Provide a chart of organization for the proposed ASC.

Please see Exhibit 21 for the chart of organization for the Proposed ASC.

j. Provide a description of the make-up of the governing body of the proposed ASC.

The Proposed ASC shall have 3 classes of members: Class A, Class B and Class C members. MidState and HOCC will be the Class B members, OAH and COMC physicians and CSC will be the Class A members. Only Class A and Class B have voting rights in the Proposed ASC. Class C shall be reserved for certain physicians who perform surgery at the Proposed ASC and desire an ownership interest in the Proposed ASC. Class A and Class B each have 3 representatives on the governing body. Class C has no representatives on the governing body. The unanimous vote of both Class A and Class B shall be required, unless the matter before the governing body involves a tax-exempt status matter wherein Class B shall have a unilateral right to take action.

2. Clarify whether this ASC will be available for use by only the Physicians who purchase ownership shares or whether non-owner physicians will be able to obtain surgical privileges at the ASC.

Use of the Proposed ASC will not be limited to physician owners. The Proposed ASC will have an open medical staff, and additional non-investor physicians satisfying the credentialing requirements of the Proposed ASC and of the Hospitals may provide services at the Proposed ASC. This will provide for enhanced utilization of the Proposed ASC, strengthen the Proposed ASC's financial performance and allow an opportunity for those physicians who either elect not to invest or who are not in a position to do so to nevertheless utilize the Proposed ASC.

3. Describe how OR time will be blocked between the Physicians with surgical privileges at the ASC.

Operating room block time for each Physician will be determined by analyzing their historical data relating to their particular utilization (i.e. average operating time by procedure). Due to projected enhanced operating efficiencies and the Proposed ASC not having to factor for hospital emergencies, it is expected that block time will be optimally available to the Physicians in order to better accommodate their and their patients' preferences.

4. Provide a draft of the management agreement with CSC.

   A copy of the draft management agreement for the Proposed ASC is attached hereto as Exhibit 23. This agreement is consistent with CSC's other management agreements with the System.

5. On page 26 of the CON submission, within the draft operating agreement, the ASC is described as "specializing primarily in musculoskeletal procedures, including, but not limited to, orthopedics, neurosurgery and pain management." The CON application as filed describes the center as an orthopedic surgery center. Please discuss the role of neurosurgery and pain management in the planned operational structure for this ASC.

   The Proposed ASC will operate as an orthopedic surgery center. Included in the scope of services provided by orthopedic surgeons are both neurosurgery and pain management services. For example, orthopedic surgeons regularly perform epidural steroid injections and other spine-related surgical procedures.

6. Provide a discussion of the development of this ownership and operational structure in relationship to upcoming health care reform, changes in payment and payer structures, value-based purchasing and other major changes affecting the industry. How have these changes specifically been taken into account in this proposal and how will this joint venture help the two hospitals in regard to these upcoming changes.

   The principles associated with health care reform (e.g., value-based purchasing) require hospitals and their affiliated physicians to align in their efforts to provide the highest quality of care at the lowest cost. Such alignment requires that there be shared value propositions, shared quality objectives, shared objectives for achieving the highest level of patient satisfaction, and shared objectives for reducing unnecessary costs and achieving improved operating inefficiencies. An integrated joint venture between hospitals and physicians will allow collaboration rather than opposition in achieving these shared goals.

   The governance structure of the Proposed ASC allows the Hospitals to have ultimate control over issues relating to its charitable care mission, while sharing operating and clinical objectives with the Physicians relating to quality, safety and operating efficiencies. Payers will appreciate a more aligned and collaborative approach because such an approach will likely result in greater value at a lower cost. See Exhibit 24 attached hereto for the significant cost savings ambulatory surgery centers present to payers such as Medicare. In addition, the reorganization of surgical services to include off-site freestanding facilities affords hospitals the latitude to efficiently allocate its resources to address operating room capacity constraints and competing demands for operating room time.

   This type of collaborative arrangement between institutional providers, professional management and physicians in the ownership and operation of the Proposed ASC will

promote an integrated approach toward achieving enhanced clinical and operational outcomes.

7. Page 6 of the CON submission states that the patients in the Central Connecticut region desire and would benefit from access to outpatient surgical facilities. What evidence can the Applicant provide that demonstrates the level of interest that patients residing in the Central Connecticut have toward the establishment of the proposed outpatient surgical facility. How would a patient differentiate this separately licensed and owned center located within the hospital setting from a hospital outpatient department structure?

The Applicant has not conducted a patient survey with respect to this specific Proposal. However, in 2011, Market Street Research (MSR), an independent market research firm, was engaged to conduct a comprehensive Image and Awareness Study to better understand the health care preferences and expectations of the communities served. Based upon the results of this study, we do know that patients prefer efficient, easily accessible healthcare services. Specifically, with respect to orthopedic surgery, the results of the 2011 Study indicate that both MidState and HOCC are less preferred than other hospitals within the service area, all of which have dedicated ambulatory surgery facilities. Of greatest concern, is that both MidState and HOCC are less preferred for orthopedic surgery in 2011 than they were in 2009.
This Proposal addresses community concern and perception by proposing the establishment of an easily accessible, orthopedic focused ambulatory surgical center to better meet the needs and expectations of patients. See Exhibit 25 attached hereto for relevant excerpts from the 2011 Image and Awareness Study.

The Proposed ASC will have a distinct and separate entrance from the Bradley Campus hospital building. Signage will clearly guide patients to the Proposed ASC's separate entrance. In addition, patients will become patients of the Proposed ASC and not patients of either HOCC or MidState.

8. Pages 6 & 7 of the CON submission states that HOCC's Bradley campus has four operating rooms of which it utilizes two of the four operating rooms with one of the rooms being shelled. Use the following table below to identify the number of surgical procedures, by inpatient, outpatient and total surgical cases actually performed by HOCC's Bradley surgical facility.

Table 1: Actual Number of Surgical Procedures Performed at the Bradley Surgical Facility

Surgical Procedures Performed	Actual Cases by Fiscal Year*			
	2010	2011	2012	2013**
Inpatient Cases	401	366	281	192
Outpatient Cases	1,489	1,278	1,358	895
Total Number of Cases	1,890	1,644	1,639	1,087

* October 1 through September 31.

** For the period October 1 through last month July 2013 (10 months).

As indicated by the data above, utilization of HOCC's Bradley campus (the "Bradley Campus") operating rooms has been declining. As previously mentioned, the operating rooms at the Bradley Campus are outdated and in need of renovation. Many of the more complex inpatient procedures cannot be performed at the Bradley Campus and must be performed in the operating rooms at the New Britain Campus.

9. Page 6 of the CON submission states that HOCC's existing operating rooms at the Bradley campus are currently underutilized and in need of renovation. Please respond to the following:
    a. Referencing the number of surgical procedures identified in response to Table 1 above, provide an explanation as to why the HOCC's Bradley surgical department has become underutilized. Include any issues related to physical plant, patient or physician preferences, the current location of services/beds between the two HOCC campuses, etc.

    Generally, the utilization of the operating rooms at the Bradley Campus has been in decline since Bradley Hospital merged with New Britain General Hospital to form the Hospital of Central Connecticut at New Britain General and Bradley Memorial. As stated above, the operating rooms at the Bradley Campus are outdated and thus, not preferred by surgeons. Accordingly, there has been a shift of more complex cases from the Bradley Campus to the New Britain Campus. In addition, patient preference has resulted in a shift in surgical volume to the New Britain Campus due to negative public perception of Bradley Campus's facility.

    Additionally, in the last 10 years, more surgeries are being performed on an outpatient basis rather than on an inpatient basis. Thus, there is greater demand for outpatient operating rooms on the Bradley Campus than there is for inpatient operating rooms. For all the reasons stated above, this is a perfect opportunity to repurpose the Bradley Campus operating rooms to respond to the demand for more cost-effective outpatient surgery.

    See Exhibit 26 attached hereto for a copy of the National Health Statistics Report, "Ambulatory Surgery in the United States, 2006" along with a statistical report from the Healthcare Cost and Utilization Project (HCUP) State Ambulatory Surgery Databases (SASD) and State Inpatient Databases (SID) which speak to the dramatic increase in ambulatory surgery due to development of minimally invasive and non-invasive procedures and advancements in anesthesia.

    b. Provide a brief description of the type of renovation work that will be accomplished to prepare the surgical space for the proposed ASC.

    The existing surgical suite will be completely renovated and separated from the Bradley Campus's hospital operations. Three of the existing Bradley Campus

operating rooms will be leased to the Proposed ASC and modernized with new finishes, fixtures, updated medical gases, and a new HVAC system. The plumbing, medical gas, HVAC, telephone and information systems and emergency electrical systems for the Proposed ASC will be separate from the Bradley Campus facility operations. A dedicated sterile processing area will be added with 2 new steam sterilizers and a washer/disinfector along with a pass-through window will be provided to a completely renovated soiled utility room. The existing PACU and pre-operative areas will be modernized and expanded and a central nurse's station will be designed. Separate staff lockers will be provided along with new furnishings and fixtures. A completely new waiting room, business office with record storage, staff lounge and exam/consultation rooms will also be provided.

10. The Applicant reports that if it were to build a new freestanding ambulatory surgery center, the cost estimate for construction would be between six and seven million dollars. Provide evidence that supports this contention.

Recent examples of the cost associated with building a freestanding ambulatory surgery center are as follows:

1) **In 2009, Hartford Hospital developed the Glastonbury Surgery Center under docket number 08-31164 CON for a total capital cost of $6,425,000.**

2) **In 2009, Greenwich Hospital developed the Greenwich Surgery Center under docket number 09-30813 MDF at a total capital of $10,056,982.**

Given the high capital cost associated with the development and build out of a freestanding surgery center, the use and repurposing of the Bradley Campus space is a more cost-effective option for providing ambulatory surgical services.

11. Page 6 of the CON submission states that existing space will be allocated for the fourth operating room that will remain separate from the ASC's leased space and will be used by HOCC for the surgeries that will continue to be performed by HOCC at the Bradley surgical facility. Please respond to the following:

    a. Please explain how the fourth operating room will be utilized. Will the fourth operating room perform inpatient as well as outpatient surgical procedures?

    The fourth operating room at the Bradley Campus will be utilized for both hospital inpatient and outpatient surgical procedures. It is expected that most of the procedures/cases performed in this operating room will be surgical cases that are elective or that originate in the Bradley Campus emergency department.

b. Provide the projected total number of inpatient and outpatient surgical procedures that are anticipated to be accomplished in the fourth operating room from FYs 2014 through 2016.

HOCC Bradley Memorial Hospital
Projected Operating Room Utization
4th Operating Room

	FY2014	FY2015	FY2016
Inpatient	115	100	87
Outpatient	537	548	559
Total	652	648	646

c. Explain how the fourth operating room will remain separate from the proposed orthopedic ambulatory surgery center. Include in you explanation a description of the planned separation of staffing, ancillary services, etc. between the separately owned and licensed services within the same space.

The fourth operating room will be adjacent to the Special Procedures Unit located on a separate floor and in a different section of the Bradley Campus hospital facility. This area is currently being used for outpatient procedures, such as colonoscopies and other invasive diagnostic services. The physical location of the fourth operating room requires separate and distinct staff and supporting ancillary services. This new space will be renovated to be a fully equipped and operational operating room for inpatient and outpatient procedures.

12. Did the Hospitals perform their own respective patient satisfaction surveys in conjunction with the planning of the proposal? If so, please provide the results of the surveys accomplished.

The Hospitals did not perform patient satisfaction surveys specific to this Proposal. However, please also see the Applicant's response to Question 7. above.

13. On page 9 of the CON submission, the Applicant states that the service area of the proposed ASC includes the following towns: Berlin, Newington, New Britain, Plainville, Southington, Meriden, Wallingford and Cheshire. Provide a listing of FY 2012 orthopedic surgery patients' town of origin for HOCC and MidState, totaling to 100% and listing the towns with the highest percentage first for each Hospital. Use this listing to further explain the designated services area for this proposal.

Please see Exhibit 27 for inpatient and outpatient orthopedic discharges for FY 2012 by patient town of origin for both HOCC and MidState. As presented in Exhibit 27, 81% of total inpatient discharges and 77% of outpatient surgeries came from the identified

service area (Berlin, Newington, New Britain, Plainville, Southington, Meriden, Wallingford, and Cheshire).

14. On page 10 of the CON submission, the Applicant states that an aging population and a rise in the incidence of obesity are two factors contributing the most to the overall projected growth in orthopedic surgery. Provide specific demographic data, on a national, state and regional level, that provides evidence supporting this statement.

Obesity:
In September 2012, The Robert Wood Johnson Foundation ("RWJF") published a landmark study related to obesity, related diseases and associated health care costs. An analysis of the impact of obesity on each state was included in the study. The Connecticut specific analysis along with the National Study on Obesity entitled: "F as in Fat" was included as Exhibit 10 (page 226) of the CON Application. According to RWJF, the percentage of obese adults in Connecticut has grown significantly over recent years and is expected to reach between 40.5% and 46.5% of the adult population by 2030.

On a national and regional level, the Centers for Disease Control (the "CDC") reported that 35.7% of U.S. and 25.3% of Northeast region adults, respectively, are obese. As to State populations, the CDC reported that 25.6% of Connecticut adult residents are obese. See the CDC's "Adult Obesity Facts."[1]

While these numbers are alarming in and of themselves, the historic trend of obesity rates between 1985 and 2010 are further illustrative of the increasing numbers of obese U.S. and Connecticut residents. More specifically, in 1990, not one U.S. state had an incidence of obesity equal to or greater than 15%. By 2000, 23 states had an incidence of obesity between 20-24%. By 2010, no U.S. state had an incidence of obesity less than 20% and 36 U.S. states had an incidence of obesity equal to or greater than 25%. With respect to Connecticut, the incidence of obesity increased from less than 10% in 1985 to between 20-24% in 2010. See the CDC's "Obesity Trends among U.S. Adults Between 1985 and 2010[2]."

Age:
As of 2010, the U.S. Census Bureau reported that the number of persons 65 and older in the U.S. and Connecticut are 40,267,984 and 506,559, respectively.[3] More importantly, these numbers are expected to increase significantly in the future. For example, the U.S. Census Bureau states that "[b]etween 2010 and 2050, the United States is projected to experience rapid growth in its older population. In 2050, the number of Americans aged 65 and older is projected to be 88.5 million, more than double its projected

[1] This CDC report can be found at http://www.cdc.gov/obesity/data/adult.html.
[2] This CDC report can be found at http://www.cdc.gov/obesity/downloads/obesity_trends_2010.pdf.
[3] This data can be found at http://www.aoa.gov/Aging_Statistics/Census_Population/census2010/Index.aspx

population of 40.2 million in 2010. The baby boomers are largely responsible for this increase in the older population, as they will begin crossing into this category in 2011." See page 1 of the U.S. Census Bureau's report titled "The Next Four Decades - The Older Population in the United States: 2010 to 2050."[4] Furthermore, and with respect to Connecticut, the number of Connecticut residents 65 and over is projected to increase from approximately 500,000 to 800,000 between 2010 and 2030.[5]

Relationship between Obesity, Age and Joint Replacement:
It is well established in the medical literature that there is a strong relationship between obesity, age and osteoarthritis and the eventual need for joint replacement surgery. The medical literature and articles attached hereto as Exhibit 28 provide strong evidence linking obesity and age with the need for joint replacement surgery. According to a study conducted by the National Institutes of Health,

> **Our study found a strong association between obesity and the need for TKR or THR in nonelderly adults. These findings support those previously observed in the elderly population. As the prevalence of overweight and obese individuals continues to rise, an increase in the number of total joint replacements may rise accordingly.**

See Exhibit 28 attached hereto.

15. On page 12 of the CON submission, the Applicant states that in FY 2012 HOCC at the New Britain General campus operated 23 ORs, HOCC at the Bradley Memorial campus operated 2 ORs and MidState operated 9 ORs. For the ORs that are dedicated to outpatient surgery only, provide the following:

MidState does not have any operating rooms that are dedicated to outpatient surgery.

HOCC has 5 operating rooms dedicated to outpatient surgery. These operating rooms are all located on the New Britain Campus.

[4] The report can be found at http://www.aoa.gov/AoARoot/Aging_Statistics/future_growth/DOCS/p25-1138.pdf

[5] This report and data can be found at http://www.aoa.gov/AoARoot/Aging_Statistics/future_growth/future_growth.aspx

a. Historical outpatient volume by OR for FYs 2010, 2011, 2012 and FY to date 2013 ;

HOCC New Britain Campus
Ambulatory Surgery Volume in
Dedicated Outpatient Operating Rooms Only

	FY 2010	FY2011	FY2012	FYTD 2013*
Actual Volume	5,014	4,788	4,682	4,008

*FYTD 2013 through August 2013 (11 months)

Recent declines in outpatient surgical volume at HOCC reflect the need to develop a more efficient model for providing outpatient surgical services in order to continue to attract and maintain orthopedic and other surgical specialties. This Proposal allows for the establishment of an efficient, low cost model which provides value to the communities served and as well to the affiliated physicians. More importantly, 3 HOCC orthopedic surgeons that had previously performed their outpatient surgeries at the New Britain Campus, but subsequently moved their cases to another hospital (the cause of the decline seen above) have committed to performing their cases at the Proposed ASC.

b. Types of surgeries performed in each OR and the average times of usage by type of outpatient surgery;

HOCC New Britain Campus
Ambulatory Surgery Volume
Dedicated Outpatient Operating Rooms Only
Average Man Minutes per Case

Types of Surgery	FY10	FY11	FY12	FY13 YTD Aug
Dental	158.97	150.10	152.00	145.73
ENT	58.40	56.10	59.11	59.48
Eye	69.09	66.82	60.63	51.96
Gen	61.05	59.02	52.16	62.37
Gyn	58.42	59.30	59.82	62.14
Ortho	58.62	59.99	58.02	60.53
POD	83.03	78.18	79.10	69.86
Total Cases	**61.35**	**61.04**	**59.13**	**62.98**

The average number of man minutes per case has increased over time due to the increasing complexity of the surgery being performed in an outpatient setting.

c. Capacity for each OR for FYs 2010, 2011, 2012 and FY to date 2013. Be sure to provide an explanation as to how the capacity for each OR was derived.

HOCC New Britain Campus
Ambulatory Surgery Volume in
Dedicated Outpatient Operating Rooms Only

	FY 2010	FY2011	FY2012	FYTD 2013**
Number of Outpatient Operating Rooms	5	5	5	5
Minutes Available per OR*	96,000	96,000	96,000	96,000
Total Minutes Available (see note below)	552,000	552,000	552,000	506,000
Actual Volume	5,014	4,788	4,682	4,008
Average Time per Case (including 30 minute clean up time)	91.35	91.04	89.13	92.98
Total Minutes Utilized	458,040	435,900	417,307	372,670
% of Capacity Utilized	**83.0%**	**79.0%**	**75.6%**	**73.7%**

* Actual Minutes Available based on 8 hours per day, 5 days per week, 50 weeks per year, = 2,000 hours per year
Optimal utilization of an OR = 80%
2,000 hours x 80% = 1,600 hours
1,600 hours times 60 minutes = 96,000 minutes
**FYTD 2013 through August 2013 (11months)

note:
*** HOCC has 4 outpatient ORs that run 8 hours per day , 5 days per week, 50 weeks per year for a total of 8,000 hours
And
1 outpatient OR that runs 8 hours per day, 3 days per week, 50 weeks per year for a total of 1,200 hours
Total available capacity = 9,200 hours or 552,000 minutes

Outpatient operating room utilization has decreased at HOCC primarily due to the loss of 3 orthopedic surgeons to Orthopedic Associates in 2012 that have over time transitioned the majority of their outpatient cases to other physician-owned freestanding ambulatory surgery centers. In addition, 2 community orthopedic surgeons have also transitioned much of their outpatient practice to physician-owned freestanding ambulatory surgery centers. Combined, the migration of these 5 surgeons to freestanding facilities has resulted in a loss of 589 outpatient cases at the New Britain Campus. We expect that the majority of these cases will return to the Proposed ASC should it be approved by OHCA.

d. Provide FYs 2014, 2015 and 2016 projected outpatient volume for each of the ORs and provide annual capacity. Provide all assumptions utilized for projected volume and annual capacity.

HOCC New Britain Campus
Ambulatory Surgery - Projected Volume
Dedicated Outpatient Operating Rooms Only

	FY 2014	FY2015	FY2016
Number of Outpatient Operating Rooms	5	5	5
Minutes Available per OR*	96,000	96,000	96,000
Total Minutes Available (see note below)	552,000	552,000	552,000
Projected Volume	4,668	4,715	4,762
Average Time per Case (including 30 minute clean up time)	92.98	92.98	92.98
Total Minutes Utilized	434,031	438,401	442,771
% of Capacity Utilized	**78.6%**	**79.4%**	**80.2%**

* Actual Minutes Available based on 8 hours per day, 5 days per week, 50 weeks per year, = 2,000 hours per year
Optimal utilization of an OR = 80%
2,000 hours x 80% = 1,600 hours
1,600 hours times 60 minutes = 96,000 minutes
**FYTD 2013 through August 2013 (11months)

note:
*** HOCC has 4 outpatient ORs that run 8 hours per day , 5 days per week, 50 weeks per year for a total of 8,000 hours
And
1 outpatient OR that runs 8 hours per day, 3 days per week, 50 weeks per year for a total of 1,200 hours
Total available capacity = 9,200 hours or 552,000 minutes

During FY 2013, HOCC recruited 3 additional surgeons (urology, breast and bariatric) which are each expected to generate approximately 125 new outpatient cases during FY 2014. It is anticipated that the incremental volume from these additional surgeons along with a continual shift of non-orthopedic cases from the Bradley Campus to the New Britain Campus as a result of this Proposal will ensure the effective utilization of dedicated outpatient operating rooms at the New Britain Campus.

Note: Whenever discussing capacity in this application, be sure to include the following: minutes between cases for cleanup, number of hours per day, number of days per week, number weeks per year, optimal utilization for an operating room (%), and average time per case.

16. The Applicant has added Exhibits 3 through 10 in support of its CON application, but has not provided any explanation regarding the relevance of the selected articles to the proposal. Please provide the requested explanations which demonstrate relevance to the creation of a separately owned and operated surgery center.

Please note that the reference to Exhibit 8 in the CON Application was in error because the incorrect reference was attached. We have replaced Exhibit 8 with Exhibit 28 attached hereto. In addition, please see below for a brief explanation regarding the relevance of each of the exhibits referenced below to the Proposal:

Exhibit 3: In summary, Exhibit 3 is relevant to and supports the need for this Proposal because it provides that ambulatory surgical centers: (a) improve quality; (b) improve customer service and satisfaction; (c) lower costs for patients, private payers, and federal healthcare programs such as Medicare; (d) permit physicians to work and provide services more efficiently; and (e) are needed more and more today and in the future as the "aging population [will] be a major force in driving the significant growth in demand for surgical services" and settings such as ambulatory surgical centers "that allow physicians to practice efficiently will help mitigate the impact of the aging population on the anticipated shortage in the surgery workforce."

Exhibit 4: In summary, Exhibit 4 is relevant to and supports the need for this Proposal because it provides that ambulatory surgical centers: (a) lower costs for patients, private payers, and federal healthcare programs such as Medicare; (b) improve customer service and satisfaction; and (c) provide better access through more convenient locations and scheduling and shorter wait-times.

Exhibit 5: In summary, Exhibit 5 is relevant to and supports the need for this Proposal because it provides that ambulatory surgical centers: (a) lower the costs and expenses for the Medicare Program; (b) lower the cost-sharing amounts for Medicare beneficiaries/patients; (c) offer more convenient locations, shorter wait-times and easier scheduling as compared to hospitals; and (d) allows for more efficient surgical/specialized operations.

Exhibit 6: In summary, Exhibit 6 is relevant to and supports the need for this Proposal because it provides that the overwhelming majority of patients who receive care in ambulatory surgical centers are highly satisfied with the ambulatory surgical center and its services.

Exhibit 7: In summary, Exhibit 7 is relevant to and supports the need for this Proposal because it provides forecasts and projections relevant to the services and Service Area

related to this Proposal including the projection of outpatient orthopedic surgical growth at 29% over the next 10 years for the Proposal's Service Area.

Exhibit 8 (Replaced by Exhibit 28):

- **In summary, Exhibit 28's first article ("Obesity increases the likelihood of total joint replacement surgery among younger adults") is relevant to and supports the need for this Proposal because it evidences that both obesity and age are significant factors for the development of oasteoarthritis, which in turn leads to the need for joint replacement surgery.**
- **In summary, Exhibit 28's second article ("Total Knee Arthroplasty Volume, Utilization, and Outcomes Among Medicare Beneficiaries, 1991-2010") is relevant to and supports the need for this Proposal because it demonstrates that the volume of total knee replacements or "TKAs" has increased significantly and that "this growth is likely driven by a combination of factors including an expansion in the types of patients considered to likely benefit from TKA, an aging population, and an increasing prevalence of certain conditions that predispose patients to osteoarthritis, most notably obesity." (Emphasis added.)**
- **In summary, Exhibit 28's third article ("Obesity and Total Joint Arthroplasty: A Literature Based Review") is relevant to and supports the need for this Proposal because it provides that "obesity significantly contributes to a higher rate of osteoarthritis and ultimately total joint arthroplasty utilization."**
- **In summary, Exhibit 28's fourth article ("Projections of Primary and Revision Hip and Knee Arthroplasty in the United States from 2005 to 2030") is relevant to and supports the need for this Proposal because it demonstrates that the projected need for joint replacement surgeries will continue to increase at a staggering pace. In fact, the authors of this article project that by 2030, the demand for total hip arthroplasties will grow by 174% and the demand for total knee arthroplasties is projected to grow by 673%.**

Exhibit 9: In summary, Exhibit 9 is relevant to and supports the need for this Proposal because it provides that obesity is a prominent risk factor that significantly contributes to the onset of osteoarthritis.

Exhibit 10: In summary, Exhibit 10 is relevant to and supports the need for this Proposal because it evidences the size of the obese population in Connecticut and, more importantly, it projects the size of this population to "grow significantly" in the upcoming years.

Financial

17. Provide estimates for the completion date of the proposed renovation work and commencement date of the proposed ASC operations.

The expected completion date for construction is January 2014. Expected commencement date of operations will be the first quarter of 2014, subject to OHCA's approval.

18. The operations of the ASC will be funded though capital contributions by the members, income from operations and lender financing at market rates. Please expand your response in addressing how each component cited will be utilized in the funding of the proposed ASC's operations.

Equipment acquisition and facility renovations will be funded by lender financing at market rates. Income from operations will be used to fund operating expenses such as salaries, benefits, and overhead expenses associated with the Proposed ASC's operations. Capital contributions by the members will fund startup expenses of the Proposed ASC as well as fund equipment and supply purchases.

19. Provide the rate schedule for the proposed ASC's services. Provide a comparison of the rates or charges for orthopedic surgical procedures for the proposed center and the orthopedic surgical procedures at the two hospitals.

There is no rate schedule for the Proposed ASC's services. The Proposed ASC will accept commercial, governmental and self-pay payers and will be competitive with the market for ambulatory surgical services that are not hospital based. The goal of the project is to provide cost-effective services. The Applicant does not have control over the rates of the physicians providing services at the Proposed ASC, but all physicians will be required to comply with the Hospitals' Financial Assistance Policy.

20. On page 18 of the CON submission, the Applicant provides a Patient Population mix and indicates that it is based on the current patient population mix of the two hospitals. The projected Medicaid mix is 3.8%. However, both MidState and HOCC have a Medicaid population as a percentage of total discharges of approximately 21% and 24 %, respectively. Explain how the proposed Medicaid percentage was determined in light of this.

The baseline patient population reflecting a Medicaid mix of 3.8% on page 18 is inclusive only of orthopedic outpatient surgical services moving from both Hospitals to the Proposed ASC. It does not represent the combined total inpatient and outpatient populations/payer mix of MidState and HOCC. Hence, the Proposed ASC has a much lower Medicaid percentage in comparison to the historical inpatient Medicaid mix at the Hospitals.

21. On page 18 of the CON submission, in response to 5(j), the Applicant indicates that this proposal will contribute to the financial strength of the system because of its high quality and low cost services. Please provide an expanded response and demonstrate that the proposed model will increase quality and lower cost as opposed to the hospital outpatient department model or structure.

    The Applicant provided a cost comparison between hospital-based outpatient services and services provided in a freestanding ambulatory surgery center in its CON Application at page 8. Based upon that data, it is evident that when the services are provided in a freestanding facility versus a hospital setting, the reimbursement is, on average, 35% lower. With respect to enhancing quality, we believe that quality can be equally high at both a hospital-based and freestanding ambulatory surgery center. Notwithstanding, by having physician owners, we believe that there will be a high level of physician involvement and accountability with respect to performance benchmarks that are mutually established by both the Hospitals and the Physicians.

22. Regarding MidState's incremental financial projections, please indicate why there an increase in Medicare and Medicaid revenue for MidState due to this project when HOCC is showing a projected decrease.

    The projected incremental surgical cases for MidState include both inpatient and outpatient cases and thus, reflect a higher percentage of Medicare and Medicaid patients than is reflected in the outpatient orthopedic volumes of the Proposed ASC.

EXHIBIT 20

ORTHOPEDIC ASSOCIATES OF HARTFORD, PC
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Jeffrey K. Burns, M.D.
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Stephen L. Davis, M.D.
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Thomas W. Dugdale, M.D.
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Richard L. Froeb, M.D.
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John P. Fulkerson, M.D.
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John C. Grady-Benson, M.D.
Joint Replacement Surgery
Charles B. Kime, M.D.
Spine Surgery
W. Jay Krompinger, M.D.
Spine Surgery
Christopher J. Lena, M.D.
Sports Medicine / Arthroscopic Surgery
Courtland G. Lewis, M.D.
Joint Replacement Surgery
Richard M. Linburg, M.D.
Hand and Wrist Surgery
Pietro A. Memmo, M.D.
Interventional Physiatry
Michael A. Miranda, M.D.
Complex Fractures / Shoulder Surgery
Durgesh G. Nagarkatti, M.D.
Joint Replacement / Arthroscopy
John F. Raycroft, M.D.
General Orthopedics / Spine
Clifford G. Rios, M.D.
Sports Medicine / Arthroscopic Surgery
Steven F. Schutzer, M.D.
Hip and Knee Reconstructive Surgery
Raymond J. Sullivan, M.D.
Foot and Ankle Surgery
Robert S. Waskowitz, M.D.
Sports Medicine / Arthroscopic Surgery
Gordon A. Zimmermann, M.D.
Knee, Shoulder Surgery, Knee Replacement

October 8, 2013

Commissioner Jewel Mullen, MD, MPH, MPA
State of Connecticut
Department of Public Health
410 Capitol Avenue
Hartford, CT 06134

Dear Dr. Mullen:

Orthopedic Associates of Hartford (OAH) strongly supports the proposed creation of an orthopedic-ambulatory surgery center in the Southington area, jointly owned and operated by MidState Medical Center, The Hospital of Central Connecticut and affiliated surgeons. We believe an ambulatory surgical center as proposed is needed in Southington, and it is our full intention to participate in the project and utilize the ambulatory surgery center should the CON be approved.

We believe the joint venture structure provides a superior framework for collaboration and engagement between surgeons and hospitals. Flexibility and alignment of interest will become increasingly critical as the demands for clinical integration intensify under healthcare reform initiatives and new payment models.

As in many other businesses, specialization begets efficiency in surgery. Focused staff, the right equipment close at hand, and the ability to tailor operations around the requirements of a single specialty result in high quality clinical outcomes, more predictable schedules and lower cost. These benefits redound to patients, surgeons and the healthcare system as a whole.

We urge you to favorably consider Hartford HealthCare's CON application.

Sincerely,

Gordon A. Zimmermann, MD
President
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000427 (10/11/13)

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Gaurav Kapur, MD

Ronald S. Parét, MD
Steven P. Fries, PA-C.

Jeffrey T. Pravda, MD
Paul H. Zimmering, MD

COMPREHENSIVE PHYSICAL THERAPY

Raymond Ryan, PT, Director *Melinda Amato, OTR/L, CHT* *Cynthia Desmarais, PT* *Daniel Harrigan, PT* *Laura Welsh, PT* *Peter Ives, PTA* *Tracey Stratton, PTA*

August 29, 2013

Commissioner Jewel Mullen, MD, MPH, MPA
State of Connecticut
Department of Public Health
410 Capitol Avenue
Hartford, CT 06134

Dear Dr. Mullen:

I write today on behalf of Comprehensive Orthopaedics and Musculoskeletal Care in support of the creation of an orthopedic-focused ambulatory surgery center, jointly owned and operated by MidState Medical Center, The Hospital of Central Connecticut and Southington area surgeons. As central Connecticut's premiere practice for the treatment of orthopaedic disease and injuries of the musculoskeletal system, we believe a dedicated surgical center would greatly benefit patients in the Southington market. We plan to participate in the project and utilize the center if the CON is approved.

From our careful study of various institutional models, we believe that a physician-hospital joint venture is well-suited to both the current healthcare delivery system and emerging models, which will reward collaboration, efficiency and organizational flexibility.

Having performed surgery in a number of specialized orthopedic facilities, I can attest that a singular clinical focus creates a superior patient experience. This proposal offers to make that experience available and convenient to Southington patients.

We hope you will approve Hartford HealthCare's CON application.

Sincerely,

Paul H. Zimmering, M.D.
For Comprehensive Orthopaedics and Musculoskeltal Care, LLC

EXHIBIT 21

DRAFT

Organizational Structure

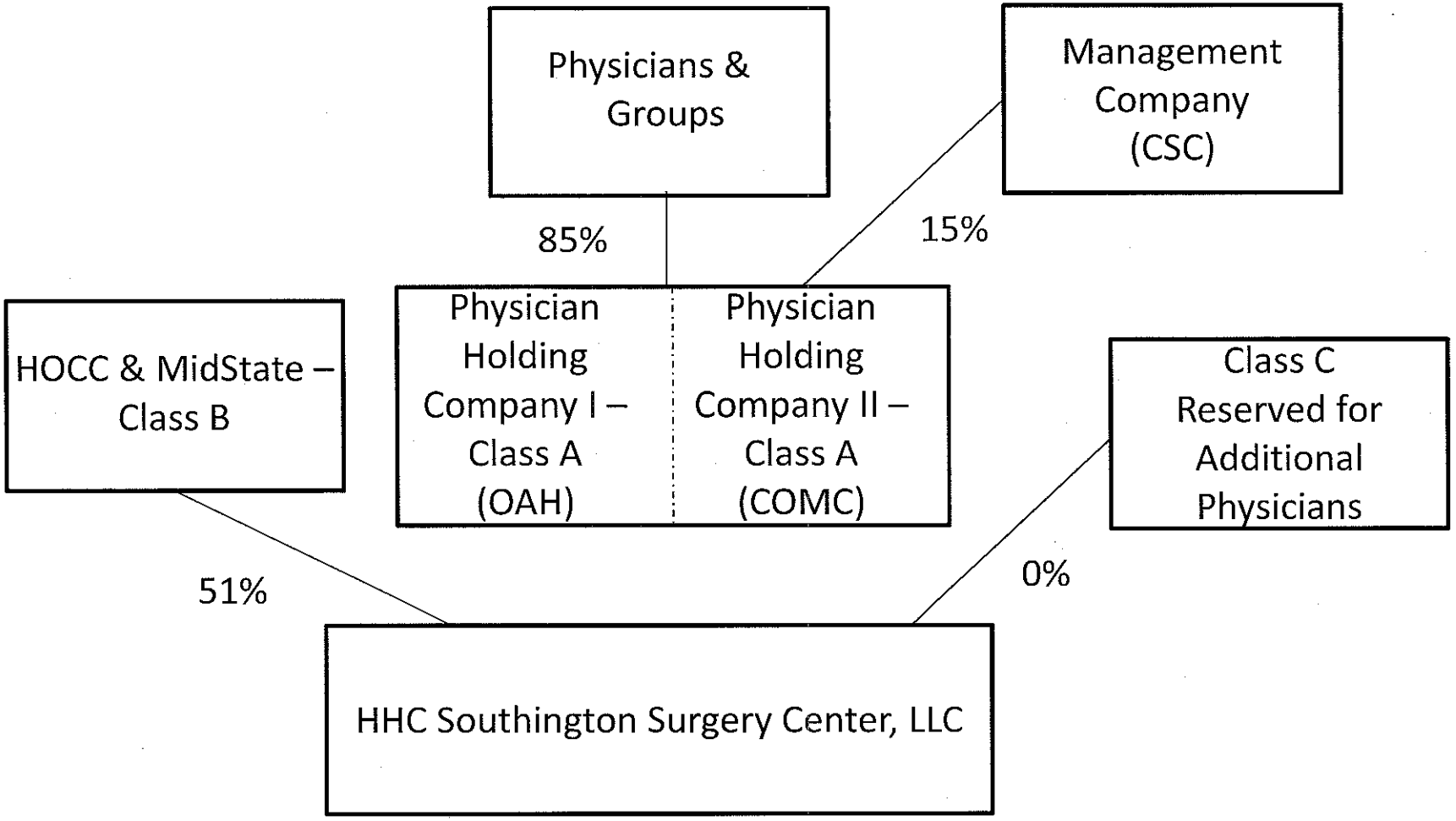


EXHIBIT 22

Ambulatory Surgery Centers

A POSITIVE TREND IN HEALTH CARE

Ambulatory surgery centers (ASCs) are health care facilities which offer patients the opportunity to have selected surgical and procedural services performed outside the hospital setting. Since their inception more than three decades ago, ASCs have demonstrated an exceptional ability to improve quality and customer service while simultaneously reducing costs. At a time when most developments in health care services and technology typically come with a higher price tag, ASCs stand out as an exception to the rule.

A PROGRESSIVE MODEL FOR SURGICAL SERVICES

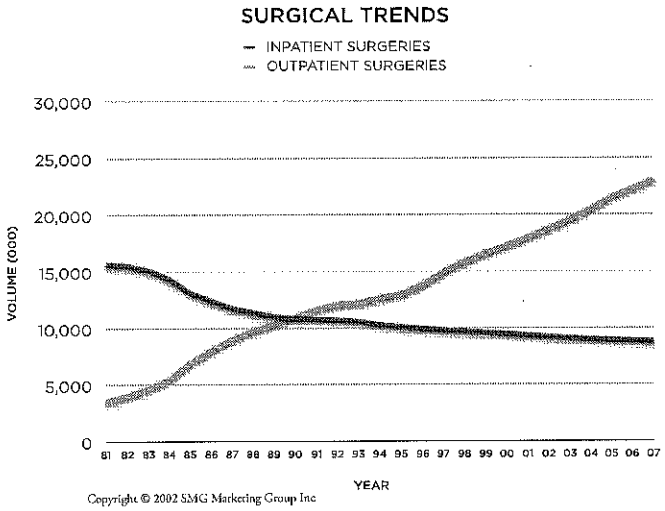
As our nation struggles with how to improve a troubled health care system, the experience of ASCs is a rare example of a successful transformation in health care delivery.

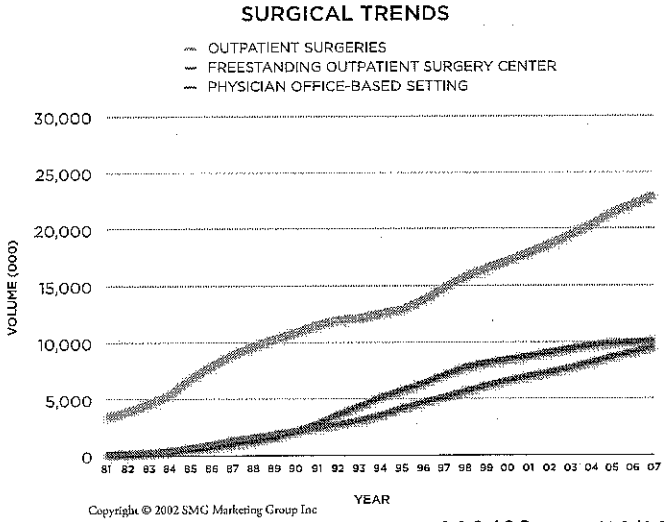
Thirty years ago, virtually all surgery was performed in hospitals. Waits of weeks or months for an appointment were not uncommon, and patients typically spent several days in the hospital and several weeks out of work in recovery. In many countries, surgery is still like this today, but not in the United States.

Physicians have led the development of ASCs. The first facility was opened in 1970 by two physicians who saw an opportunity to establish a high-quality, cost-effective alternative to inpatient hospital care for surgical services. Faced with frustrations like scheduling delays, limited operating room availability, and challenges in obtaining new equipment due to hospital budgets and policies, physicians were looking for a better way - and developed it in ASCs.

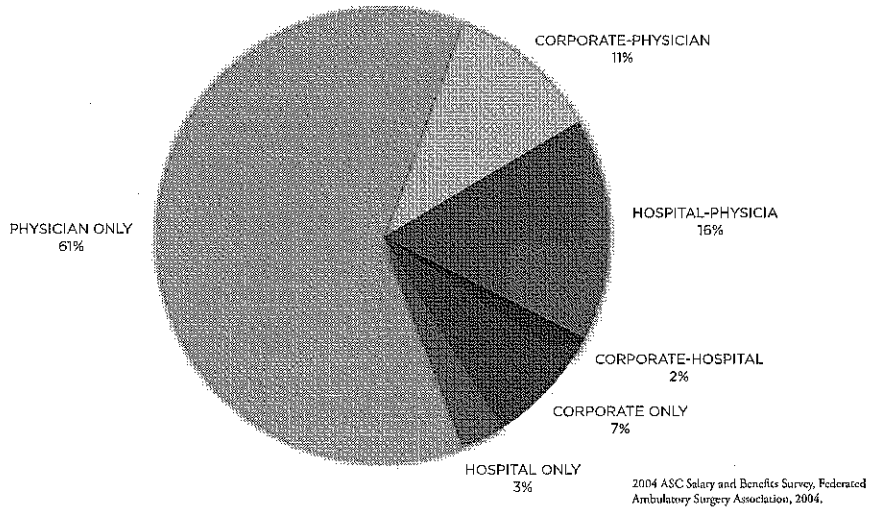
Physicians continue to provide the impetus for the development of new ASCs. By operating in ASCs instead of hospitals, physicians gain the opportunity to have more direct control over their surgical practices.[1] In the ASC setting, physicians are able to schedule procedures more conveniently, assemble teams of specially-trained and highly skilled staff, ensure the equipment and supplies being used are best suited to their technique, and design facilities tailored to their specialties. Simply stated, physicians are striving for, and have found in ASCs, the professional autonomy over their work environment and over the quality of care that has not been available to them in hospitals. These benefits explain why physicians who do not have ownership interest in ASCs (and therefore do not benefit financially from performing procedures in an ASC) choose to work in ASCs in such high numbers.

Given the history of their involvement with making ASCs a reality, it is not surprising physicians continue to have ownership in virtually all (90%) ASCs. But what is more interesting to note is how many ASCs are jointly owned by local hospitals that now increasingly recognize and embrace the value of the ASC model. According to the most recent data available, hospitals have ownership interest in 21% of all ASCs; 3% are owned entirely by hospitals.[2]





ASC OWNERSHIP STRUCTURE



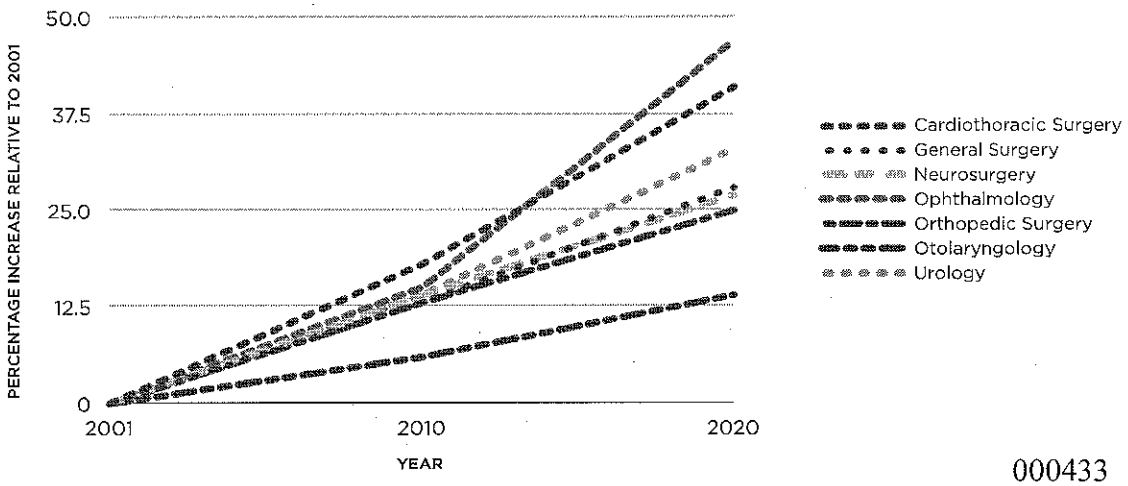
2004 ASC Salary and Benefits Survey, Federated Ambulatory Surgery Association, 2004.

ASCs ALLOW PHYSICIANS TO WORK EFFICIENTLY

A recent analysis examined the impact of the aging population on the demand for surgical procedures and attendant need for surgical subspecialists. This study concluded that the aging population would be a major force in driving significant growth in the demand for surgical services. The forecasted growth in work by the year 2020 varied from 14 percent to 47 percent, depending on specialty.[3] Meeting these surgical needs will be a challenge. Solutions include increasing the number of surgical residency positions, increasing the workloads of surgeons in the workforce, and improving the efficiency of surgeons.

Utilizing settings that allow physicians to practice efficiently will help mitigate the impact of the aging population on the anticipated shortage in the surgery workforce. ASCs offer physicians the ability to work more efficiently and are therefore uniquely positioned to play an important role in managing the increased need for surgical services as it arises in the years ahead.

FORECASTED DEMAND GROWTH IN THE NUMBER OF PROCEDURES BY SPECIALTY



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Etzioni DA, Liu JH, Maggard MA, Ko CY. The aging population and its impact on the surgery workforce. Ann Surg. 2003 Aug;238(2):170-7.

ASCs ARE HIGHLY REGULATED TO ENSURE QUALITY AND SAFETY

Health care facilities in the United States are highly regulated by federal and state entities. ASCs are not excluded from this oversight.

The safety and quality of care offered in ASCs is evaluated by independent observers through three processes: state licensure, Medicare certification and voluntary accreditation.

Most states require ASCs to be licensed in order to operate. Each state determines the specific requirements ASCs must meet for licensure. Most state licensure programs require rigorous initial and ongoing inspection and reporting.

All ASCs serving Medicare beneficiaries must be certified by the Medicare program. In order to be certified, an ASC must comply with standards developed by the federal government for the specific purpose of ensuring the safety of the patient and the quality of the facility, physicians, staff, services and management of the ASC. The ASC must demonstrate compliance with these Medicare standards initially and on an ongoing basis.

In addition to state and federal inspections, many ASCs choose to go through voluntary accreditation by an independent accrediting organization. Accrediting organizations for ASCs include the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the Accreditation Association for Ambulatory Health Care (AAAHC), the American Association for the Accreditation of Ambulatory Surgery Facilities (AAAASF) and the American Osteopathic Association (AOA). ASCs must meet specific standards during on-site inspections by these organizations in order to be accredited. All accrediting organizations require an ASC to engage in external benchmarking, which allows the facility to compare its performance to the performance of other ASCs.

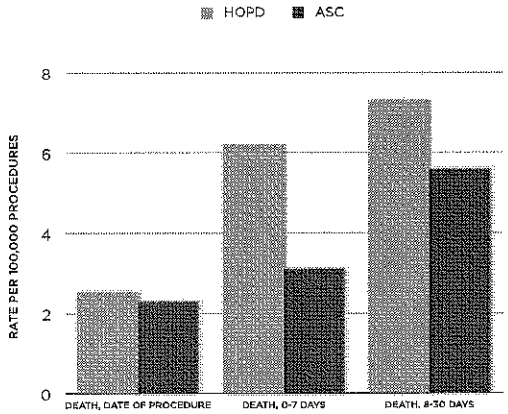
In addition to requiring certification in order to participate in the Medicare program, federal regulations also limit the scope of surgical procedures reimbursed in ASCs.[5] Generally, services are limited to elective procedures with short anesthesia and operating times not requiring an overnight stay. These limitations do not apply to hospital outpatient departments (HOPDs).[6]

The federal government views ASCs and HOPDs as distinct types of providers. As a result, the federal regulations governing HOPDs and ASCs differ. Another reason for differing regulations is that, in a hospital, the same operating room may be used interchangeably to provide services to both inpatients and outpatients. For example, a procedure room in the HOPD may be used to perform a service for an inpatient and then used to perform the same procedure for an ambulatory patient who is discharged home immediately thereafter. In other words, ambulatory patients seen on an outpatient basis in an HOPD may utilize exactly the same facilities used to provide services to patients who have been admitted to the hospital. Consequently, the inpatient standards for hospitals are applied to HOPDs.[7]

On the other hand, ASCs provide services in facilities specifically designed to perform selected outpatient surgical services. The different requirements developed by the federal government appropriately reflect the fundamental differences in the hospital setting versus the ASC.[8]

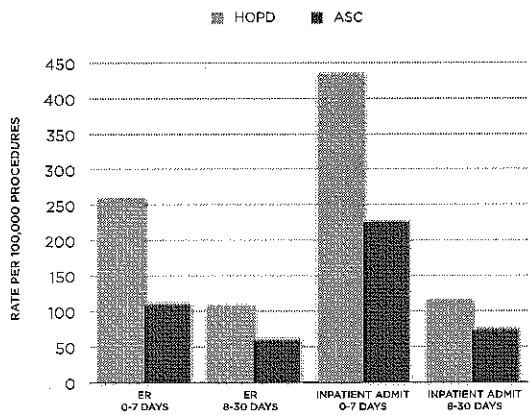
ASCs consistently perform as well as, if not better than, HOPDs when quality and safety is examined. A recent study[9] included an examination of the rates of inpatient hospital admission and death in elderly patients following common outpatient surgical procedures in HOPDs and ASCs. Rates of inpatient hospital admission and death were lower in freestanding ASCs as compared to HOPDs. Even after controlling for factors associated with higher-risk patients, ASCs had low adverse outcome rates.

RATE OF ADVERSE EVENTS: DEATH



Fleisher LA, Pasternak LR, Herbert R, Anderson GF. Inpatient hospital admission and death after outpatient surgery in elderly patients: importance of patient and system characteristics and location of care. Arch Surg. 2004 Jan;139(1):67-72.

RATE OF ADVERSE EVENTS: ER VISIT OR INPATIENT ADMISSION



Fleisher LA, Pasternak LR, Herbert R, Anderson GF. Inpatient hospital admission and death after outpatient surgery in elderly patients: importance of patient and system characteristics and location of care. Arch Surg. 2004 Jan;139(1):67-72.

SPECIFIC FEDERAL REQUIREMENTS GOVERNING ASCs

In order to participate in the Medicare program, ASCs are required to meet certain conditions set by the federal government designed to ensure the facility is operated in a manner that ensures the safety of patients and the quality of services. Some of these requirements are highlighted in more detail below.

ASCs are required to maintain complete, comprehensive and accurate medical records. The content of these records must include a medical history and physical examination relevant to the reason for the surgery and the type of anesthesia planned. In addition, a physician must examine the patient immediately before surgery to evaluate the risk of anesthesia and the procedure to be performed. Prior to discharge each patient must be evaluated by a physician for proper anesthesia recovery.

CMS requires ASCs to ensure patients do not acquire infections during their care at these facilities. ASCs must establish a program for identifying and preventing infections, maintaining a sanitary environment, and reporting outcomes to appropriate authorities. The program must be one of active surveillance and include specific procedures for prevention, early detection, control, and investigation of infectious and communicable diseases in accordance with the recommendations of the Centers for Disease Control. In fact, ASCs have historically had very low infection rates.[10]

A registered nurse trained in the use of emergency equipment and in cardiopulmonary resuscitation must be available whenever a patient is in the ASC. To further protect patient safety, ASCs are also required to have an effective means of transferring patients to a hospital for additional care in the event an emergency occurs. Written guidelines outlining arrangements for ambulance services and transfer of medical information are mandatory. An ASC must have a written transfer agreement with a local hospital, or all physicians performing surgery in the ASC must have admitting privileges at the designated hospital. Although these safeguards are in place, hospital admissions as a result of complications following ambulatory surgery are rare.[9,11]

Continuous quality improvement is an important means of assuring patients are receiving the best care possible. ASCs are required to implement and monitor policies that ensure the facility provides quality health care in a safe environment. An ASC, with the active participation of the medical staff, is required to conduct an ongoing, comprehensive assessment of the quality of care provided.

The excellent outcomes associated with ambulatory surgery reflect the commitment that the ASC industry has made to quality and safety. One of the many reasons that ASCs continue to be so successful with patients, physicians and insurers is their keen focus on ensuring the quality of the services provided.

Medicare Requirements for ASCs and Hospitals Are The Same Where Services are Comparable

Required Standards	ASC	Hospital
Compliance with state licensure law	☑	☑
Governing body	☑	☑
Surgical services	☑	☑
Evaluation of quality	☑	☑
Environment	☑	☑
Medical staff	☑	☑
Nursing services	☑	☑
Medical records	☑	☑
Pharmaceutical services	☑	☑
Laboratory services	☑	☑
Radiologic services	☑	☑

Source: 42 CFR 416, 42 CFR 482

THE ASC INDUSTRY IS COMMITTED TO REPORTING QUALITY MEASURES

A fundamental change in the way the government assures the quality of health care services is well underway. The Department of Health and Human Services has launched its Quality Initiative to assure quality health care through accountability and public disclosure.

The ASC industry is excited to have the opportunity to make its excellent outcomes more widely known to the public through this initiative. Leaders from the ASC industry, along with associations and related organizations with a focus on health care quality and safety, have come together in a collaborative effort to identify specific measures for quality appropriate to ASCs. This group, the ASC Quality Collaboration, strongly endorses the vision that measures of quality which are appropriate to ASCs should be congruent with measures utilized for other outpatient surgery settings. The continued development of these measures will involve a number of different stakeholders including ASC clinical and administrative leaders, health policy researchers, CMS and other key federal and state governmental agencies. The group will also work with the National Quality Forum to achieve consensus on the proposed quality measures.

PATIENT SATISFACTION

Patient satisfaction is a hallmark of the ASC industry. This year, more than eight million Americans will undergo surgery in an ASC. Virtually all of those patients will return home the same day and will resume most normal activities within a matter of days. Talk to these patients and you will hear how overwhelmingly satisfied they are with their ASC experience. Recent surveys show average patient satisfaction levels in ASCs exceeding 90 percent.[4] Safe and high quality services, ease of scheduling, greater personal attention and lower costs are among the main reasons cited for the growing popularity of ASCs as a place for having surgery.

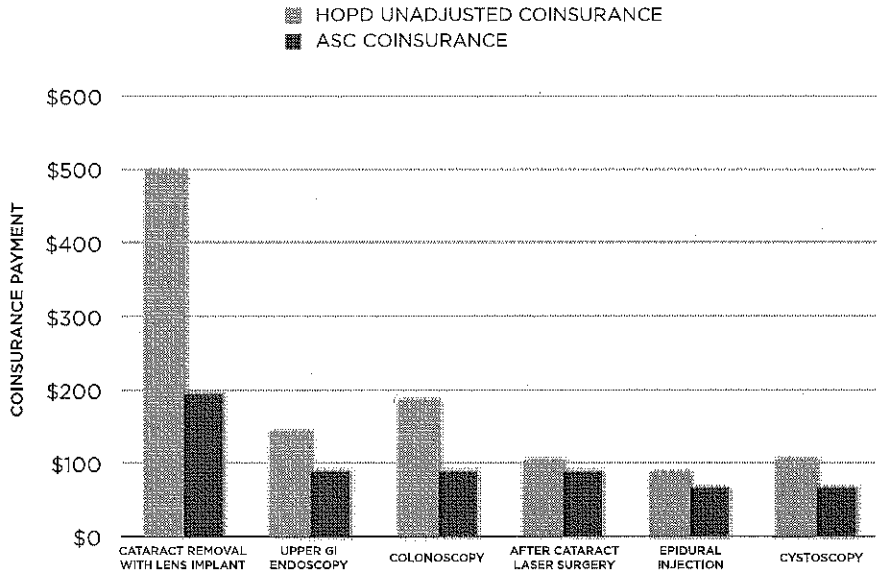
ASCs PROVIDE CARE AT SIGNIFICANT COST SAVINGS

Not only are ASCs focused on ensuring patients have the best surgical experience possible, the care they provide is also more affordable. One of the reasons ASCs have been so successful is they offer valuable surgical and procedural services at a lower cost when compared to hospital charges for the same services. Beginning in 2007, Medicare payments to ASCs will be lower than or equal to Medicare payments to HOPDs for comparable services for 100 percent of procedures.[12]

In addition, patients typically pay less coinsurance for procedures performed in the ASC than for comparable procedures in the hospital setting. For example, a Medicare beneficiary could pay as much as $496 in coinsurance for a cataract extraction procedure performed in a HOPD, whereas that same beneficiary's copayment in the ASC would be only $195; a Medicare beneficiary could pay as much as $186 in coinsurance for a colonoscopy performed in a HOPD, whereas that same beneficiary's copayment for the same procedure performed in an ASC would be only $89. By having surgery in the ASC the patient may save as much as 61%, or more than $300, compared to their out-of-pocket coinsurance for the same procedure in the hospital.

Without the emergence of ASCs as an option for care, health care expenditures would have been billions of dollars higher over the past three decades. Studies have shown the Medicare program would pay approximately $464 million more per year if all procedures performed in an ASC were instead furnished at a hospital.[13] Private insurance companies tend to save similarly, which means employers also incur lower health care costs by utilizing ASC services. Employers and insurers, particularly managed care entities, are driving ASC growth in many areas, because they recognize ASCs are able to deliver consistent, high quality outcomes at a significant savings. As the number of surgical procedures performed in ASCs grows, the Medicare program may realize even greater savings - and of course Medicare beneficiaries will realize additional out-of-pocket savings as well.[13]

MEDICARE COINSURANCE RATES ARE LOWER IN ASCs



MedPAC, Report to the Congress: Medicare Payment Policy, March 2004.

THE ASC INDUSTRY SUPPORTS DISCLOSURE OF PRICING INFORMATION

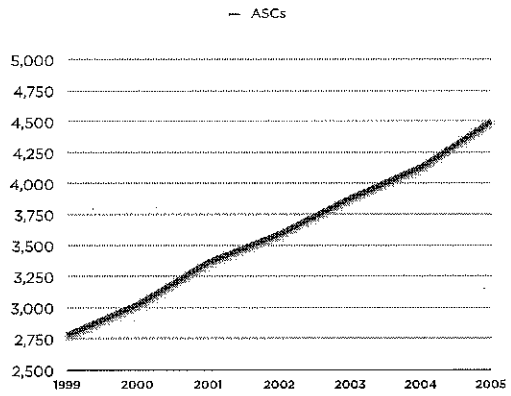
It is the general practice of ASCs to make pricing information available to the patient in advance of surgery. The industry is eager to make price transparency a reality, not only for Medicare beneficiaries, but for all patients. To offer maximum benefit to the consumer, these disclosures should outline the total price of the planned surgical procedure and the specific portion for which the patient would be responsible. This will empower health care consumers as they evaluate and compare costs for the same service amongst various health care providers.

ASCs IMPROVE PATIENT CHOICE, DEMAND FOR ASCS GROWS

Technological advancement has allowed a growing range of procedures to be performed safely on an outpatient basis. Faster acting and more effective anesthetics and less invasive techniques, such as arthroscopy, have driven this outpatient migration. Procedures that only a few years ago required major incisions, long-acting anesthetics and extended convalescence can now be performed through closed techniques utilizing short-acting anesthetics, and with minimal recovery time. As medical innovation continues to advance, more and more procedures will be able to be performed safely in the outpatient setting.

The number of ASCs continues to grow in response to demand from the key participants in surgical care – patients, physicians and insurers. This demand has been made possible by technology, but has been driven by high levels of patient satisfaction, efficient physician practice, high levels of quality and the cost savings that have benefited all. The number of Medicare certified ASCs has grown from 2786 in 1999 to 4506 in 2005, with an average annual growth rate of 8.3%.[14]

NUMBER OF MEDICARE-CERTIFIED ASCs



MedPAC, Data Book, June 2006.

Further impetus to future ASC growth has been given by MedPAC, which has recommended that the CMS list of approved ASC procedures be expanded. This would allow a broader range of choice for patients and surgeons. Specifically, MedPAC has recommended the procedures approved for the ASC setting be revised so that ASCs can receive payment for any surgical procedure, with the exception of those surgeries requiring an overnight stay or which pose a significant safety risk when furnished in an ASC.8 Adoption of these recommendations would allow Medicare beneficiaries to access an extended range of surgical services – a range of surgical services which is already available to patients with private insurance.[15]

ASCs WILL CONTINUE TO LEAD INNOVATION IN OUTPATIENT SURGICAL CARE

As leaders of the revolution in surgical care who led to the establishment of affordable and safe outpatient surgery, the ASC industry has shown itself to be ahead of the curve in identifying promising avenues for improving the delivery of health care.

With a solid track record of performance in stakeholder satisfaction, safety, quality and cost management, the ASC industry is already embracing the changes that will allow it to continue to play a leading role in raising the standards of performance in the delivery of outpatient surgical services.

As always, the ASC industry welcomes any opportunity to clarify the services it offers, the regulations and standards governing its operations, and the ways in which it ensures safe, high-quality care for patients.

POLICY CONSIDERATIONS

Given the continued fiscal challenges posed by administering health care programs, policy makers and regulators should continue to focus on fostering innovative methods of health care delivery that offer safe, high-quality care so progressive changes in the nation's health care system can be implemented.

Support should be reserved for those policies that promote the utilization of sites of service providing more affordable care while maintaining high quality and safety standards. In light of the many benefits ASCs have brought to the nation's health care system, it will be important for future payment and coverage policies to continue to strengthen access to and utilization of ASCs.

ENDNOTES

1 "Ambulatory Surgery Centers." Encyclopedia of Surgery. Ed. Anthony J. Senagore. Thomson Gale, 2004.

2 2004 ASC Salary and Benefits Survey, Federated Ambulatory Surgery Association, 2004.

3 Etzioni DA, Liu JH, Maggard MA, Ko CY. The aging population and its impact on the surgery workforce. Ann Surg. 2003 Aug;238(2):170-7.

4 Press Ganey Associates, 2004.

5 Centers for Medicare and Medicaid Services ASC Website, http://www.cms.hhs.gov/center/asc.asp

6 70 Fed. Reg. pp.68916-68964, November 10, 2005.

7 42 C.F.R. §482

8 42 C.F.R. §416

9 Fleisher LA, Pasternak LR, Herbert R, Anderson GF. Inpatient hospital admission and death after outpatient surgery in elderly patients: importance of patient and system characteristics and location of care. Arch Surg. 2004 Jan;139(1):67-72.

10 FASA, FASA Outcomes Monitoring Project, 4th Quarter 2005

11 Natof HE. Complications associated with ambulatory surgery. JAMA. 1980 Sep 5;244(10):1116-8.

12 Deficit Reduction Act of 2005.

13 MedPAC, Report to the Congress: Medicare Payment Policy, March 2004.

14 MedPAC, Data Book, June 2006.

15 Thomson Medstat, MarketScan® Outpatient Claims Data, 2005.

This report was prepared by the ASC Coalition and is further supported by the following organizations:

Alabama Ambulatory Surgery Association
American Association of Ambulatory Surgery Centers
AmSurg
Arizona Ambulatory Surgery Center Association
Arkansas Ambulatory Surgery Association
California Ambulatory Surgery Association
Colorado Ambulatory Surgery Center Association
FASA
Florida Society of Ambulatory Surgical Centers
Foundation for Ambulatory Surgery in America
Freestanding Ambulatory Surgery Center Association of Tennessee
Georgia Society of Ambulatory Surgery Centers
Healthmark Industries Co
HealthSouth
Idaho Ambulatory Surgery Center Association
Illinois Freestanding Surgery Center Association
Indiana Federation of Ambulatory Surgical Centers
Kansas Association of Ambulatory Surgery Centers

Kentucky Ambulatory Surgery Center Association
Maine Ambulatory Surgery Center Coalition
Maryland Ambulatory Surgical Association
Mississippi Ambulatory Surgery Association
Missouri Ambulatory Surgery Center Association
National Surgical Care
Nevada Ambulatory Surgery Association
New Hampshire Ambulatory Surgical Association
NovaMed
Ohio Association of Ambulatory Surgery Centers
Pennsylvania Ambulatory Surgery Association
South Carolina Ambulatory Surgery Center Association
South Dakota Association of Specialty Care Providers
Symbion Healthcare
Texas Ambulatory Surgery Center Society
United Surgical Partners International
Utah Ambulatory Surgery Center Association
Washington Ambulatory Surgery Center Association

Provided to You Courtesy of

The American Society for Gastrointestinal Endoscopy
For information, call Randy Fenninger at 202.833.0007

EXHIBIT 23

DRAFT

SOUTHINGTON ASC

DEVELOPMENT AND MANAGEMENT SERVICES AGREEMENT

THIS DEVELOPMENT AND MANAGEMENT SERVICES AGREEMENT (the "Agreement") is made and entered into as of this ___ day of ____ 2013, to be effective as provided herein, by and among **CONSTITUTION SURGERY CENTERS, LLC**, a Connecticut limited liability company ("CSC"), **HHC SOUTHINGTON ASC, LLC**, a Connecticut limited liability company ("LLC"), and, as to Sections 10 and 12 of this Agreement only, **THE HOSPITAL OF CENTRAL CONNECTICUT**, a Connecticut nonstock corporation ("HOCC"); and **MIDSTATE MEDICAL CENTER**, a Connecticut nonstock corporation ("Midstate"). HOCC and Midstate collectively hereinafter sometimes referred to as (the "HHC entities").

R E C I T A L S :

A. HOCC and Midstate, each a hospital affiliate of HHC, and a holding company (the original owner of which shall be CSC and up to eighty-five percent (85%) ownership by individual or groups of surgeons ("Holding Company"), (collectively, the "Members") desire to jointly develop, construct and operate an ambulatory surgery facility (the "Facility"). The Members intend to operate the Facility as a joint venture organized as a Connecticut limited liability company (the "LLC").

B. CSC has acquired certain training, technical skills and experience with respect to the management of ambulatory surgery facilities, and the LLC desire to obtain the services of CSC to assist in the development and management of the Facility.

C. CSC is willing to render services as described in this Agreement in accordance with the terms and conditions hereinafter set forth.

1. TERM.

The initial term of this Agreement ("Initial Term") shall commence on _____ (the "Effective Date"), and shall run through the fifth (5th) anniversary of the date the Facility commences operations (the "Commencement Date"). Following the Initial Term, this Agreement shall automatically renew for one three (3) year period (the "First Renewal Term"). After the Initial Term and the First Renewal Term this Agreement shall be renewed only by the mutual written agreement of the CSC and the LLC. The Initial Term and the First Renewal Term are collectively referred to in this Agreement as the "Term."

2. RETENTION OF AUTHORITY.

Throughout the Term, the LLC shall retain all authority and control over the business, policies, operations and assets of the Facility, except as specifically provided herein, and the LLC, acting through its Board of Managers (the "Board"), shall retain the final authority and responsibility for all matters pertaining to the operations, accreditation and licensure of the Facility. The LLC does not delegate to CSC any of the powers, duties and responsibilities required to be retained by the LLC under law and shall be the owner and holder of all certificates and licenses issued under authority of law for operation of the Facility by the LLC. The LLC shall be the owner and holder of all accreditation certificates and contracts entered into by

or on behalf of the LLC. CSC shall perform the Development and Management Services (as defined below) in accordance with the policies, bylaws and directives of the LLC. The LLC shall communicate all relevant policies and directives to CSC. CSC shall be entitled to rely on and assume the validity of communications from, and shall report to, the Board, or its designee, or, at the discretion of the Board, a duly constituted subdivision thereof. All medical and professional matters shall be the LLC's sole responsibility. The relationship between the parties hereto is not one of partners or joint venturers, but rather, CSC is acting as an independent contractor in discharging its duties hereunder and as agent for the LLC in the purchase of any services or tangible personal property to be incorporated into or consumed in the operation of the Facility.

3. DEVELOPMENT SERVICES.

From the Effective Date through the Commencement Date, CSC, working with its affiliate, Constitution Healthcare Strategies, LLC, shall assist the LLC in developing an ambulatory surgery facility by providing the services listed on Exhibit A (the "Development Services").

4. MANAGEMENT SERVICES.

From the Commencement Date and thereafter throughout the Term, CSC shall provide the following services to the Facility (the "Management Services"):

(a) General. Subject to the limitations and conditions set forth in this Agreement (including without limitation CSC obligations under Section 4(j)), CSC, as manager of the Facility, shall have the authority and responsibility to conduct, supervise, and manage the day-to-day operations of the Facility subject to the control of the Board, which shall continue to have final authority in all matters relating to the Facility's operations. CSC shall be expected to exercise its best judgment in its management activities. CSC shall have responsibility and commensurate authority, subject to the written policies of the LLC, for all activities described in this Section 4 and for those activities described in Exhibit B to this Agreement. Although the LLC is delegating the management of the Facility to CSC in accordance with the terms of this Agreement, all decisions with respect to the business and operations of the Facility are subject to approval by the LLC's Board except as otherwise provided herein. CSC shall have no authority to enter into any contracts or obligations on behalf of the LLC except as otherwise expressly delegated to CSC by the Board.

(b) Major Decisions. In conjunction with the performance of its duties as described in this Agreement, CSC shall obtain prior written approval from the LLC's Board prior to undertaking any major decisions ("Major Decisions"). Major Decisions shall be defined as, but not be limited to, the following: (i) Sale of assets out of the ordinary course of business; (ii) Purchase of assets not included in the Facility's Board-approved budget or not related to the business of the Facility; (iii) Incurrence of any debt; (iv) Incurrence of lease obligations by the Facility not in the ordinary course of business; (v) Entering into professional service provider contracts (e.g. Pathology, Anesthesia); (vi) Establishment of or change to Facility fee schedule; (vii) Entering into or termination of any managed care or other third party payer contract; (viii) Approval of annual Facility operating and capital budget; (ix) Capital expenditures in any one fiscal year that total more than $50,000 and are not included in the Facility's Board approved budget; (x) Adjustments to the Facility's wage/salary/benefit program for employees; (xi) Approval and payment of distributions to the LLC's Members; (xii) Establishment of or change in Facility's credentialing policies, procedures or protocols; (xiii) Establishment of or change in Facility's

Quality Assurance Plan, policies, procedures or protocols; (xiv) Taking any action or implementation of any policy that CSC believes could significantly involve an analysis or interpretation of any State or Federal laws, rules or regulations dealing with fraud and abuse or other similar matters; (xv) Entering into any contract or agreement on behalf of the Facility that is not subject to termination without cause on thirty (30) days or less prior notice and involves either the expenditure of or receipt of more than $20,000 by the LLC; (xvi) Establishment of or change in any Facility policy, procedure or protocol dealing with payor mix or the provision of charity care to, or access to the Facility by, all patients or the conduct of any charitable activities pursuant to the Facility's Charity Care Policy; or (xvii) Entering into any agreement or contract on behalf of the Facility with any entity affiliated with the Facility through direct or indirect ownership or by existing contract or agreement. The LLC's Board has the right, at any time during the term of this Agreement, to change the definition of what constitutes Major Decisions to include additional items that require approval by the Board prior to CSC taking any such action. CSC may seek written Board approval before taking any action in addition to one of the Major Decisions which is related to the development or management of the Facility. If there is any reasonable doubt as to whether an action would be considered to be a Major Decision, CSC will seek guidance from the Board.

(c) Account Executive Team. CSC shall provide to the Facility a dedicated account executive team with such team to be comprised of the following persons:

(i) CSC's Executive. A CSC executive, meaning a senior vice president or higher level individual within CSC, who is reasonably acceptable to the LLC will have overall accountability for the quality and value of CSC's services to Facility, and will have overall responsibility for coordination of key initiatives pursued through this Agreement and for CSC's performance of its duties under this Agreement ("CSC Principal"). The CSC Principal, or his/her designee, shall attend the regularly-scheduled meetings of the Board. The CSC Principal shall attend such other meetings as may be necessary to effect the intent of this Agreement, and the Board shall be entitled to a special meeting with a representative of CSC upon reasonable notice. Beginning on the Commencement Date, and prior to the beginning of every calendar year hereafter, the LLC shall provide CSC with a calendar containing the dates of all regularly-scheduled Board meetings. Should the LLC become dissatisfied with the CSC Principal, CSC will remove the CSC Principal and provide the LLC with another CSC Principal reasonably satisfactory to the LLC within no more than thirty (30) days of the initial LLC request.

(ii) Administrator. CSC shall select, employ, supervise and train a Facility administrator who is reasonably acceptable to the LLC (the "Administrator") to oversee, on a fulltime, on-site basis, the execution and performance of the administrative functions of the Facility. The parties acknowledge and agree that neither the Administrator nor CSC shall be ultimately responsible for any medical or professional matters relating to the Facility. The Administrator and CSC may consult with the LLC and make recommendations concerning such matters from time to time; however, the LLC shall be solely responsible for all final decisions and actions taken with respect to medical and professional matters. Should the LLC become dissatisfied with the Administrator, CSC will remove the Administrator and provide the LLC with another Administrator reasonably satisfactory to the LLC within thirty (30) days of the initial LLC request. If the salary or hourly wage to be paid to the Administrator is not within the approved annual budget, such salary or hourly wage shall be approved in writing and in advance by the LLC which approval will not be unreasonably withheld. CSC agrees to obtain LLC's prior

written approval of any increase in the Administrator's salary or hourly wage and any bonus payments if not otherwise within the approved annual budget which approval shall not be unreasonably withheld.

(iii) Responsibility for Employer Obligations. CSC shall be responsible for the payment of compensation, fringe benefits, insurance, licensing fees and employer-paid taxes of all personnel employed by CSC, including without limitation, the CSC Principal and the Administrator, as well as for the maintenance of workers' compensation coverage and occupational health and safety programs to the extent required by applicable law. CSC shall pay all taxes related to its employees, including without limitation, the CSC Principal and the Administrator, (i.e. FICA, FUTA, workers' compensation, state unemployment, etc.).CSC shall comply with all applicable provisions of the Consolidated Omnibus Budget Reconciliation Act ("COBRA") as they pertain to such employees, as well as with any and all other obligations under applicable federal, state and local laws relating to an employer's obligations toward its employees. Notwithstanding the foregoing, if the LLC or the HHC Entities determine, or is advised, that it is required by law to compensate or pay applicable taxes for, or provide employee benefits of any kind (including contributions to government-mandated, employment-related insurance and similar programs) to or on behalf of, CSC or any person employed or retained by or on behalf of CSC, CSC shall reimburse LLC or the HHC Entities, as appropriate, for any such expenditures within thirty (30) days after being notified of such expenditure.

(d) Management Plan and Reports. CSC shall annually prepare and submit to the Board for its review and approval an annual management plan (the "Management Plan") designed to implement the goals and objectives for the Facility, which will set forth the methods and resources to be used and a proposed timetable to be observed to achieve such goals and objectives. Upon acceptance of the final Management Plan as revised and approved by the Board, the Board will use reasonable commercial efforts to take or cooperate with the actions recommended. The initial proposed Management Plan shall be delivered to the Board within sixty (60) days of the Effective Date, and any subsequent proposed plans shall be delivered to the Board no later than the last day of each fiscal year of the LLC. CSC shall deliver to the Board an annual written report on the status of the goals and objectives set forth in the Management Plan approved by the Board. The Board may modify the Management Plan from time to time, with input from CSC.

(e) Other Plans and Reports. CSC agrees to provide to the LLC, for its review and approval, the following plans and reports:

(i) Consulting Reports. CSC will cause copies of all consulting reports prepared pursuant to this Agreement to be delivered to the Board.

(ii) Monthly Executive Summaries. CSC, with assistance from the LLC's personnel, will provide the Board with a monthly executive summary, "The CSC Report". Such summaries will contain sections describing: (1) the overall progress of the LLC in implementing the Management Plan; (2) the performance of all the LLC's management and administrative personnel and their effectiveness in implementing the Management Plan approved by the Board; (3) the status of relationships between the LLC and its customers, chiefly surgeons and patients

utilizing the Facility; (4) such other information which CSC considers appropriate for Board discussion; and (5) such other matters as the Board shall request from time to time.

(f) Advisory Services. CSC will provide consulting support and recommendations to the LLC's management and the Board regarding the following:

(i) Financial Statements. (This language may require some further revision to comport with actual structure of responsibilities and operations at Glastonbury pertaining to financial matters) CSC, working with the LLC's personnel or others , will prepare and deliver to the Board the monthly financial package and monthly financial reports in a timely manner as follows: (1) reports on both the month and year to date basis, (2) balance sheet, (3) statement of income and expenses including explanation of budget variances, (4) cash flow statements, (5) accounts receivable analysis, (6) investment schedules, (7) key financial statistics, and (8) key operating performance statistics. CSC shall not provide audit services, nor perform the functions of a certified public accounting firm, and any fees charged by the LLC's independent auditors shall be the sole responsibility of the LLC.

(ii) Budgets. CSC, with assistance from the LLC's personnel, will prepare and submit to the Board for its approval the yearly budgets for the Facility, including the development of a timeline for budget preparation. CSC shall assist the LLC's management in developing the following budgets each year for review, approval, disapproval or modification by the Board (including such member approvals as required by the LLC's Operating Agreement);

(1) A capital expenditure budget (if appropriate) outlining a program of capital expenditures for the next fiscal year.

(2) An operating budget setting forth an estimate of operating revenues and expenses for the coming fiscal year, together with an explanation of anticipated changes in facility utilization and services offered to patients, charges to patients, payroll rates and positions, non-wage cost increases, and other factors differing significantly from the then current year.

(3) Annual cash flow projections based upon the proposed operating and capital budgets, together with recommendations as to the use of projected cash flow in excess of short-term operating requirements and, if necessary, recommendations as to the sources and amounts of additional cash flow that may be required to meet operating and capital requirements.

(iii) Corporate Compliance. CSC agrees to assist in the development and implementation of and will comply with the requirements of the LLC's compliance program in carrying out its duties under this Agreement, to bring items of potential noncompliance to the attention of the LLC when discovered by CSC and, at the direction of the Board, to take corrective action prescribed by the Board once any item of noncompliance is identified; provided that the costs (including, without limitation, legal and consulting fees and expenses incurred in undertaking any corrective action) required to develop, implement, update and maintain the compliance program shall be the sole responsibility of the LLC. In providing development, management and consulting services to Facility and performing its obligations hereunder, CSC

shall act in accordance with all applicable federal, state and local statutes, including without limitation the applicable Medicare conditions of participation, and shall act in good faith.

(iv) Contract Review. CSC will negotiate proposed contracts for services by medical, paramedical and other persons and organizations, and for the services concerning the maintenance and repair of the physical plant of the Facility and make recommendations to the Board regarding such contracts. All such consulting support and recommendations by CSC shall be provided from a business perspective and shall not involve any legal analysis of such contracts. CSC will not negotiate managed care contracts for the Facility.

(v) Ownership Transfers. CSC will advise as to the structuring of transfers and sales of units of the Facility as well as coordinating the syndication of interests in the holding company organized by CSC to physician investors (other than the original Members of the LLC). The LLC agrees to consult its legal counsel with respect to all such matters.

(vi) New Procedures. CSC shall evaluate opportunities to provide new clinical procedures, perform a feasibility analysis of each proposed procedure and provide guidance through the process of implementing new services, provided that CSC will not provide medical or clinical advice as part of its services.

(vii) Financial Consultation. CSC will recommend earnings distribution practices, evaluate debt financing alternatives, analyze capital equipment purchases and evaluate appropriate levels of general and medical liability insurance coverage.

(viii) Performance Measurement. CSC will advise as to the measurement of financial performance, productivity and expense management as follows: CSC shall provide appropriate national benchmarks for all the Facility's operating and financial performance indicators, a monthly report comparing the Facility's performance to the benchmark targets, and recommendations on ways to meet or exceed such targets. CSC shall conduct an annual surgeon satisfaction survey and shall summarize and report the results of such survey to the Board for consideration and appropriate action.

(ix) Quality Measurement. CSC will advise as to the measurement of quality and safety as follows: CSC shall provide current national quality performance benchmarks and advise the LLC's management on the appropriate accumulation of data and information and will provide a monthly report comparing the Facility's quality performance to such benchmarks for the Board's consideration and action.

(x) Audit Oversight. CSC shall work directly with the LLC's audit firm to assure the timely completion of the annual financial audit of the Facility.

(xi) Accreditation. Approximately six (6) months before each scheduled accreditation survey, CSC shall perform a mock survey of the Facility and shall report its findings, along with a corrective action plan, to the Board.

(g) Facility Personnel. The LLC shall be the employer of all non-professional Facility personnel, other than the Administrator and other personnel employed by CSC or its Affiliates who are

performing Development or Management Services for the Facility, all of whom shall nevertheless be subject to the supervision of CSC. CSC shall design and implement training programs for all managerial and administrative personnel at the Facility and shall ensure that such personnel are properly qualified and trained and satisfy, at a minimum, all educational and competency requirements established by federal and state regulatory agencies and accrediting bodies. CSC shall cooperate with the LLC in addressing employee issues, including without limitation, enforcing the LLC's policies and procedures, participating in employment-related investigations, providing training to all Facility personnel regarding employment issues (e.g., anti-harassment, diversity, etc.), assisting in resolving employee complaints and in the defense of employment-related claims, and taking responsibility for workplace safety and other related issues. The LLC shall retain ultimate authority over the hiring, disciplining and termination of all management and administrative personnel working at the Facility. CSC shall be responsible for preparing an annual evaluation of the Administrator and preparing recommended evaluations for all LLC employees working at the Facility. If CSC is reasonably dissatisfied with any of the LLC's employees working at the Facility, upon request of CSC, the LLC will remove such employee and appoint another employee reasonably acceptable to CSC in accordance with LLC's policies and procedures.

(h) Notices to LLC. CSC shall promptly notify the LLC of the following and all relevant facts related thereto:

(i) Any occurrence, event or condition known to CSC that could materially impair the health or safety of any patients of the Facility or the ability of CSC to perform its obligations under this Agreement;

(ii) Any defective or inoperative equipment at the Facility;

(iii) The existence and basis of any charges, suit, investigation, audit disciplinary action or other proceeding against CSC or any member of the Facility's Medical Staff or LLC employee or any subcontractor or service contractor to the Facility or any Affiliate of CSC and any claim by any plaintiff, governmental agency, health care facility, peer review organization or professional society which involves any allegation of incompetence or professional misconduct by CSC or any employees or service providers of the Facility; and

(iv) Any issues relating to the Facility's Medical Staff or any Facility personnel, including without limitation, complaints, allegations, threats or incidents of actual or alleged misconduct, and workplace safety violations; work-related injuries and accidents; changes in job functions and duties; any misclassifications regarding workers' compensation; union organizing activities; claims of harassment or unfair or abusive treatment.

(i) Standards of Conduct. CSC shall perform its duties and obligations under this Agreement in a competent, professional and ethical manner in compliance with all rules of professional conduct, applicable federal and state laws and regulations and standards of applicable accreditation organizations, including the standards of the Joint Commission ("Joint Commission") or the Accreditation Association for Ambulatory Health Care (AAAHC).

(j) Community Benefit Objectives. The parties hereto acknowledge that the purpose and business of the LLC shall be to operate the Facility to promote health and provide services in a non-discriminatory manner to individuals without regard to race, creed, national origin, gender, payor source

or the ability to pay for services, to provide health care services in a manner that furthers the charitable purposes of HOCC and Midstate by promoting health for a broad cross-section of the community, and to generally engage in such other business and activities and to do any and all other acts and things in furtherance of the purposes of the LLC as set forth in its Operating Agreement and the Charity Care Policy, each as amended from time to time. The Facility shall be operated and managed in a manner that will not cause either HOCC or Midstate to act other than exclusively in furtherance of its tax-exempt purpose, adversely affect its tax-exempt status under Section 501(c)(3) of the Internal Revenue Code, or generate income for HOCC or Midstate which is subject to federal taxation. The duty of the LLC to operate in a manner that furthers the charitable purposes of HOCC and Midstate as described above overrides any duty of the LLC to operate for the financial benefit of its members. At the request of CSC, the individuals serving on the Board shall provide timely guidance and assistance to CSC in accomplishing said purposes, including but not limited to those set forth in the preceding sentence. CSC, with the support and guidance of the Board shall: (i) implement the Charity Care Policy and, (ii) provide the Board with quarterly reports regarding the LLC's compliance with the Charity Care Policy.

5. RESTRICTIVE COVENANT.

(a) Covenant Not to Hire. During the Term, and for a period of at least one (1) year following the termination or expiration of this Agreement, no party will, directly or indirectly, through an Affiliate or separate employee leasing or staffing company or otherwise, employ or solicit for employment any employee of another party hereto, unless the other party gives its written consent thereto. Each party recognizes and agrees that monetary damages are not an adequate remedy for a breach of this covenant not-to-hire. Each party agrees that irreparable damage will result to the impacted other party and its business from a breach of this covenant, and that, in the event of a breach or a threatened breach of this covenant, in addition to monetary damages, the other party shall be entitled to an injunction enjoining such party from violating this covenant.

(b) Covenant Against Conflicting Engagements. During the Term, CSC will not, directly or indirectly, through an Affiliate or otherwise, establish, own, operate, provide services for or invest or otherwise participate in any hospital-based or ambulatory orthopedic surgery center not affiliated with an HHC Entity within those cities set forth on Exhibit C, except for management agreements of CSC that are in existence on the date hereof and any renewals thereof as set forth on Exhibit D . CSC recognizes and agrees that monetary damages are not an adequate remedy for a breach of this restrictive covenant. CSC agrees that irreparable damage will result to the LLC and its business from a breach of this covenant, and that, in the event of a breach or a threatened breach of this covenant, in addition to monetary damages, the LLC shall be entitled to an injunction enjoining CSC from violating this covenant.

6. FEES.

(a) Development Fees. For Development Services rendered by CSC pursuant to this Agreement, HOCC and Midstate shall pay to CSC a development fee of Two Hundred Thousand Dollars ($200,000) in four (4) installments of Fifty Thousand Dollars ($50,000) each payable upon the satisfaction of the designated milestone events for each of the four (4) phases set forth in Exhibit A hereto. All the development fees are in addition to, and not in lieu of, all other payments and reimbursements to be made by the LLC to CSC under the terms of this Agreement. Upon execution of

this Agreement, HOCC and Midstate shall take all necessary steps to initiate and authorize payment of the development fees through wire transfers to CSC's account. .

(b) Management Services Fee. In consideration for the Management Services to be provided to the LLC by CSC during the Term of this Agreement, the LLC shall pay CSC beginning on the Commencement Date a monthly fee (the "Fee") equal to the greater of (i) $12,500 per month or (ii) five percent (5%) of the Facility's monthly Net Revenues until such time as the Facility's annual Net Revenues exceed Fifteen Million Dollars ($15,000,000); four and one-half percent (4.5%) on annual Net Revenues between Fifteen Million Dollars ($15,000,000) and Twenty Million Dollars ($20,000,000); and four percent (4%) on annual Net Revenues in excess of Twenty Million Dollars ($20,000,000) . The Fee shall be payable monthly and shall be prorated based upon any partial calendar month for which payment is due. The term "Net Revenues" shall mean the Facility's gross patient revenues, less contractual allowances, and reasonable reserves for bad debt and charity care determined in accordance with generally acceptable accounting practices, consistently applied. CSC will provide a separate and itemized invoice for the Management Services Fee. CSC will provide a separate and itemized invoice for the Management Services Fee. All fees are in addition to, and not in lieu of, all other payments and reimbursements to be made by the LLC to CSC under the terms of this Agreement. Upon execution of this Agreement, the LLC shall take all necessary steps to initiate and authorize payment of the Fee through wire transfer to CSC's account. Such transfer shall occur on or before the 5th business day of each month for services rendered during the immediately preceding month.

(c) Reimbursement of Costs Relating to the Administrator. The LLC further acknowledges that the Administrator shall be paid a salary or hourly wage by CSC, and, in addition thereto, shall receive benefits from CSC in accordance with CSC's then standard policies (such as health insurance, disability insurance, life insurance and retirement plans). The LLC agrees to pay CSC through wire transfer to CSC's account, on or before the 5th day of the month, before CSC's payroll date, an amount equal to the sum of (i) the salary or hourly wage of the Administrator plus (ii) the actual cost of direct benefits and administrative costs related to CSC's provision of the Administrator plus (iii) CSC's actual costs for statutory benefits related to the provision of the Administrator, such as worker's compensation, FICA, state unemployment and federal unemployment payroll taxes. In addition thereto, the LLC agrees to reimburse CSC for the following reasonable and necessary expenses incurred by CSC with respect to the Administrator: business expenses, relocation and recruitment expenses, interim living expenses, and severance expenses, subject to the LLC's approved budget; provided, however, that CSC shall have obtained the LLC's prior written consent prior to incurring any business expenses, relocation and recruitment expenses or interim living expenses in excess of $2,500 in any calendar month. CSC shall invoice such additional costs and expenses each month to the LLC with such invoice being due and payable within thirty (30) days from the date thereof. It is specifically understood and agreed that all such amounts shall be considered payroll obligations of the LLC for purposes of setting priorities for payment of the LLC's obligations. CSC will provide a separate and itemized invoice for costs relating to the Administrator.

7. DUTY TO COOPERATE.

The parties acknowledge that the parties' mutual cooperation is critical to the ability of CSC to perform its duties hereunder successfully and efficiently. Accordingly, each party agrees to cooperate with the other fully in formulating and implementing goals and objectives which are in the Facility's best interest. For the entire term of this Agreement, the Board shall name an individual Board member as the formal representative of the LLC to CSC. This Board representative shall receive and accept all formal communications from CSC and shall be responsible for transmitting all formal communications on behalf of the LLC to CSC. The LLC may change the Board representative at any time upon providing prior notice to CSC. The LLC shall provide CSC with the following: (i) Work space during on-site visits to include phone, FAX and online internet access if available; (ii) Reasonable access to the LLC Board at agreed-upon or scheduled times; and (iii) Timely, accurate and complete responses to reasonable CSC requests for data and information pertaining to Facility operations.

8. PROPRIETARY INFORMATION.

(a) CSC Systems. CSC retains all ownership and other rights in all systems, manuals, computer software, materials and other information, in whatever form, provided by or developed by CSC in the performance of its obligations hereunder including, without limitation, any systems developed by CSC or licensed to CSC from third parties and used to assist the Facility in performing operational activities in areas such as reimbursement, charge master reviews, and productivity analysis (hereinafter collectively referred to as "CSC Systems"); and nothing contained in this Agreement shall be construed as a license or transfer of such CSC Systems or any portion thereof, either during the Term of this Agreement or thereafter. Upon the termination or expiration of this Agreement, CSC shall have the right to retain all such CSC Systems, and the LLC shall upon request deliver to CSC all such CSC Systems in its possession. Notwithstanding the foregoing, CSC hereby grants to the LLC, and its successors and assigns, a perpetual, royalty-free, fully-paid, non-exclusive right and license to use at the Facility's current location any materials specifically developed for or tailored or designed for the Facility, and all materials, policies, procedures and information delivered through CSC for use at the Facility, including the rights to copy, modify and create derivative works from such CSC for use in the Facility without the express written consent of CSC, but not for any other purpose, after the termination or expiration of this Agreement for any reason. Furthermore, CSC agrees that it will not affix a copyright legend to any written materials specifically prepared for the Facility.

(b) Proprietary Information. Each party recognizes that due to the nature of this Agreement, it will have access to information of a proprietary nature owned by the other party and its Affiliates, including, without limitation, business plans, financial analyses, fee schedules, managed care contracts, computer programs (whether or not completed or in use), operating manuals and similar materials, forms, contracts, policies, procedures and other information used or employed by them for the operation of their facilities and medical offices. Each party acknowledges and agrees that all such information constitutes confidential and proprietary information of the other party and agrees to keep such information and the terms and conditions of this Agreement in strictest confidence. Each party hereby waives any and all right, title and interest in and to such proprietary information of another party and agrees to return all copies of such proprietary information and information related thereto to the applicable party, at the expense of the returning party, upon the expiration or termination of this Agreement.

(c) **Confidentiality.** Each party acknowledges and agrees that the other party and its respective Affiliates are entitled to prevent their competitors from obtaining and utilizing their respective proprietary information. Therefore, each of the parties agrees to hold the proprietary information of the other party and its respective Affiliates in the strictest confidence and not to disclose it or allow it to be disclosed, directly or indirectly, to any person or entity other than as expressly provided herein without such other party's prior written consent. Each party shall disclose proprietary information of the other party only to (i) its employees or consultants who have a need to know such information in connection with the performance of its obligations under this Agreement and who are legally bound to protect the confidentiality of such information to the same extent as provided herein or (ii) to those persons or entities who are employed by or affiliated with the party owning such proprietary information. Each party shall protect the other party's proprietary information by using the same degree of care, but not less than a reasonable degree of care, to prevent the unauthorized use, dissemination, publication of or access to the other party's proprietary information as it uses to protect its own proprietary information.

9. **FACILITIES AND RECORDS.**

(a) **Access to Records.** During the Term, the LLC shall give CSC full access to such portions of Facility, its facilities, and their records as CSC may reasonably require in order to discharge its duties hereunder.

(b) **Medical Records.** The medical records of the Facility's patients are the property of the LLC and shall remain on the Facility's premises or other facilities under the supervision and control of the LLC. During the Term of this Agreement, subject to all applicable federal and state confidentiality laws (and corresponding regulations), CSC shall at all times be provided free and complete access to such medical records and may copy all or any part of the same for such purposes as are consistent with its duties and responsibilities under this Agreement. CSC shall maintain the confidentiality of patient records, except to the extent that disclosure is required by law or legal process.

(c) **Other Records.** All other records generated at the Facility or by the LLC or by CSC relating to the provision of Development or Management Services for the Facility are the property of the LLC. CSC shall maintain the confidentiality of Facility's records and other information regarding Facility, except to the extent that disclosure is required by law or legal process.

(d) **CSC Systems-Confidentiality.** The LLC acknowledges that CSC has invested a significant amount of its resources in developing and maintaining the CSC Systems and that the value to CSC of these CSC Systems may be diminished or destroyed if the LLC discloses information concerning the CSC Systems or any portion thereof to a third-party. Accordingly, the LLC shall maintain the confidentiality of the CSC Systems. The LLC shall not knowingly duplicate or knowingly permit the duplication of any portion of the CSC Systems and shall not permit access to the CSC Systems by its personnel or any third party other than on a strict "need-to-know" basis and in the ordinary course of business. The LLC shall not loan, lease, or otherwise permit the use of any of the CSC Systems by any other person or entity, regardless of its relationship to the LLC. The LLC shall notify CSC of any suspected or actual breach of these confidentiality requirements. The provisions of this section shall survive any termination or expiration of this Agreement.

(e) **Access.** Upon the written request of the Secretary of Health and Human Services, the Comptroller General, or any of their duly authorized representatives, CSC will make available those

contracts, books, documents and records necessary to certify the nature and extent of the costs of providing services under this Agreement. Such inspection shall be available up to four (4) years after the rendering of such services. If CSC carries out any of the duties of this Agreement through a subcontract with a value of $10,000 or more over a twelve (12) month period with a related individual or organization, CSC agrees to include this requirement in any such subcontract. This section is included pursuant to and is governed by the requirements of Public Law 96-499, Sec. 952, and the regulations promulgated thereunder.

10. BREACH.

In the event of a material breach of any obligation or covenant under this Agreement, the nonbreaching party may give the breaching party written notice of the specifics of the breach, and if it does not involve a breach of an obligation to pay money the breaching party shall have thirty (30) days from the date of the receipt of the notice in which to cure the breach or if it involves the breach of an obligation to pay money, the breaching party shall have five (5) business days from the date of the receipt of the notice in which to cure the breach (in either case, the "Cure Period"). Only if the breach is not cured within said Cure Period shall the non-breaching party be entitled to pursue any remedies it may have by reason of the breach, including, but not limited to, the termination of this Agreement pursuant to Section 12(b). A waiver of any breach of this Agreement shall not constitute a waiver of any future breaches of this Agreement, whether of a similar or dissimilar nature. For purposes of CSC's compliance with Section 4(j), the HHC Entities shall have the unilateral right to assert breach of Section 4(j) on behalf of the LLC under this Section 10 (including termination pursuant to Section 12(c) of this Agreement).

11. INDEMNIFICATION AND INSURANCE.

(a) Indemnification by the LLC. The LLC shall indemnify, defend and hold harmless CSC, its shareholders, members, directors, officers, employees and agents (each, an "LLC-Indemnified Party") from and against any and all judgments, losses, claims, damages, liabilities, sanctions, penalties, fines, costs and expenses (including reasonable attorneys' fees and expenses paid or incurred by an LLC-Indemnified Party) which may be asserted against or incurred by any LLC Indemnified Party arising out of any act or omission of the LLC or its directors, officers, managers, trustees, employees or agents that constitutes negligence, intentional misconduct or breach of the terms of this Agreement.

(b) Indemnification by CSC. CSC shall indemnify, defend and hold harmless the LLC and its respective directors, officers, managers, trustees, employees and agents (each, a "CSC Indemnified Party") from and against all judgments, losses, claims, damages, liabilities, costs and expenses (including reasonable attorneys' fees and expenses paid or incurred by a CSC Indemnified Party) which may be asserted against or incurred by any CSC-Indemnified Party arising out of any act or omission of CSC or its directors, officers, managers, trustees, employees or agents that constitutes negligence, intentional misconduct or breach of the terms of this Agreement.

(c) Conditions on Indemnification. The obligations of an indemnifying party (the "Indemnitor"), as set forth in Sections 11(a) and 11(b) above, are conditioned upon: (i) the indemnified party ("the "Indemnitee") promptly notify the Indemnitor in writing of the commencement or threatened commencement of any action or proceeding involving a claim of indemnification under this Agreement; (ii) with respect to all such claims, the cooperation of the Indemnitee, at the Indemnitor's expense with the investigation and defense of such claims as reasonably requested by the Indemnitor. The Indemnitor

shall have sole control over the defense and settlement of any such claim. The foregoing notwithstanding, the Indemnitee shall be entitled to participate in the defense of such claim and to employ counsel at its own expense to assist in the handling of such claim and to file and answer or take similar action to prevent the entry of a default judgment against it. The Indemnitor shall not be required to indemnify the Indemnitee for any amount paid or payable by the Indemnitee in a settlement of any claim which was agreed to without the prior written consent of the Indemnitor.

(d) **The LLC's Insurance.** The LLC shall secure and maintain, during the Term of this Agreement, at its own cost and expense, the following minimum insurance coverage:

Worker's Compensation	Statutory Amount
Comprehensive General Liability	Reasonable amounts based on local and national industry standards
Professional Liability / Errors & Omissions	Reasonable amounts based on local and national industry standards
Directors and Officers (D & O)	Reasonable amounts based on local and national industry standards
Employment Practices Liability (EPL)	Reasonable amounts based on local and national industry standards
Property Insurance	Insurable Value

Property insurance shall insure against loss or direct physical damage to the Facility's buildings, furnishings, equipment and machinery under standard all-risk coverage (including, but not limited to, fire, smoke, lightning, windstorm, explosion, aircraft or vehicle damage, riot, civil commotion, vandalism, and malicious mischief) and shall also include damage due to flood and earthquake. The LLC shall use reasonable commercial efforts to cause CSC to be named as an additional insured, with respect to this Agreement, under the comprehensive general and professional liability / errors & omissions policies. CSC's Administrator shall be named in the LLC Directors and Officers (D&O) policy; provided LLC shall not be obligated to incur additional expense to add CSC as an additional insured. CSC's rights to invoke the protection of such policies shall be severable from and independent of the LLC's rights and the LLC shall use its best faith efforts to provide at least thirty (30) days prior written notice to CSC of the termination or non-renewal of any insurance policy. If such coverage is written on a claims-made form, following termination or expiration of this Agreement, the LLC shall (i) continue such coverage to survive with CSC as an additional insured for the period of the applicable statute of limitations or (ii) shall provide an extended reporting endorsement (tail coverage) covering CSC for claims arising during the Term but not reported until after the termination or expiration of this Agreement. Should the LLC change insurance companies during the Term, the LLC shall maintain coverage which includes claims incurred but not reported under the prior coverage (prior acts coverage). No later than thirty (30) days following the Commencement Date and thirty (30) days following the end of each policy year, the LLC shall give to CSC a copy of the endorsements naming CSC as an additional insured (if permitted by the insurer). It is the intention of the parties, subject to the approval of the insurer, that such insurance shall protect the LLC and CSC and will be the primary insurance for such parties for any and all losses covered thereby, notwithstanding any insurance which may be maintained by CSC or its Affiliates covering any such loss. If permitted by their respective insurers, the LLC and CSC agree to waive any right of contribution from the other party with respect to a loss covered under such policies (or their deduction).

(e) CSC Insurance. CSC shall secure and maintain, during the Term of this Agreement, at its own cost and expense, the following minimum insurance coverage:

Worker's Compensation	Statutory Amount
Comprehensive General Liability	Reasonable amounts based on local and national industry standards
Professional Liability / Errors &Omissions	Reasonable amounts based on local and national industry standards
Directors and Officers (D & O)	Reasonable amounts based on local and national industry standards
Employment Practices Liability (EPL)	Reasonable amounts based on local and national industry standards

CSC shall be required to provide professional liability / errors & omissions insurance covering all CSC employees and agents who render services at the Facility or to or for the benefit of the LLC under this Agreement. CSC shall use reasonable commercial efforts to cause the LLC to be named as an additional insured under the comprehensive general liability and the professional liability / errors & omissions policies; provided CSC shall not be obligated to incur additional expense to add LLC as an additional insured. The LLC's rights to invoke the protection of such policies shall be severable from and independent of CSC's rights, and CSC shall use its best faith efforts to provide at least thirty (30) days prior written notice to LLC of the termination or non-renewal of any insurance policy. If such coverage is written on a claims-made form, following termination or expiration of this Agreement, CSC shall (i) continue such coverage to survive with the LLC as an additional insured for the period of the applicable statute of limitations or (ii) shall provide an extended reporting endorsement (tail coverage) covering the LLC for claims arising during the Term but not reported until after the termination or expiration of this Agreement. Should CSC change insurance companies during the Term, CSC shall maintain coverage which includes claims incurred but not reported under the prior coverage (prior acts coverage). No later than thirty (30) days following the Commencement Date and thirty (30) days following the end of each policy year, CSC shall give to the LLC a copy of the endorsements naming the LLC as an additional insured (if permitted by the insurer).

12. TERMINATION OF AGREEMENT.

This Agreement may be terminated prior to the expiration of the Term only as follows, and any such termination shall not affect any rights or obligations arising prior to the effective date of termination.

(a) Connecticut CON Approval. In the event that (i) the LLC's application for a Certificate of Need for the Facility is denied and no appeal is filed by the LLC or (ii) the LLC fails to obtain approval of its Certificate of Need for the ambulatory surgery center by December 31, 20__, the LLC may terminate this Agreement upon written notice to CSC.

(b) Creation of the Holding Company. Within fifteen (15) days of the closure of the syndication of the Holding Company (as defined in Recital A of this Agreement), CSC shall provide the LLC and the HHC Entities with a list of the subscribed investors in the Holding Company and, within

thirty (30) days after receipt of the subscriber list, the parties, by mutual agreement as to the inadequacy of the syndication, may terminate this Agreement.

(c) Breach. In the event of a material breach of this Agreement which is not cured within the Cure Period set forth in Section 10, "Breach," or in the event of a breach as to which no Cure Period is provided by this Agreement, the non-breaching party may terminate this Agreement immediately upon written notice; provided that notice of termination for Breach must be given no later than thirty (30) days after the expiration of the Cure Period if one is applicable. This remedy shall be in addition to any other remedy available at law or in equity. Failure to terminate this Agreement shall not waive any breach of this Agreement.

(d) Casualty. In the event that the physical plant housing the Facility is destroyed or is so damaged that the Facility cannot continue operations and it is reasonably anticipated that Facility will not within ninety (90) days be able to resume full operation, then either party may terminate this Agreement upon no less than thirty (30) days' notice without further liability to the other party.

(e) Sale or Cessation of Operation. If the Facility is sold or the LLC decides to permanently cease operations at the Facility, then either party may terminate this Agreement upon no less than thirty (30) days' notice without further liability to the other party.

(f) Bankruptcy. Either party may terminate this Agreement immediately or upon such notice as it may select following the bankruptcy of the other party, provided that notice of termination must be given no later than thirty (30) days after the date the terminating party acquires reasonably reliable knowledge of the bankruptcy. For the purpose of this section, "bankruptcy" shall mean (i) the filing of a voluntary or involuntary petition for bankruptcy or similar relief from creditors, (ii) insolvency, (iii) the appointment of a trustee or receiver, or (iv) any similar occurrence reasonably indicating an imminent inability to perform substantially all of such party's duties under this Agreement.

(g) Change of Ownership. The LLC may terminate this Agreement immediately upon written notice to CSC following any transaction or a series of transactions which take place, in which persons others than Kristian Mineau, Theodore Krawiec or an Affiliate in which Kristian Mineau and Theodore Krawiec control, acquire or own, of record or beneficially, fifty percent (50%) or more of the issued and outstanding equity interests or voting power of CSC. If one of the HHC Entities becomes the sole member of the LLC through agreement of all the members of the LLC, including CSC, the Parties may terminate this Agreement by substituting a replacement agreement defining CSC's management duties, and the compensation therefor, pertaining to the Facility's operation as a hospital outpatient department.

(h) Regulatory Matters. Either party may terminate this Agreement upon one hundred and twenty (120) days prior written notice to the other party in the event that any agency or bureau of any federal, state or local government issues an order, decree or ruling or takes any other action which materially and adversely affects the ability of any party to perform its obligations under this Agreement or otherwise prohibits or restricts the performance of any party obligations hereunder, including commencement of a legal proceeding or threat to commence such a proceeding on the basis of any party's participation in the ownership or operation of the Facility, or if any change in federal, state or local law or regulation or any interpretation thereof by any governmental agency or judicial body after the Effective Date would subject either party to civil or criminal prosecution or other adverse proceeding on the basis

of any person's participation in the ownership or operation of the Facility in the reasonable opinion of legal counsel selected by the parties who is experienced in health law matters, provided that the parties have negotiated in good faith to modify this Agreement to resolve any adverse effects created by such action and have failed to reach agreement as to an acceptable modification of terms within such one hundred and twenty (120) day period or have determined that compliance with such law or regulation is impossible or impractical.

(i) Performance Standards. The Parties have established the following performance objectives in the areas of patient satisfaction, accreditation and operational efficiency. These are designed as measures to be assessed as to CSC's conduct, but not as to matters not substantially under CSC's control. While the LLC does not hold CSC responsible for the conduct of the physicians who will be using the Facility, it does expect CSC to conduct its own operations at the Facility at a level that will promote quality services and cost-effective performance at the Facility. The initial performance objectives for this Agreement are as follows: (a) Financial. On and after the third anniversary of the Facility's commencement of operations as a licensed outpatient surgical facility, the Facility shall maintain an annual level of earnings before adjustments for interest, taxes, depreciation and amortization ("EBITDA"), calculated consistent with generally accepted accounting principles, of at least One Million Dollars ($1,000,000). This amount shall hereinafter be referred to as the "EBITDA Standard"; The EBITDA for the Facility shall be calculated annually beginning with the Facility's third full fiscal year of operations for purposes of measuring CSC's achievement of the EBITDA Standard. Should the results of any fiscal year's operation for the Facility result in the EBITDA Standard not being met, CSC shall have a period of one hundred and twenty (120) days from the date of notice by the LLC to achieve the EBITDA Standard for the one hundred and twenty (120) day period, which when annualized, satisfies the EBITDA Standard. If CSC achieves the EBITDA Standard, the Financial Performance Objective shall be deemed satisfied; provided, however, it shall be maintained for each subsequent one hundred and twenty (120) day period for the remainder of the contract year. Should CSC fail to satisfy the EBITDA Standard within the one hundred and twenty (120) day period, then the Financial Performance Objective shall be deemed not to have been satisfied and the LLC may terminate this Agreement in accordance with this Section 12. (b) Patient satisfaction. CSC shall manage the Facility to promote quality and satisfaction such that the Facility's patient satisfaction scores for each calendar year shall not be less than Seventy Percent (70%) under the Surgical Outcomes™ Information Exchange, (the "Patient Satisfaction Score Quality Performance Objective"). Should CSC not achieve the Patient Satisfaction Score Quality Performance Objective, the LLC shall so notify CSC in writing, along with providing CSC with underlying survey results. Should CSC not address issues identified in survey results as leading to the Facility's substandard results to the LLC's satisfaction within one hundred and twenty (120) days, then the Patient Satisfaction Score Quality Performance Objective shall be deemed not to have been satisfied and the LLC may terminate this Agreement in accordance

with this Section 12. (c) Accreditation. CSC shall take such actions and manage the Facility so as to allow the Facility, as soon as practicable upon its inception of operations as a licensed outpatient surgical facility, to obtain, and thereafter to maintain, accreditation from either the Joint Commission or the Accreditation Association for Ambulatory Health Care (the "Accreditation Objective"). Should CSC not achieve the Accreditation Objective, the LLC shall so notify CSC in writing, along with providing CSC with underlying survey results or other pertinent information. Should CSC not address issues identified in such survey results and information as leading to the Facility's failure to achieve accreditation to the LLC's satisfaction within one hundred and twenty (120) days, then the Accreditation Objective shall be deemed not to have been satisfied and the LLC may terminate this Agreement in accordance with this Section 12. With respect to all of the Financial Performance Objective, the Patient Satisfaction Quality Performance Objective, and the Accreditation Objective, should CSC be able to identify specific and material actions of the LLC or other events beyond CSC's control as a cause for such failure to satisfy any of the defined Performance Objectives, then CSC shall not be held responsible in any fashion for the Facility's failure to achieve the Performance Objective in question.

13. EFFECTS OF TERMINATION.

In the event of the termination of this Agreement, CSC shall immediately be paid all undisputed fees heretofore earned and reimbursed for all expenses incurred for which reimbursement is required under this Agreement. The termination of this Agreement for any reason shall be without prejudice to any payments or obligations which may have accrued or become due hereunder prior to the date of termination or which may become due after such termination. Sections 9(b), 9(c), 9(d), 9(e) and Article 11 shall survive the expiration or termination for any reason of this Agreement.

14. NOTICES.

All notices permitted or required by this Agreement shall be in writing and deemed given immediately when delivered personally or sent by facsimile or deemed received five (5) business days after deposited in the United States mail, postage prepaid, return receipt requested, addressed to the other party at the address set forth below or such other address as the party may designate in writing

To: HHC:_____

To: HOCC:_____

To: Midstate:_____

To: CSC: Constitution Surgery Centers, LLC
505 Willard Avenue, Building No. 2
Newington, Connecticut 06111

Attn: Mr. Kristian Mineau, President and CEO

To the LLC: _____ Surgery Center, LLC
c/o _____
Attn: _____

15. AFFILIATES.

As used in this Agreement with regard to a party, the term "Affiliate" means any person or entity (a "Parent") owning fifty percent (50%) or more of the voting membership interests of such party, any subsidiary entity of which such party owns fifty percent (50%) or more of the voting interests, and any subsidiary of a Parent of which the Parent owns fifty percent (50%) or more of the voting interests.

16. BINDING EFFECT.

This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their permitted assigns, successors in interest, and successors in ownership, operation or control of the Facility.

17. CONFIDENTIALITY.

Neither party may disclose the terms of this Agreement to any other person or entity, except by mutual written consent of the parties or unless such disclosure is required by legal process, by law or regulation.

18. FORCE MAJEURE.

Notwithstanding any provision contained herein to the contrary, neither party shall be deemed to be in default hereunder for failing to perform or provide any of the services or other obligations to be performed or provided by said party pursuant to this Agreement if such failure is the result of any labor dispute, act of God, inability to obtain labor or materials, government restrictions or any other event which is beyond said party's reasonable control (an "Event of Force Majeure"). If the performance of any obligation shall have been delayed, interfered with or prevented by an Event of Force Majeure, then the parties shall take such steps as shall be reasonably available to them to remove the Event of Force Majeure or to mitigate the effect of such occurrence (except that labor disputes shall be settled at the sole discretion of the party affected). If an Event of Force Majeure (alone or extended by another Event of Force Majeure) continues so that the mutual obligations remain suspended for a period of thirty (30) consecutive days and at the end of such period or at any time thereafter during which such suspension continues uninterrupted, either party, in the exercise of reasonable judgment, concludes that there is no likelihood of the Event of Force Majeure ending within the next thirty (30) days, then either party may terminate this Agreement without liability to the other party by giving to the other at least ten (10) days' written notice of its intention to terminate.

19. ASSIGNMENT.

Neither party may assign this Agreement, except with the prior written consent of the other party, except that either party may assign all of its rights and obligations hereunder to an Affiliate, or in connection with a sale of substantially all of the assets of such party, without the prior written consent of the other party. An assignment or attempted assignment in violation of this provision shall be null and void

20. MISCELLANEOUS.

(a) Headings. Section headings are for convenience of reference only and shall not be used to construe the meaning of any provision of this Agreement.

(b) Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be an original, and all of which shall together constitute one agreement.

(c) Severance. Should any part of this Agreement be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity and enforceability of the remaining portions.

(d) Authority. Each individual signing this Agreement warrants that such execution has been duly authorized by the party for which he or she is signing. The execution and performance of this Agreement by each party has been duly authorized by all applicable laws and regulations and all necessary corporate action, and this Agreement constitutes the valid and enforceable obligation of each party in accordance with its terms.

(e) Governing Law. This Agreement shall be governed in all respects, whether as to validity, construction, capacity, performance or otherwise, by the laws of the State of Connecticut, and any applicable Federal laws. The parties agree that the proper venue for any legal proceedings arising out of this Agreement shall be in Hartford County, Connecticut. All the parties hereto consent to the personal jurisdiction of the United States District Court for the Federal District of Connecticut and to the Superior Court of Connecticut.

(f) Amendment. This Agreement may not be modified, altered, amended or supplemented except in writing executed by the parties hereto.

(g) Arbitration. All disputes, claims, controversies and grievances arising out of or in connection with this Agreement or the breach thereof, including a dispute as to the scope or applicability of this agreement to arbitrate, which cannot be resolved by the parties within thirty (30) days after written notice by either party, shall be settled by binding arbitration by a single arbitrator in Hartford, Connecticut; provided, however, this provision shall not apply to any action seeking solely equitable relief. The arbitrator shall be a person who is experienced in health care matters. The arbitration shall be administered by JAMS pursuant to its Streamlined Arbitration Rules & Procedures. The cost of any arbitration proceeding under this provision shall be shared equally by both parties. The arbitrator shall state in writing the reasons for his or her award and the legal and factual conclusions underlying the award. The award of the arbitrator shall be final, and judgment upon the award may be entered in any state or federal court located in Connecticut. The parties agree that all of the negotiations and arbitration proceedings relating to such disputes and all testimony, transcripts and other documents relating to such arbitration shall be treated as confidential and will not be disclosed or otherwise divulged to any other person except as necessary in connection with such negotiations and arbitration proceedings. The prevailing party in any dispute relating to this Agreement shall be entitled to recover its reasonable costs and expenses incurred in prosecuting or defending such a dispute, including a reasonable attorney's fee, from the non-prevailing party.

(h) Entire Agreement. This Agreement constitutes the entire agreement of the parties hereto and supersedes all prior agreements, written or oral, and representations with respect to the subject matter hereof.

(i) **Assumption of Liabilities.** CSC shall not be liable for or assume responsibility for any of the debts, obligations or liabilities of the Facility due to its development or management of the Facility under the terms of this Agreement.

21. HIPAA AND BUSINESS ASSOCIATE AGREEMENT.

The parties agree that they have entered into a Business Associate Addendum to evidence their compliance with the provision of the Health Insurance Portability and Accountability Act of 1996, as amended ("HIPAA"), Privacy and Security Standards, and such Business Associate Addendum is attached hereto as Exhibit F and incorporated herein by reference.

[The next page is the signature page.]

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IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written to be effective as provided hereinabove.

HHC SOUTHINGTON ASC, LLC a Connecticut limited liability company

By: _____

Its: _____

Date: _____

CONSTITUTION SURGERY CENTERS, LLC a Connecticut limited liability company

By: _____

Kristian Mineau, President and Chief Executive Officer

Date: _____

As to Sections 10 and 12 only:

THE HOSPITAL OF CENTRAL CONNECTICUT, a Connecticut nonstock corporation

By: _____

Its: _____

Date: _____

MIDSTATE MEDICAL CENTER, a Connecticut nonstock corporation

By: _____

Its: _____

Date: _____

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Exhibit A

DEVELOPMENT SERVICES

CSC will provide development consulting services to the LLC to include: collaboration with the HHC Government Relations staff in preparation of the CON application, evaluation of organization issues, securing project financing, coordination of facility design, providing oversight to facility construction, and preparing the Facility for Operation. CSC will serve as the owner's representative throughout all the development phases of the project.

CON Related Services: CSC will assist the LLC and its legal counsel in preparing the formal CON application and prepare responses to anticipated questions from OHCA for approval by the owners. CSC will coordinate activities as needed with the HHC Government Relations staff members assigned to provide the required financial, statistical, demographic, need analysis and other information required for the CON from the hospital. CSC will work directly with participating physicians and other HHC staff members assigned to provide required financial, statistical and other information required from the surgeon partners. CSC will also cooperate in the development of a strategic justification in the application most likely to be viewed favorably by OHCA.

Phase 1.

1. Selection of Development Team* – CSC will submit for the LLC's review and approval, as requested, a slate of professionals to provide the following professional development services:

- Architect
- Equipment Planning
- General Contractor
- Project Financing Institution

*the LLC will enter into separate contractual agreements for these services.

2. Coordinate the Production of Initial Draft Agreements and work with the LLC's Legal Counsel to finalize:

- Guaranty Agreements, as applicable
- Consulting Agreements
- Real Estate / Building Leases
- Operating Agreement
- Hospital Services Agreement
- Private Offering Memorandum

3. Pro Forma Financials

- Confirm capital requirements
- Preparation of Projected Profit & Loss Statement
- Preparation of Projected Cash Flow Statement
- Preparation of Projected Balance Sheet
- Preparation of Projected Statement of Investment and Distributions

4. Financial Fundamentals

- Review Charges by Market Area
- Review Reimbursement by Medicare and Medicaid
- Review Reimbursement by Third Party Payers

Milestone Event triggering payment: Submission of Certificate of Need Application.

Phase 2.

5. Surgery Facility Design and Construction Support

- Review Architect's Space Program and Design based on Specialty Case-mix

- and Projected Procedure Volumes
- Collaborate Design with Architect and Contractor based upon Need Analysis
- Review Architect's Schematic Design and Floor Plans
- Review Tenant Improvement Construction Contracts for approval by the Facility
- Review Bid(s) from Contractors
- Generate and Maintain Project Budget
- Monitor Project Schedule and Design
- Conduct Regular Design and Equipment Review Meetings with the Facility
- Board
- Coordinate Activities of all Project Consultants (A&E, Equipment Planning,
- Telecommunications, etc.)
- Assist in Final Punch List Inspection and Post-Occupancy Review

6. Assure Timely Equipment Planning and Selection

- Prepare specific equipment list for CON
- Assure Determination of Physician Preferences
- Assure Determination of Price / Options
- Assure Determination of Space Requirements

Milestone Event triggering payment: Issuance of Building Permit

Phase 3.

7. Equipment Procurement & Financing

- Supervise Equipment Planner in Equipment Procurement
- Recommend Financing and Cost Effective Pricing Options
- Coordinate Equipment Procurement

8. Systems Design and Implementation

- Recommend Information System
- Supervise Set-up of Site Specific Data Files such as Physician, Payer and
- Patient Charges
- Coordinate Information System Training

9. Work with LLC's Legal Counsel to Coordinate the Production of Draft Operational Agreements:

- Professional Service Contracts (Anesthesia, Pharmacy, Pathology, etc.)
- Operating Contracts (Waste Disposal, Linen, Pest Control, Maintenance,
- Biomedical, Laboratory)
- Transfer Agreements
- Consulting Agreements

10. Business and Operating Plan

- Commencement of Operation
- Staff Planning
- Recruitment and Training
- Establish Revenue-Cycle Operating Procedures
- Assist in Development of Competitive Fee Schedules
- Coordinate Managed Care Contracting

Milestone Event triggering payment: Construction deemed fifty percent (50%) complete based on a schedule agreed upon by the Parties.

Phase 4.

11. Policies & Procedures

- Provide Draft Operating Policies and Procedures, to be adapted to local
- preference

- Provide Draft Medical Staff bylaws
- Provide Suggested Operating Forms
- Provide Suggested Job Descriptions

12. Licensure & Accreditation

- Coordinate Actions to Obtain Appropriate State Licenses
- Coordinate Actions to Obtain Eligibility to Receive Payments from Medicare &
- Medicaid
- Coordinate Accreditation Process with Joint Commission or AAAHC

Milestone Event triggering payment: Issuance of Outpatient Surgical Facility License by the Connecticut Department of Public Health.

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Exhibit B

MANAGEMENT SERVICES

From the commencement date and thereafter throughout the term, CSC shall provide, assist and/or oversee provision of the following services to the LLC:

Operational Leadership:

- Management of day-to-day Facility operations through CSC's on-site
- Administrator
- Overall account responsibility through a-n CSC Principal, or designee
  - Regular attendance at on-site meetings
  - Unlimited electronic availability
  - Assign consulting resources
  - Communicate with owners
- Annual Management Plan
  - Defines the goals & objectives of the Facility
  - Annual performance report to Board and, upon request, HHC Entities or its affiliates Boards and the Holding Company
- Monthly Executive Board Summaries
  - Overall progress of the Facility implementing the Management Plan
  - Performance of Facility management/Operational Overview (e.g., Key Indicator Report)
  - Status of Customer relationships

Financial Support & Services to be Provided by CBFS through a separate agreement:

- Preparation of Monthly Financial Statements & Reports
  - Balance Sheet
  - Income Statement
  - Budget variance explanation
  - Cash flow statements
  - Accounts receivable analysis
  - Investment schedules
  - Key financial / performance indicators & benchmarks
- Prepare Annual Budgets
  - Capital
  - Operating
  - Cash Flow
- Oversee monthly bank reconciliation
- Oversee preparation of State and Federal required reports
- Oversee cash management
- Facilitate independent audit / review
- Facilitate tax return preparation
- Recommend owner profit distributions
- Manage owner profits distributions
- Manage ownership transfers

Operational Management:

- Review, recommend and manage capital equipment purchases
- Analyze, review and recommend new surgical procedures
- Monitor and assure cost effective Inventory management
- Monitor and assure cost effective Medical supply purchases
- Monitor Group purchasing contracts & discount utilization
- Maintain and update charge master
- Provide support for negotiation of managed care contracts

- Monitor cost per case benchmarks
- Monitor salary to net revenue benchmarks
- Monitor medical supply cost to net revenue benchmarks
- Oversee Accounts Payable
- Assist in negotiation of all external agreements (e.g. anesthesia, pathology, biomedical, Biohazardous waste disposal, laundry & linen, maintenance, etc.)
- Oversee purchase of appropriate insurance policies by owner
- Mediate physicians and/or partners issues as requested (e.g. supplies, equipment, personnel, etc.)
- Provide recommendations for performance improvement

Regulatory, Accreditation & Licensure:

- HIPAA privacy and compliance services as liaison to HHC Office of Compliance and Privacy
- Provide regular updates on regulatory issues effecting Surgery Centers
- Provide regular updates on compliance and HIPAA issues effecting Surgery Centers
- Maintain current standards for: Medicare, accrediting body (Joint Commission or AAAHC) and state licensure
- Provide education to Facility personnel regarding all Medicare, state and accrediting body regulations
- Oversee preparation of all survey applications
- Assist in preparation for Medicare, accreditation and licensure surveys
- Maintain and update policies & procedures as needed:
    - Administration
    - Medical Staff Bylaws
    - Medical Staff Credentialing
    - Emergency protocols
    - Human Resources
    - Infection Control
    - OSHA
    - Compliance & HIPAA
    - Medical Records & Coding
    - Environment of Care
    - Quality & Performance Improvement
    - Life Safety

Risk Management Program:

- Implement risk management and corporate compliance program
- Perform periodic on-site risk analysis
- Develop education and training programs
- Provide guidance to committee as needed

Business Office & Billing Assistance:

- Implement admission & scheduling protocols
- Establish and implement pre-certification process
- Implement billing and collection practices
- Provide recommendations to improve revenue cycle
- Provide training and education to billing & collection staff
- Maintain updated fee schedules
- Oversee management of Accounts Receivable
- Implement and monitor collection performance benchmarks

Human Resources:

- Develop and maintain job descriptions
- Administer wage, salary and benefit s programs for LLC employees
- Develop and maintain new employee orientation program

- Provide guidelines for mandatory employee education programs
- Oversee proper storage and maintenance of employee personnel records
- Develop performance evaluation tools
- Develop technical skills checklist
- Recommend and implement employee incentive bonus program
- Provide guidance for the employment, supervision and termination of all nonphysician staff positions

Information Systems Support:

- Oversee development and/or coordination of all Management Information System functions:
  - Scheduling & patient registration
  - Insurance profiles & logs
  - Fee schedules
  - Electronic claims filing
  - Patient statements
  - Credential files
  - Clinical outcomes program
  - General Accounting Ledger
  - Accounts Payable / Accounts Receivable
  - Payroll
  - Inventory Management
  - Physician preference cards
  - Resource Utilization analysis
  - Payer mix analysis
  - Cost tracking modules

Quality Assurance

- Implement policies, procedures and protocols consistent with industry best practices
- Implement patient, employee and physician satisfaction survey programs
- Manage continuous quality improvement process to maintain performance excellence to industry standards
- Recommend opportunities for LLC awards and recognition

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Exhibit C

Non-Compete City List

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Exhibit D

Current CSC Management Engagements

Orthopedic Associates Surgery Center, LLC – Rocky Hill, CT

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Exhibit E

Payment Schedule for Phase I and II

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Exhibit F

BUSINESS ASSOCIATE ADDENDUM(to be replaced by current HHC HIPAA Business Associate form)

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EXHIBIT 24

Medicare Cost Savings Tied to Ambulatory Surgery Centers

ASCA
Ambulatory Surgery Center Association

Produced with cost savings analysis from Berkeley UNIVERSITY OF CALIFORNIA

000473

(10/11/13)

Acknowledgements

Dr. Brent Fulton, Assistant Adjunct Professor and Research Economist, and Dr. Sue Kim, Research Scientist, both from the Nicholas C. Petris Center on Health Care Markets and Consumer Welfare, School of Public Health, University of California-Berkeley, conducted the cost savings analysis presented in this report.

Berkeley
UNIVERSITY OF CALIFORNIA

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EXECUTIVE SUMMARY

Even in today's divisive political environment, there's at least one important area of consensus among policymakers: the threat posed by rising health care costs to both our national economy and the federal and state governments' balance sheets. This concern is particularly acute in the Medicare program, where costs are expected to rise dramatically as new treatments are developed and a generation of Baby Boomers enters retirement. Burgeoning health care costs, it seems certain, will be near the top of Washington, DC's agenda for years to come.

As they work to reduce health care costs and extend the solvency of programs like Medicare, policymakers will confront tough choices in the months and years ahead. Yet, they must also be alert for reforms that cut costs while maintaining quality services for beneficiaries. This analysis by Professor Brent Fulton and Dr. Sue Kim of the University of California at Berkeley explores one possible way for policymakers to generate substantial Medicare savings without reducing services or quality of care.

This study examines ambulatory surgery centers (ASCs). ASCs are technologically advanced medical facilities that provide same-day surgical procedures, including important diagnostic and preventive services like colonoscoples. Today, more than 5,300 Medicare-certified ASCs serve communities throughout our nation. These ASCs perform many of the same procedures as hospital outpatient departments (HOPDs). ASCs, however, are able to provide care much more efficiently and without the often costly overhead associated with hospitals. According to an industry calculation, the Medicare program currently reimburses ASCs at 58 percent of the HOPD rate, meaning that Medicare—and the taxpayers who fund it—realize savings every time a procedure is performed in an ASC instead of an HOPD.

When one considers the millions of same-day surgical procedures performed in ASCs through the Medicare program each year, the nationwide savings add up quickly. In this study, University of California at Berkeley's Professor Brent Fulton and Dr. Sue Kim analyze the numbers to determine how much ASCs save the Medicare program and its beneficiaries. They begin by analyzing government data to identify how much money ASCs saved Medicare in recent years, and then, forecast how much more ASCs will save Medicare in the future. The key findings are the following:

- During the four-year period from 2008 to 2011, ASCs saved the Medicare program and its beneficiaries $7.5 billion. ASCs saved Medicare and its beneficiaries $2.3 billion in 2011 alone.

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- $6 billion of these savings were realized by the federal Medicare program. The remaining $1.5 billion went directly to Medicare beneficiaries. In other words, Medicare patients nationwide saved $1.5 billion thanks to the less expensive care offered at ASCs.
- ASCs have the potential to save the Medicare program and its beneficiaries up to $57.6 billion more over the next decade.
- Beneficiaries themselves also stand to save considerably in future years. Because Medicare reimburses ASCs at a lower rate than HOPDs, patients also pay a smaller coinsurance amount in an ASC. The authors use the example of cataract surgery, noting that a Medicare beneficiary will save $148 on his or her coinsurance by electing to undergo surgery in an ASC instead of a hospital.

These findings have important implications for policymakers' ongoing discussion about how to most effectively reduce health care costs and the national budget deficit. The clearest implication is that, while public officials may indeed confront tough choices in the years ahead, the choice to encourage ASC use within the Medicare program is an easy decision. These findings suggest that ASCs offer a "win–win" for patients and the Medicare system, since they provide substantial savings without any corresponding reduction in quality or benefits.

While the future savings offered by ASCs are easily attainable, however, they are not inevitable. Indeed, a discrepancy in Medicare reimbursement policy could jeopardize the savings ASCs provide. Medicare uses two different factors to update ASC and HOPD payments—despite the fact that the two settings provide the same surgical services. ASC payments are updated based on the consumer price index for all urban consumers (CPI-U), which measures changes in the costs of all consumer goods; HOPD rates, meanwhile, are updated on the hospital market basket, which specifically measures changes in the costs of providing health care, and so, more accurately reflects the increased costs that outpatient facilities face.

Since consumer prices have inflated more slowly than medical costs, the gap in ASC and HOPD reimbursement

rates has widened over time. If the reimbursement rate for ASCs continues to fall relative to their HOPD counterparts, ASC owners and physicians will face increasing pressure to leave the Medicare system and allow their facilities to be acquired by nearby hospitals. When an ASC is acquired by a hospital, the Medicare reimbursement rate jumps roughly 75 percent. This threatens to turn the cost-saving advantage of ASCs into a perverse market incentive that drives ASCs from the Medicare program.

Already, the widening disparity in reimbursement has led more than 60 ASCs to terminate their participation in Medicare over the last three years. If the reimbursement gap continues to widen, more ASCs will leave the Medicare program. As a result, more Medicare cases will be driven to the HOPD, causing costs to both the Medicare program and its beneficiaries to rise.

Thus, realizing the full potential savings that ASCs offer will likely require policymakers to step in and halt this continuing "slide" in ASC reimbursement rates. Because Medicare saves money virtually every time a procedure is performed in an ASC instead of an HOPD, any policies that reduce the widening reimbursement gap between ASCs and HOPDs, and that otherwise encourage the migration of cases from the hospital setting into ASCs, will increase total savings for the Medicare program and its beneficiaries.

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I. AN INTRODUCTION TO AMBULATORY SURGERY CENTERS

Only 40 years ago, virtually all surgeries and diagnostic procedures were performed in hospitals. Today, however, standalone facilities known as Ambulatory Surgery Centers (ASCs) provide outpatient surgical care in an atmosphere removed from the competing demands that are often encountered in an acute care hospital.

ASCs, as this report details, offer patients a cost-effective alternative to hospital outpatient departments (HOPDs). The first ASC opened in 1970, and today, there are more than 5,300 Medicare-certified ASCs in the United States. The overwhelming majority of these ASCs are at least partially owned by physicians, which allows for better control over scheduling, as procedures are not often delayed or rescheduled due to staffing issues or competing demands for operating room space from emergency cases.

ASC surgeons perform a diverse range of procedures, many of them diagnostic or preventive in nature. For example:

- ASCs perform more than 40 percent of all Medicare colonoscopies, contributing to a decade-long decline in colorectal cancer mortality.
- The ASC industry also led the development of minimally invasive procedures and the advancement of technology to replace the intraocular lens, a procedure that is now used nearly one million times each year to restore vision for Medicare patients with cataracts. Once an inpatient hospital procedure, it can now be performed safely at an ASC at a much lower cost.

What is an ASC?

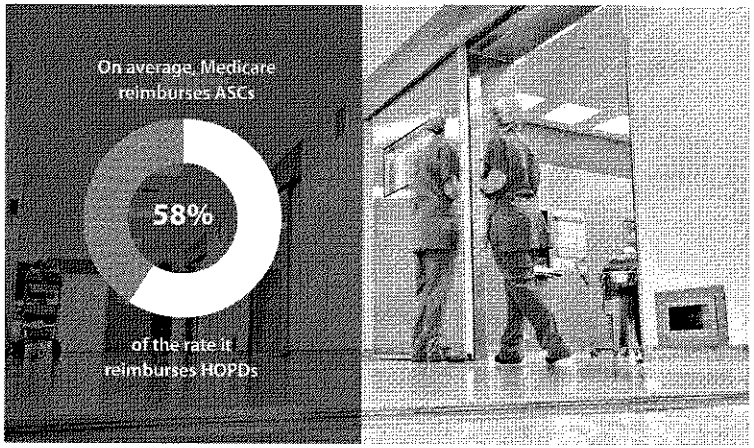
Ambulatory Surgery Centers are modern health care facilities focused on providing a range of same-day surgical care, the same types of procedures that were once performed exclusively in hospitals. Today, as a result of medical advancements and new technologies—including minimally invasive surgical techniques and improved anesthesia—a range of procedures can be performed safely and effectively on an outpatient basis.

II. ASCS: SAVING THE SYSTEM

The more than 5,300 Medicare-certified ASCs in the United States today provide identical services to those performed at HOPDs throughout the country. ASCs are able to perform these surgeries much more efficiently than HOPDs. ASCs do not incur the often substantial administrative and overhead costs associated with a hospital. This enables ASCs to provide these services at substantially less cost to the Medicare program—and to its beneficiaries—than their hospital counterparts.

Today, Medicare reimburses ASCs at an average of 58 percent of the rate it reimburses HOPDs for the same procedures.

The savings that accrue over time, even for individual procedures, are significant. For example, in 2011, Medicare beneficiaries (excluding Medicare Advantage beneficiaries) had 1,709,175 cataract surgeries, of which, 1,120,388 were performed in ASCs and the other 588,787 in HOPDs. The parallel reimbursements per surgery were $951 for an ASC and $1,691 for an HOPD, meaning that every time a patient elected to receive treatment in an ASC, the Medicare program saved $740. When applied across the 1,120,388 cataract surgeries performed in ASCs during 2011, the total savings for this single procedure reached $829 million.



III. COST SAVINGS ANALYSIS

Data and Methodology

Professor Fulton and Dr. Kim conducted the following analysis, which looks at government data from the Centers for Medicare & Medicaid Services (CMS), to answer two fundamental questions. First, how much money did the Medicare program and its beneficiaries save from 2008 to 2011 because surgical and diagnostic procedures were performed at ASCs instead of HOPDs? Second, how much more could the Medicare program and its beneficiaries save over the next decade (2013–2022) if additional procedures move from HOPDs to the ASC setting during that timeframe?

Government data was used to ascertain the volume of procedures performed in ASCs, HOPDs and physician offices from 2008 through 2011, as well as the reimbursement rates for procedures done at ASCs and HOPDs. The volume data reports are from the Medicare Physician Supplier Procedure Specific file available from CMS. It excludes Medicare Advantage enrollees. The ASC reimbursement rates are from the ASC Addendum AA[1], and the HOPD reimbursement rates are from Hospital Outpatient Prospective Payment System Addendum.[2]

When forecasting future cost savings, the Berkeley analysts relied on CMS' predicted number of Medicare beneficiaries from 2013 to 2022. This data set also excludes Medicare Advantage enrollees.[3]

To ensure a realistic baseline for their analysis and predictions, the analysts limited the data set to the 120 procedures most commonly performed at ASCs in 2011, which represented 73 percent of the total volume of all procedures performed in ASCs in 2011. [4]

Past Savings

To estimate the savings generated by ASCs from 2008 to 2011, the analysts calculated the differences in reimbursement rates for each of the 120 procedures, then multiplied those differences by the number of procedures performed at ASCs. For example, the cataract surgery discussed in the previous section, when performed in an ASC, generated a total of $829 million in savings in 2011. They applied the same method for all of the 120 procedures in each year from 2008 to 2011. They broke the numbers into savings that accrued to the Medicare program and savings that directly benefited beneficiaries. The beneficiary share of the total savings was 20 percent over the four-year period. Professor Fulton's and Dr. Kim's analysis found the following:

- During the four-year period from 2008 to 2011, the lower ASC reimbursement rate generated a total of $7.5 billion in savings for the Medicare program and its beneficiaries.
- $6 billion of these savings were realized by the federal Medicare program. The remaining $1.5 billion was saved by Medicare beneficiaries themselves. In other words, Medicare patients nationwide saved $1.5 billion thanks to the less expensive care offered at ASCs.
- These savings increased each year, rising from $1.5 billion in 2008 to $2.3 billion in 2011. The increase results from the total number of procedures growing from 20.4 million to 24.7 million (or 6.6 percent annually) between 2008 and 2011 as well as the reimbursement rate gap widening between HOPDs and ACSs. These savings were realized despite the share of total Medicare procedures performed in ASCs decreasing over this period, falling from 22.9 percent in 2008 to 21.7 percent in 2011.

1 http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ASCPayment/11_Addenda_Updates.html
2 http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalOutpatientPPS/Addendum-A-and-Addendum-B-Updates.html
3 http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/downloads/tr2011.pdf (p.51).
4 The data set was initially narrowed to 148 procedures, which represented about 90% of the total volume. Twenty-seven procedures were dropped because of missing data on the number of procedures or reimbursement rates. One additional procedure was dropped the ASC share was 160%, and it thus provided no basis for comparison with HOPDs.

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These findings are illustrated in the following chart.

Descriptor	Annual Change	Total (2008–2011)	2008	2009	2010	2011
Number of procedures per 1,000 Medicare beneficiaries	5.6%		573.9	587.3	600.3	674.9
Procedures (million)						
ASC	4.7%	19.5	4.7	4.7	4.8	5.4
HOPD	5.9%	22.3	5.3	5.3	5.4	6.3
Physician office	7.7%	45.5	10.4	10.8	11.3	13.0
Total # of procedures	6.6%	87.3	20.4	20.8	21.5	24.7
ASC share*	1.5%	22.3%	22.9%	22.7%	22.3%	21.7%
Savings ($billion) **						
Program	16.6%	$6.0	$1.2	$1.4	$1.5	$1.9
Beneficiaries	14.8%	$1.5	$0.3	$0.4	$0.4	$0.5
Total***	16.3%	$7.5	$1.5	$1.8	$1.9	$2.3

Notes:

*The ASC share reported in the table is influenced by (or weighted for) high-volume procedures, such as cataracts. The analysts also calculated the ASC share based on a simple average across the 120 procedures. The ASC shares for 2008 to 2011 were 30.4%, 31.0%, 31.4% and 31.6%, respectively, each year, and averaged 31.1% over the four years.

**Savings are reported in nominal dollars.

***Totals may not sum and percentages may not total to 100% due to rounding.

Future Savings

The ASC industry is certain to continue generating savings to both the Medicare program and its beneficiaries over the next decade. The magnitude of these savings, however, will hinge on whether, and how much, the ASC share of surgeries grows within the Medicare program. That growth rate will, in turn, depend on market trends, demographic factors and how policymakers act—or decline to act—to encourage the use of ASCs within the Medicare program.

To estimate the savings Medicare would realize from having more procedures performed in ASCs from 2013 to 2022, Professor Fulton and Dr. Kim applied the methodology above to six scenarios. These six scenarios, which incorporate different assumptions about both the growth of ASC share and the overall growth of Medicare procedure rates, provide a range of possible savings offered by ASCs in the next decade.

The analysts divided the scenarios into two subsets. For subset A, they assumed that the number of procedures per 1,000 Medicare beneficiaries would remain constant at the 2010 rate. For subset B, they assumed that the 2011 rate would increase by 3 percent annually for each procedure.[5] Within each subset, the analysts examined three scenarios:

1. The ASC share of each procedure in 2011 will remain constant between 2013 and 2022. *This is a baseline assumption that assumes ASC share does not grow at all in the coming decade.*
2. The ASC share of each procedure will increase by 2 percent per year from 2013 through 2022, equivalent to the average increase across procedures from 2008 through 2011.[6] The analysts capped the share for any given procedure at 90 percent to avoid implausible assumptions.
3. The ASC share growth for each procedure will vary depending on that procedure's historical share growth rate. The analysts assumed three growth rates and, again, capped the share for any single procedure at 90 percent.
   - The "low" group included procedures that had negative or no growth in the share of procedures performed at ASCs during 2008–2011. The analysts assumed that the ASC share of these procedures will increase 1 percent annually from 2013–2022. This group included approximately 30 percent of the procedures.
   - The "middle" group included procedures that had up to 5 percent growth in share of procedures performed at ASCs during 2008–2011. It was assumed that the ASC share of these procedures will increase 5 percent annually from 2013–2022. This group included approximately 43 percent of the procedures.
   - The "high" group included procedures that had greater than 5 percent growth in share of procedures performed at ASCs during 2008–2011. This group had a median ASC share growth rate of about 11 percent annually during 2008–2011. The analysts projected that the ASC share of these procedures will increase 10 percent annually from 2013–2022. This group included approximately 27 percent of the procedures.

The estimated savings are tabulated in the following table. The savings analysis and predictions for each individual procedure are tabulated in the appendix.

5 The number of procedures per 1,000 Medicare beneficiaries significantly increased between 2010 and 2011 (see table on page 9). For the lower-savings estimates (subset A), the lower 2010 rate was used as a baseline. For the higher-savings estimates (subset B), the 2011 rate was used as the baseline.

6 The 2% annual average increase is based on a simple average across the 120 procedures, meaning the average is not influenced by (or weighted for) high-volume procedures, such as cataracts.

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Projected Savings ($Billion)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013-2017	2018-2022	2013-2022
A: Volume of Procedures (per 1,000 Medicare Beneficiaries) Remains Constant over Time													
A1: ASC share remains constant	$2.3	$2.5	$2.8	$3.0	$3.2	$3.3	$3.5	$3.7	$4.0	$4.2	$13.7	$18.7	$32.5
A2: ASC share increases at 2% annually	$2.4	$2.7	$3.0	$3.3	$3.6	$3.8	$4.1	$4.4	$4.8	$5.2	$14.9	$22.5	$37.3
A3: ASC share increases either 1%, 5% or 10% annually (depending on the procedure)	$2.5	$2.8	$3.1	$3.5	$3.8	$4.2	$4.6	$5.0	$5.5	$6.0	$15.7	$25.3	$41.0
B: Volume of Procedures (per 1,000 Medicare Beneficiaries) Increases by 2.4% Annually each													
B1: ASC share remains constant	$2.8	$3.1	$3.5	$3.9	$4.3	$4.7	$5.1	$5.5	$6.0	$6.6	$17.6	$27.9	$45.5
B2: ASC share increases at 2% annually	$2.9	$3.3	$3.8	$4.3	$4.8	$5.4	$5.9	$6.6	$7.4	$8.2	$19.1	$33.4	$52.6
B3: ASC share increases either 1%, 5% or 10% annually (depending on the procedure)	$3.0	$3.5	$4.0	$4.6	$5.2	$5.8	$6.6	$7.4	$8.3	$9.4	$20.2	$37.5	$57.6

Note: Savings are reported in nominal dollars. In all scenarios, the Berkeley analysts inflated the reimbursement amounts over time using a forecasted Consumer Price Index for All Urban Consumers, which averaged 2.4% from 2013–2022.

Conclusions

ASCs saved the Medicare program and its beneficiaries $7.5 billion over the four-year period from 2008 to 2011. Even under the most conservative assumptions, the future savings generated by ASCs are substantial.

- Under the baseline scenario, which assumes that neither ASC share nor Medicare procedure volume will grow over the next decade, ASCs will save the Medicare program an additional $32.5 billion during that time.
- As the share of procedures performed in ASCs grows within the Medicare program, so do the savings. If ASC share within the Medicare system increases even slightly, as in scenarios B2 and B3, the savings could exceed $57.6 billion over 10 years—an average savings of $5.76 billion each year.
- Medicare beneficiaries also save money by choosing ASCs, since a lower Medicare reimbursement rate means that patients, in turn, pay a smaller coinsurance. While the forward-looking portion of this study does not examine coinsurance rates for each procedure, it is clear that the savings realized by the Medicare program imply additional savings for beneficiaries. Using the example of cataract surgeries: a Medicare beneficiary will pay coinsurance of $338.20 for such a surgery to be performed in an HOPD, but only $190.20 for that same surgery in an ASC—a $148 savings that goes directly to the patient.

Further, the above estimates are quite conservative. Even the most "optimistic" scenario assumes that ASC share growth per procedure grows only modestly more quickly than historical averages, and that Medicare volume grows at a modest, and historically consistent, rate. If policy decisions or other factors cause either growth rate to accelerate further, the savings generated by ASCs within the Medicare system would certainly exceed the $57.6 billion estimated here.

BY THE NUMBERS:

$7.5 billion
in savings generated by ASCS from 2008 to 2011

Up to
$57.6 billion
additional savings in Medicare program generated by ASCs over the next 10 years

Up to
$5.76 billion
average future yearly savings

A final note: although this study examined only data from the Medicare program, ASCs typically also charge private payers, including those in the Medicare Advantage program, less than their HOPD counterparts. Thus, similar cost savings also exist in the commercial health insurance market and in the Medicare Advantage program. We believe it is important to quantify these private-side savings as well and encourage others to examine this subject in future studies.

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IV. POLICY IMPLICATIONS AND CONSIDERATIONS

An aging population, along with inflation in health care costs, means that the federal government's expenditures through the Medicare program are projected to increase substantially in the coming years. Consequently, policymakers in Washington, DC, are exploring potential ways to reduce projected Medicare outlays and extend the program's solvency. We believe that this study offers an important contribution to that discussion. Two specific policy concerns stand out.

AVOIDING ASC TO HOPD CONVERSIONS

Our first and most important observation is that, while the future savings offered by ASCs are easily attainable, they are not inevitable. Because they provide identical services to HOPDs but do so at an average of 58 percent of the reimbursement rate that the Medicare program pays HOPDs for those services, ASCs represent a source of value to the program and the taxpayers who fund it. A discrepancy in the way Medicare reimbursement rates are updated, however, threatens to marginalize ASCs' role within the program.

CMS currently applies different measures of inflation to determine the adjustments it provides to its payment systems for ASCs and HOPDs each year. For ASCs, that measure is the CPI-U, which is tied to consumer prices. The index for HOPD reimbursements, on the other hand, remains tied to the hospital market basket, which measures inflation in actual medical costs. Since consumer prices have inflated more slowly than medical costs, the gap in ASC and HOPD reimbursement rates has widened over time. As the reimbursement rate for ASCs continues to fall relative to their HOPD counterparts, ASC owners and physicians will face increasing pressure to leave the Medicare system and allow their facilities to be acquired by nearby hospitals.

When an ASC is acquired by a hospital, in what is known as "an ASC to HOPD conversion," the Medicare reimbursement rate jumps roughly 75 percent and all savings to the Medicare program and its beneficiaries are promptly lost. The continuing reduction in reimbursement led more than 60 ASCs to terminate their participation in Medicare over the last three years. If policymakers allow this gap in reimbursements to continue widening, the cost-saving advantage that ASCs offer could morph into a perverse market incentive that drives ASCs from the Medicare program.

Some in Congress have introduced legislation, which is titled the "Ambulatory Surgical Center Quality and Access Act," that aims to fix this problem. This bill would correct the imbalance in reimbursement indices and ensure that ASC reimbursements do not continue to fall relative to their HOPD counterparts. Additionally, it would establish an ASC value-based purchasing (VBP) program designed to foster collaboration between ASCs and the government and create additional savings for the Medicare system in the process.

ASCS AS PART OF BROADER COST-SAVINGS EFFORTS

Many of the policy options aimed at reducing Medicare costs that are being considered in Congress today involve important "trade-offs," where reduced outlays come at the expense of retirees' benefits. Often-discussed options such as raising the Medicare retirement age or increasing cost-sharing, for example, generate savings as a direct result of reducing the amount of benefits delivered by the Medicare program. The savings offered by ASCs, however, do not involve such trade-offs; they make it possible for the Medicare program, and its beneficiaries, to realize significant savings without any corresponding reduction in benefits.

There are more than 5,300 Medicare-certified ASCs throughout the country, all of which represent an important source of efficiency for the Medicare program and the taxpayers who fund it. We recommend that policymakers explore all potential options for encouraging further growth of ASC share within the Medicare system.

APPENDIX: METHODOLOGY AND CHART OF INDIVIDUAL PROCEDURE SAVINGS

The following table shows detailed statistics for the 120 procedures. In the table, the procedures are first sorted by the annual ASC share increase assumptions in Scenarios A3 and B3, which were 1, 5, and 10 percent annually (see Column "% ASC Share Growth Assumptions for A3 and B3"). Within the 1, 5, and 10 percent buckets, the procedures are then sorted based on the savings they generated in 2011 (see Column "Savings 2011").

The table shows the average annual change in the ASC share from 2006 through 2011, the 2011 ASC share of procedures and projected ASC share in 2022 if the share increases by 2 percent annually or in the range of 1 to 10 percent annually. In addition, it shows the 2011 and projected 2022 volume per 1,000 Medicare beneficiaries. Most importantly, those columns are followed by two sets of three columns that show the projected savings estimates in 2022 when the number of procedures per 1,000 Medicare beneficiaries remains constant and when the number of procedures per 1,000 Medicare beneficiaries increases by 3 percent per year. Within each set, the ASC share assumptions are based on the assumptions presented in the table on page 11.

The first row of the table illustrates that cataract surgeries (HCPCS 66984) alone generated a savings of $829 million in 2011. In 2011, the ASC share of this procedure was 56 percent, and that share either increases to 62 or 69 percent depending on the scenario. Depending on whether the number of cataract surgeries per 1,000 Medicare beneficiaries increases and the share of procedures performed in ASCs, the projected savings for Medicare and its beneficiaries range from $1.5 billion to $2.95 billion in 2022.

The last row of the table shows column totals and averages (see page 9). In 2011, there were $2.3 billion in savings for the 120 procedures, and the projected savings in 2022 range from $4.2 billion to $9.4 billion, depending on the scenario.

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No.	HCPCS	HCPCS Description	Nurse Anesthetist Salary	Anesthesiologist Salary	Anesthesiologist Assistant Salary	Certified Registered Nurse Anesthetist Salary	Physician Assistant Salary	Total Anesthesia Provider Salary	Anesthesia Provider Salary Percentage	Total Facility Charge	Facility Charge Percentage	Total Anesthesia Provider Salary + Facility Charge	Total Anesthesia Provider Salary + Facility Charge Percentage	Medicare Allowable Amount	Medicare Allowable Amount Percentage
1	66984	Cataract surg w/out IOL insert	$82,370	$81,820	$81,500	$74,900	$76,410	$317,630	54%	$252,370	46%	$570,000	100%	$2,650	0.46%
2	66982	Cataract surgery complex	$61,110	$60,670	$60,370	$55,610	$56,710	$233,760	54%	$201,240	46%	$435,000	100%	$2,240	0.51%
3	64483	Inj foramen epidural l/s	$5,170	$5,130	$5,100	$4,780	$4,870	$19,950	54%	$17,050	46%	$37,000	100%	$193	0.52%
4	62311	Inject spine l/s (cd)	$91,170	$90,510	$90,060	$83,980	$85,540	$350,210	54%	$298,790	46%	$649,000	100%	$3,329	0.51%
5	66821	After cataract laser surgery	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$169	2.06%
6	29881	Knee arthroscopy/surgery	$1,270	$1,260	$1,250	$1,160	$1,180	$4,850	54%	$4,150	46%	$9,000	100%	$902	10.02%
7	28285	Repair of hammertoe	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$681	8.30%
8	43235	Upper gi endoscopy diagnostic	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$268	3.27%
9	64622	Destr paravertebral nerve l/s	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$386	4.71%
10	52000	Cystoscopy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$224	2.73%
11	62310	Inject spine c/t	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$229	2.79%
12	29848	Wrist endoscopy/surgery	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$903	11.01%
13	29823	Shoulder arthroscopy/surgery	$2,320	$2,300	$2,280	$2,120	$2,160	$8,860	54%	$7,540	46%	$16,400	100%	$1,460	8.90%
14	63650	Implant neuroelectrodes	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$866	10.56%
15	20680	Removal of support implant	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$720	8.78%
16	29750	Arthrodesis of bunion	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$1,002	12.22%
17	52005	Cystoscopy & ureter catheter	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$794	9.68%
18	45381	Colonoscopy submucous lsn	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$247	3.01%
19	36561	Insert tunneled cv cath	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$927	11.30%
20	29825	Knee arthroscopy/surgery	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$903	11.01%
21	30520	Repair of nasal septum	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$773	9.42%
22	52281	Cystoscopy and treatment	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$530	6.46%
23	58558	Hysteroscopy biopsy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$696	8.49%
24	65426	Removal of eye lesion	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$736	8.98%
25	66636	Destr paravertebral nerve c/t	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$229	2.79%
26	11401	Excl tissue malignant lesion	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$519	6.33%
27	43251	Operative upper gi endoscopy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$268	3.27%
28	64632	Destr paravertebral add-on	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$80	0.98%
29	44361	Small bowel endoscopy/biopsy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$307	3.74%
30	62264	Epidural lysis of adhes 1 day	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$586	7.15%

No.	HCPCS	HCPCS Description	Nurse Anesthetist Salary	Anesthesiologist Salary	Anesthesiologist Assistant Salary	Certified Registered Nurse Anesthetist Salary	Physician Assistant Salary	Total Anesthesia Provider Salary	Anesthesia Provider Salary Percentage	Total Facility Charge	Facility Charge Percentage	Total Anesthesia Provider Salary + Facility Charge	Total Anesthesia Provider Salary + Facility Charge Percentage	Medicare Allowable Amount	Medicare Allowable Amount Percentage
31	13132	Repair of wound or lesion	$2,320	$2,300	$2,280	$2,120	$2,160	$8,860	54%	$7,540	46%	$16,400	100%	$1,140	6.95%
32	62319	Inject spine w/anti/s (cd)	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$586	7.15%
33	64520	Ni block lumbar/thoracic	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$229	2.79%
34	64450	Ni block other peripheral	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$226	2.76%
35	11042	Deb subq tissue 20 sq cm/<	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$82	1.00%
36	20552	Inj trigger point 1/2 muscle	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$163	1.99%
37	43239	Upper gi endoscopy biopsy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$268	3.27%
38	45380	Colonoscopy and biopsy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$282	3.44%
39	45385	Lesion removal colonoscopy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$249	3.04%
40	45378	Diagnostic colonoscopy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$281	3.43%
41	29826	Shoulder arthroscopy/surgery	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$1,460	17.80%
42	66761	Coloplasty/repair n mb lid	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$249	3.04%
43	64721	Carpal tunnel surgery	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$527	6.43%
44	64623	Destr paravertebral n add-on	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$229	2.79%
45	G0121	Colon ca scrn not hi rsk ind	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$249	3.04%
46	29827	Arthroscop rotator cuff repr	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$1,460	17.80%
47	29880	Knee arthroscopy/surgery	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$903	11.01%
48	45384	Lesion remove colonoscopy	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$281	3.43%
49	67904	Repair eyelid defect	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$603	7.35%
50	64484	Inj foramen epidural add-on	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$197	2.40%
51	26055	Incise finger tendon sheath	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$317	3.87%
52	43246	Upper gi endoscopy/guide wire	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$268	3.27%
53	29824	Shoulder arthroscopy/surgery	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$903	11.01%
54	49505	Rpr/hern init reduce >5 yr	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$992	12.10%
55	03917	Repair eyelid defect	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$603	7.35%
56	23412	Repair rotator cuff chronic	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$1,426	17.39%
57	14060	Skin tissue rearrangement	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$519	6.33%
58	55250	Biopsy of prostate	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$393	4.79%
59	66180	Implant eye shunt	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$1,303	15.89%
60	43450	Dilate esophagus	$1,160	$1,150	$1,140	$1,060	$1,080	$4,430	54%	$3,770	46%	$8,200	100%	$198	2.41%

(10/11/13) 000481

No.	HCPCS	HCPCS Description	Savings in $ (millions)	Average Annual ASC Share Change 2008-2011	Number of ASC Share Quintiles	Projected ASC Share for 2022 (%, Medicare beneficiary)	Projected ASC Share for 2022 (%, Medicare beneficiary)	2011 Volume of Procedures per 1,000 Medicare Beneficiaries	Projected Volume of Procedures for 2022 (per 1,000 Medicare Beneficiaries)	Volume per 1,000 Medicare Beneficiaries Remains Constant: A1. Savings for 2022 (ASC share remains constant) ($millions)	A2. Savings for 2022 (ASC share increases 1% per year) ($millions)	A3. Savings for 2022 (ASC share increase varies) ($millions)	Volume per 1,000 Medicare Beneficiaries Increases 3% per year: B1. Savings for 2022 (ASC share remains constant) ($millions)	B2. Savings for 2022 (ASC share increases 1% per year) ($millions)	B3. Savings for 2022 (ASC share increase varies) ($millions)	% ASC Annual Share Growth Assumption for A2 & B2	Reimbursement Difference Between ASCs and HOPDs, 2011
61	25447	Repair wrist joint(s)	$7	1.12%	47%	58%	80%	0.4	0.5	$14	$17	$23	$21	$26	$36	5%	$1,184
62	43249	Esoph endoscopy dilation	$7	1.08%	36%	38%	52%	2.2	3.1	$12	$15	$20	$19	$24	$33	5%	$298
63	66170	Glaucoma surgery	$6	4.40%	61%	76%	90%	0.4	0.5	$13	$16	$19	$18	$23	$27	5%	$736
64	29822	Shoulder arthroscopy/surgery	$6	2.28%	36%	45%	61%	0.5	0.7	$10	$13	$17	$16	$23	$31	5%	$902
65	14040	Skin tissue rearrangement	$6	1.83%	16%	20%	27%	2.1	2.9	$13	$16	$22	$18	$23	$31	5%	$519
66	28270	Release of foot contracture	$5	3.02%	28%	35%	48%	0.8	1.1	$9	$12	$16	$15	$19	$26	5%	$681
67	15260	Skin full graft een & lips	$5	4.76%	18%	22%	31%	1.5	2.0	$10	$12	$17	$14	$18	$25	5%	$519
68	45383	Lesion removal colonoscopy	$5	1.36%	36%	45%	62%	1.3	1.8	$10	$13	$18	$14	$17	$24	5%	$281
69	66711	Ciliary endoscopic ablation	$5	1.70%	79%	90%	90%	0.3	0.4	$7	$8	$8	$14	$16	$16	5%	$539
70	67924	Repair eyelid defect	$5	3.72%	61%	76%	90%	0.3	0.5	$8	$11	$13	$13	$17	$20	5%	$603
71	52353	Cystouretero w/lithotripsy	$4	4.90%	13%	16%	21%	0.8	1.2	$8	$10	$14	$12	$15	$21	5%	$1,126
72	67028	Injection eye drug	$4	3.19%	1%	1%	2%	54.4	75.4	$6	$8	$11	$11	$14	$19	5%	$169
73	52234	Cystoscopy and treatment	$4	1.27%	19%	24%	33%	0.7	0.9	$7	$9	$13	$11	$13	$18	5%	$794
74	64718	Revise ulnar nerve at elbow	$4	3.70%	36%	45%	62%	0.5	0.7	$6	$8	$11	$11	$13	$18	5%	$577
75	28308	Incision of metatarsal	$3	1.92%	38%	48%	65%	0.4	0.5	$5	$7	$9	$10	$12	$17	5%	$681
76	26123	Release palm contracture	$3	1.37%	47%	58%	80%	0.2	0.3	$8	$10	$13	$10	$12	$17	5%	$892
77	26160	Remove tendon sheath lesion	$3	0.77%	44%	55%	75%	0.4	0.6	$6	$8	$11	$10	$12	$17	5%	$517
78	67950	Revision of eyelid	$3	2.29%	64%	80%	90%	0.2	0.3	$5	$7	$7	$9	$12	$13	5%	$603
79	52224	Cystoscopy and treatment	$3	4.95%	8%	11%	14%	1.3	1.9	$7	$9	$12	$9	$12	$16	5%	$794
80	52310	Cystoscopy and treatment	$3	0.86%	9%	11%	16%	1.8	2.5	$6	$8	$10	$9	$11	$15	5%	$530
81	67961	Revision of eyelid	$3	1.27%	55%	69%	90%	0.2	0.3	$5	$6	$9	$9	$11	$14	5%	$603
82	52235	Cystoscopy and treatment	$3	2.23%	14%	18%	24%	0.7	1.0	$6	$7	$10	$9	$11	$15	5%	$794
83	66986	Exchange lens prosthesis	$3	0.17%	63%	78%	90%	0.2	0.2	$5	$6	$7	$8	$10	$12	5%	$740
84	64479	Inj foramen epidural c/t	$3	0.16%	31%	38%	53%	1.1	1.5	$5	$6	$9	$8	$10	$14	5%	$229
85	66250	Follow-up surgery of eye	$2	1.83%	37%	46%	64%	0.3	0.4	$4	$5	$7	$6	$7	$10	5%	$539
86	14061	Skin tissue rearrangement	$2	1.01%	16%	19%	27%	0.7	0.9	$4	$5	$7	$6	$7	$10	5%	$519
87	17311	Mohs 1 stage h/n/hf/g	$1	3.76%	1%	2%	2%	14.8	20.5	$2	$2	$3	$3	$4	$5	5%	$162
88	13121	Repair of wound/er lesion	$1	0.48%	6%	7%	10%	2.8	3.8	$1	$1	$1	$2	$2	$3	5%	$95
89	15823	Revision of upper eyelid	$41	6.61%	68%	85%	90%	2.4	3.4	$84	$105	$111	$117	$146	$155	10%	$671
90	50590	Fragmenting of kidney stone	$13	10.88%	18%	23%	52%	1.5	2.1	$29	$37	$72	$36	$45	$103	10%	$1,265

No.	HCPCS	HCPCS Description	Savings in $ (millions)	Average Annual ASC Share Change 2008-2011	Number of 2011 ASC Share Quintiles	Projected ASC Share for 2022 (%, Medicare beneficiary)	Projected ASC Share for 2022 (%, Medicare beneficiary)	2011 Volume of Procedures per 1,000 Medicare Beneficiaries	Projected Volume of Procedures for 2022 (per 1,000 Medicare Beneficiaries)	Volume per 1,000 Medicare Beneficiaries Remains Constant: A1. Savings for 2022 (ASC share remains constant) ($millions)	A2. Savings for 2022 (ASC share increases 1% per year) ($millions)	A3. Savings for 2022 (ASC share increase varies) ($millions)	Volume per 1,000 Medicare Beneficiaries Increases 3% per year: B1. Savings for 2022 (ASC share remains constant) ($millions)	B2. Savings for 2022 (ASC share increases 1% per year) ($millions)	B3. Savings for 2022 (ASC share increase varies) ($millions)	% ASC Annual Share Growth Assumption for A2 & B2	Reimbursement Difference Between ASCs and HOPDs, 2011
91	67042	Vit for macular hole	$13	7.78%	42%	53%	90%	0.7	0.9	$26	$32	$55	$36	$45	$77	10%	$1,234
92	52332	Cystoscopy and treatment	$10	5.10%	13%	16%	36%	2.6	3.6	$15	$18	$42	$27	$34	$78	10%	$794
93	67041	Vit for macular puckor	$9	7.36%	40%	50%	90%	0.5	0.6	$19	$24	$42	$24	$30	$54	10%	$1,234
94	65855	Laser surgery of eye	$8	10.98%	22%	28%	63%	4.0	5.6	$18	$23	$52	$24	$30	$68	10%	$257
95	67900	Repair brow defect	$8	7.23%	68%	85%	90%	0.4	0.6	$14	$18	$19	$24	$30	$32	10%	$801
96	31255	Removal of ethmoid sinus	$8	11.19%	39%	49%	90%	0.6	0.8	$17	$21	$38	$22	$28	$51	10%	$933
97	67036	Removal of inner eye fluid	$6	10.53%	38%	47%	90%	0.4	0.5	$13	$16	$31	$18	$23	$43	10%	$1,234
98	31267	Endoscopy maxillary sinus	$6	11.09%	37%	46%	90%	0.5	0.7	$11	$14	$26	$18	$22	$44	10%	$933
99	30140	Resect inferior turbinate	$6	16.88%	39%	48%	90%	0.5	0.7	$12	$15	$28	$16	$20	$37	10%	$773
100	67108	Repair detached retina	$6	11.99%	34%	43%	90%	0.4	0.5	$11	$14	$29	$16	$20	$42	10%	$1,234
101	47562	Laparoscopic cholecystectomy	$5	11.18%	6%	7%	16%	1.8	2.5	$11	$14	$32	$16	$19	$44	10%	$1,442
102	66761	Revision of iris	$5	9.24%	27%	34%	78%	2.4	3.3	$11	$13	$31	$15	$19	$43	10%	$237
103	67040	Laser treatment of retina	$5	8.70%	33%	41%	90%	0.3	0.4	$10	$12	$27	$13	$17	$36	10%	$1,234
104	52204	Cystoscopy w/biopsy(s)	$5	7.61%	19%	24%	55%	0.8	1.1	$9	$11	$25	$13	$16	$37	10%	$794
105	20610	Drain/inject joint/bursa	$4	18.62%	0.5%	1%	1%	153.1	212.0	$8	$10	$24	$12	$14	$33	10%	$149
106	31256	Exploration maxillary sinus	$4	8.96%	37%	46%	90%	0.3	0.4	$7	$9	$18	$12	$14	$28	10%	$933
107	31276	Sinus endoscopy surgical	$4	22.38%	33%	41%	90%	0.4	0.5	$10	$12	$27	$11	$14	$31	10%	$933
108	64640	Injection treatment of nerve	$4	25.05%	13%	16%	16%	1.8	2.4	$6	$8	$18	$10	$13	$29	10%	$437
109	67255	Reinforce/graft eye wall	$3	6.57%	50%	63%	90%	0.3	0.3	$4	$6	$8	$9	$12	$17	10%	$706
110	69436	Create eardrum opening	$3	11.68%	40%	50%	90%	0.3	0.5	$6	$8	$14	$7	$9	$17	10%	$522
111	45330	Diagnostic sigmoidoscopy	$2	15.64%	17%	21%	48%	1.3	1.7	$5	$6	$14	$7	$9	$20	10%	$324
112	68815	Probe nasolacrimal duct	$2	8.08%	51%	64%	90%	0.2	0.3	$4	$5	$6	$7	$9	$12	10%	$603
113	46221	Ligation of hemorrhoid(s)	$2	59.92%	11%	14%	33%	1.7	2.4	$4	$5	$11	$6	$8	$18	10%	$296
114	67840	Remove eyelid lesion	$2	15.10%	8%	10%	24%	1.4	2.0	$4	$4	$10	$5	$6	$15	10%	$422
115	45331	Sigmoidoscopy and biopsy	$1	5.08%	34%	43%	90%	0.7	0.9	$3	$3	$7	$4	$5	$11	10%	$175
116	67210	Treatment of retinal lesion	$1	10.61%	7%	9%	21%	2.9	4.0	$3	$4	$9	$4	$5	$11	10%	$169
117	67228	Treatment of retinal lesion	$1	11.58%	7%	9%	20%	2.3	3.2	$2	$3	$6	$3	$4	$8	10%	$169
118	11642	Exc face-lesion malig+marg 1.1-2	$1	7.98%	3%	4%	10%	3.5	4.9	$2	$2	$4	$3	$4	$8	10%	$226
119	64480	Inj foramen epidural add-on	$1	17.51%	29%	36%	83%	0.8	1.0	$2	$2	$5	$3	$3	$8	10%	$117
120	51700	Irrigation of bladder	$0.5	29.91%	3%	4%	10%	4.0	5.5	$1	$1	$3	$2	$2	$4	10%	$99
		Median or Mean	$4	5.7%	34%	43%	90%	1.3	1.7	$6	$8	$14	$7	$9	$17	10%	$519

NOTES:

*Increases volume per 1,000 Medicare beneficiaries by 3% annually.

**The reported totals are for savings. The remaining columns are simple means across the 120 procedures, for which the mean is not influenced by (or weighted for) high-volume procedures, such as cataracts. Savings are reported in nominal dollars. N/A: not applicable.

Medicare Cost Savings Tied to Ambulatory Surgery Centers

ASCA
Ambulatory Surgery Center Association

Produced with cost savings analysis from
Berkeley
UNIVERSITY OF CALIFORNIA

000482 (10/11/13)

EXHIBIT 25

direction for decisions

AWARENESS AND IMAGE OF MIDSTATE MEDICAL CENTER

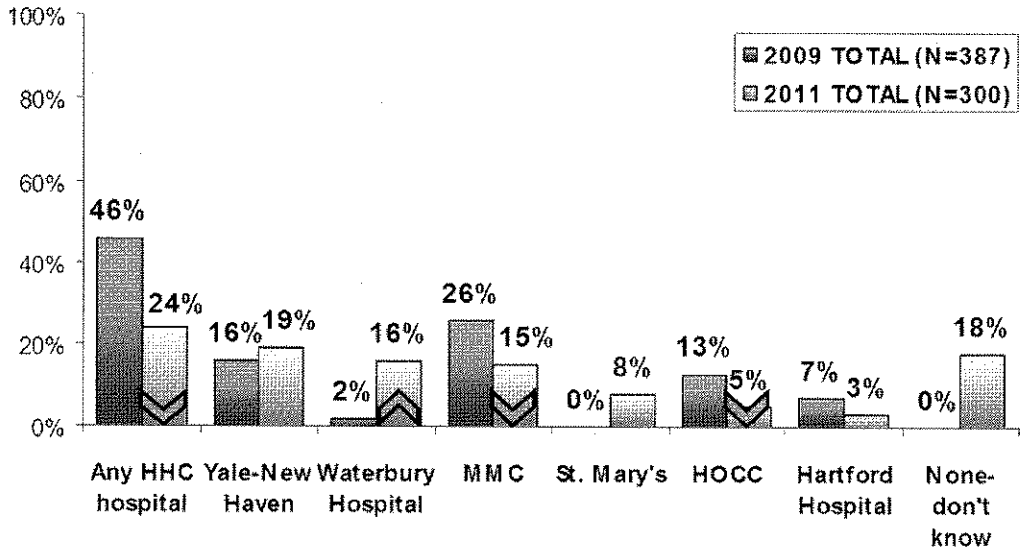
Rationale and Objectives

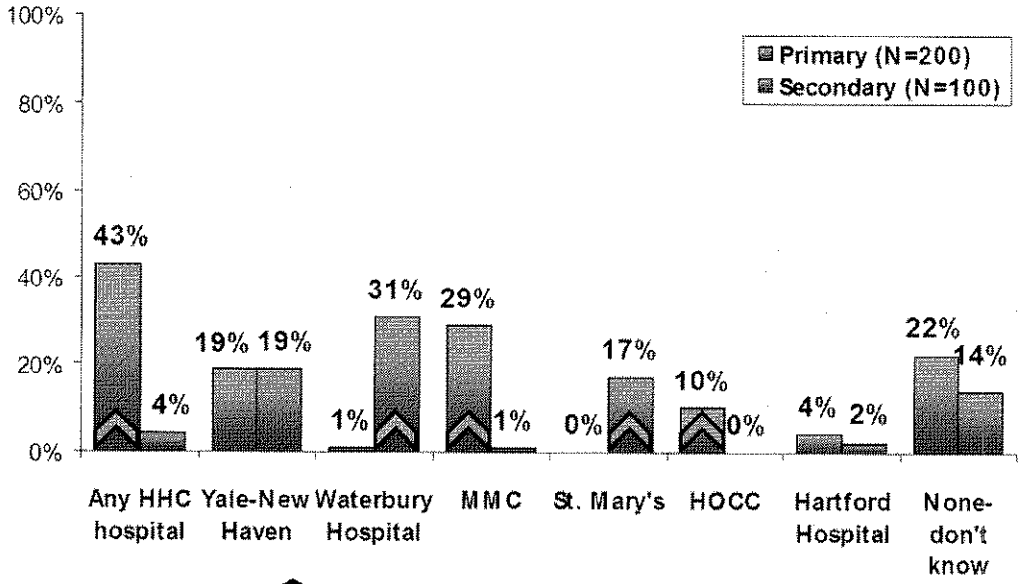
- The overall goal of this research is to understand the position of the Hartford HealthCare (HHC) system as a whole, as well as the position of its partner hospitals.
- This report presents the findings of a telephone survey of residents in Hartford HealthCare's **Midstate Medical Center** market area, and compares the findings to a research project conducted for MidState Medical Center (MMC) by Words & Numbers Research, Inc., in 2009.
- The specific objectives of this research are to assess residents':
  - **Use of MidState Medical Center**
  - **Recall of ads** for MidState Medical Center and other area hospitals
  - **Brand awareness** of MidState Medical Center and other area hospitals
  - **Brand preference** for **routine and serious care**, as well as **key service lines**
  - **Brand image** of MidState Medical Center vis-à-vis other area hospitals
  - Brand awareness and image of the **Hartford HealthCare system**

Methodology

- The phone numbers for this study were generated using a **Random-Digit Dialing (RDD)** process. The sample for the Waterbury subsection of the Secondary Market was generated using listed sample.
  - We **screened** each household to exclude residents who work as physicians, nurse practitioners, physician assistants, hospital administrators, or who serve on a board of directors for a hospital.
  - In all households we spoke with **residents age 21 and over** who make most of the **decisions about health care** for their households.
    - Where appropriate, we compare data from this year's study with the data generated by Words & Numbers Research, Inc., in 2009.
    - Comparisons between the results of the two studies should be made with caution because of differences in the sample design.
      - The 2011 study included three towns that were not in the 2009 sample: Prospect, Waterbury, and Wolcott.
      - The 2011 sample excluded three towns from the 2009 sample: Berlin, Durham, and Middlefield.
- Between December 1 and December 21, 2011, MSR conducted 300 telephone interviews, including:
  - **200 interviews in the Primary Market**, which includes Cheshire, Meriden, Southington, and Wallingford
  - **100 interviews in the Secondary Market**, which includes North Haven, Prospect, Waterbury, and Wolcott.
- The **response rate** for the survey as a whole is 22%.
- All data presented in this report are **weighted** unless otherwise indicated, to better reflect the characteristics of the population as a whole.
- Due to rounding, percentages presented in this report may not always sum to 100%.
- We conducted **difference of proportion tests** on all comparisons between groups in order to determine if the differences between subgroups were statistically significant and not due to sampling error.
- In this report, differences are reported as significant if the difference of proportion tests conducted indicate that there is a 95% or greater chance that the difference is real and not due to sampling error. These differences are marked with a color-coded chevron symbol in the charts in this report. The following page provides an illustration for readers to use in interpreting these charts.
- The **margin of error** for this study is ± 3.4 to 5.7 percentage points.
- Further technical information about this study is available upon request.

Brand Preference: Orthopedic Care





Indicates significant difference.

- **HHC member hospitals** are **somewhat strongly preferred** for orthopedic care.
- MMC is significantly less preferred in 2011 for orthopedics compared to 2009.
  - Waterbury is significantly more preferred in 2011 than in 2009 for this service line.
- MMC is significantly more preferred in the **Primary Market** than in the Secondary Market for orthopedics.
- In terms of **competing hospitals:**
  - In the **Primary Market**, Yale-New Haven is preferred by 19% of residents.
  - In the **Secondary Market,** Waterbury (31%), Yale-New Haven (19%), and St. Mary's (17%) are preferred by more than 10% of residents.
- About 18% of residents overall **do not have a specific hospital** they prefer for this type of care.

EXHIBIT 26

An error discovered in the processing of the 2006 National Survey of Ambulatory Surgery procedure data resulted in a revised data set. All analyses involving procedure data were rerun and some reported findings have changed. The required revisions have been made. In addition, some standard errors for both visits and procedures were printed incorrectly in the original report and these have been corrected in this revised report. For more information, see the explanation at the end of the report.

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Ambulatory Surgery in the United States, 2006

by Karen A. Cullen, Ph.D., M.P.H.; Margaret J. Hall, Ph.D.; and Aleksandr Golosinskiy, Division of Health Care Statistics

Abstract

Objectives—This report presents national estimates of surgical and nonsurgical procedures performed on an ambulatory basis in hospitals and freestanding ambulatory surgery centers in the United States during 2006. Data are presented by types of facilities, age and sex of the patients, and geographic regions. Major categories of procedures and diagnoses are shown by age and sex. Selected estimates are compared between 1996 and 2006.

Methods—The estimates are based on data collected through the 2006 National Survey of Ambulatory Surgery by the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS). The survey was conducted from 1994–1996 and again in 2006. Diagnoses and procedures presented are coded using the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM).

Results—In 2006, an estimated 53.3 million surgical and nonsurgical procedures were performed during 34.7 million ambulatory surgery visits. Of the 34.7 million visits, 19.9 million occurred in hospitals and 14.9 million occurred in freestanding ambulatory surgery centers. The rate of visits to freestanding ambulatory surgery centers increased about 300 percent from 1996 to 2006, whereas the rate of visits to hospital-based surgery centers remained largely unchanged during that time period. Females had significantly more ambulatory surgery visits (20.0 million) than males (14.7 million), and a significantly higher rate of visits (132.0 per 1,000 population) compared with males (100.4 per 1,000 population).

Average times for surgical visits were higher for ambulatory surgery visits to hospital-based ambulatory surgery centers than for visits to freestanding ambulatory surgery centers for the amount of time spent in the operating room (61.7 minutes compared with 43.2 minutes), the amount of time spent in surgery (34.2 minutes compared with 25.1 minutes), the amount of time spent in the postoperative recovery room (79.0 minutes compared with 53.1 minutes), and overall time (146.6 minutes compared with 97.7 minutes).

Although the majority of visits had only one or two procedures performed (59.8 percent and 27.7 percent, respectively), 1.0 percent had five or more procedures performed. Frequently performed procedures on ambulatory surgery patients included endoscopy of large intestine (5.7 million), endoscopy of small intestine (3.5 million), extraction of lens (3.1 million), injection of agent into spinal canal (2.0 million), and insertion of prosthetic lens (2.6 million). The leading diagnoses at ambulatory surgery visits included cataract (3.0 million); benign neoplasms (2.0 million), malignant neoplasms (1.2 million), diseases of the esophagus (1.1 million), and diverticula of the intestine (1.1 million).

Keywords: Outpatients • Diagnoses • Procedures • ICD–9–CM • National Survey of Ambulatory Surgery

Introduction

This report presents data from the 2006 National Survey of Ambulatory Surgery (NSAS). The survey, previously conducted annually from 1994 through 1996, was conducted by NCHS to gather and disseminate data about ambulatory surgery in the United States. For NSAS, ambulatory surgery refers to surgical and nonsurgical procedures performed on an ambulatory (outpatient) basis in a hospital or freestanding center's general operating rooms, dedicated ambulatory surgery rooms, and other specialized rooms, such as endoscopy units and cardiac catheterization laboratories. NSAS is the principal source for national data on the characteristics of visits to hospital-based and freestanding ambulatory surgery centers.

Ambulatory surgery has been increasing in the United States since the early 1980s. Two major reasons for the increase are advances in medical technology and changes in payment arrangements. The medical advances include improvements in anesthesia, which enable patients to regain consciousness more quickly with fewer after effects and better analgesics for relief of pain. In addition, minimally invasive and noninvasive procedures have been developed and are being used with increasing frequency. Examples include laser surgery, laparoscopy, and endoscopy. These medical advances have made surgery less complex and risky (1) and have allowed many

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procedures to move from inpatient to ambulatory settings (2–6).

At the same time, concern about rising health care costs led to changes in the Medicare program that encouraged the development of ambulatory surgery. In the early 1980s, the Medicare program was expanded to cover care in ambulatory surgery centers, and a prospective payment system based on diagnosis-related groups was adopted for hospital inpatient care that created strong financial incentives for hospitals to shift less complex surgery to outpatient settings. Many state Medicaid plans and private insurers followed the lead of the Medicare program and adopted similar policies (7).

Additional changes in the health care system, such as the growth of managed care along with consolidation of hospitals, have furthered the growth of ambulatory surgery (3,8). As these changes occurred, many types of surgeries done in hospitals were increasingly performed during ambulatory visits. Both in conjunction with and as a result of these changes, the number of freestanding ambulatory surgery centers (ASCs) grew from 239 in 1983 (9) to over 3,300 nearly two decades later (3,10). The number of procedures being performed in ASCs also increased dramatically—from 380,000 procedures in 1983 to 31.5 million in 1996 (5).

The National Hospital Discharge Survey (NHDS), which has been conducted by NCHS every year since 1965, includes information on surgical and nonsurgical procedures performed in inpatient settings (11–13). Although NHDS remains a good source of data for procedures that can be done only on an inpatient basis, such as open-heart surgery or cesarean delivery, NHDS estimates have become incomplete for procedures that can be performed on an ambulatory basis. NSAS was undertaken to obtain information about ambulatory procedures. For many types of procedures, data from both NHDS and NSAS are now required to obtain national estimates. Reports that present both ambulatory and inpatient procedure data for 1994, 1995, and 1996 have been published (14–16).

NSAS and NHDS are two of the NCHS provider-based surveys that constitute the National Health Care Surveys (NHCS). The NHCS were designed to provide nationally representative data on the use of health care resources of major sectors of the health care delivery system. Information on ambulatory procedures is also collected in two other NHCS surveys. The National Ambulatory Medical Care Survey obtains information on procedures ordered or performed during visits to physicians' offices (17), and the National Hospital Ambulatory Medical Care Survey (NHAMCS) collects data on procedures ordered or performed during visits to hospital outpatient and emergency departments (18).

Methods

Data source

NSAS covers procedures performed in ambulatory surgery centers, both hospital-based and freestanding. The hospital universe includes noninstitutional hospitals exclusive of federal, military, and Department of Veterans Affairs hospitals located in the 50 states and the District of Columbia. Only short-stay hospitals (hospitals with an average length of stay for all patients of fewer than 30 days), or those whose specialty was general (medical or surgical), or children's general were included in the survey. These hospitals must also have had six beds or more staffed for patient use. This universe definition is the same as that used for the NHDS and the NHAMCS. For the 2006 NSAS, the hospital sample frame was constructed from the products of Verispan, L.L.C., specifically its "Healthcare Market Index, Updated June 15, 2005" and its "Hospital Market Profiling Solution, Second Quarter, 2005" (19). These products were formerly known as the SMG Hospital Market Database. In 2006, the sample consisted of 224 hospitals. Of the 224 hospitals, 35 were found to be out-of-scope (ineligible) because they went out of business or otherwise failed to meet the criteria for the NSAS universe. Of the 189 in-scope (eligible) hospitals, 142 hospitals responded to the survey for a response rate of 75.1%.

The universe of freestanding facilities included ones that were regulated by the states or certified by the Centers for Medicare & Medicaid Services (CMS) for Medicare participation. The sampling frame consisted of facilities listed in the 2005 Verispan Freestanding Outpatient Surgery Center Database (20) and Medicare-certified facilities included in the CMS Provider-of-Services (POS) file (21). Facilities specializing in dentistry, podiatry, abortion, family planning, or birthing were excluded. However, procedures commonly found in these settings were not excluded from in-scope locations. In 1994–1996, pain block locations were also excluded; however, they were included in the 2006 NSAS. In 2006, the sample consisted of 472 freestanding ASCs. Of the 472 freestanding ambulatory surgery centers, 74 were found to be out-of-scope (ineligible) because they failed to meet the criteria for the NSAS universe. Of the 398 in-scope (eligible) freestanding ambulatory surgery centers, 295 responded to the survey for a response rate of 74.1%. The overall response rate was 74.4%.

Sample design

The NSAS sampled facilities were selected using a multistage probability design with facilities having varying selection probabilities. Independent samples of hospitals and freestanding ambulatory surgery centers were drawn. Unlike the 1994–1996 NSAS, which used a three-stage stratified cluster design, with the first stage consisting of geographic primary sampling units or PSUs, the 2006 NSAS used a two-stage list-based sample design. Facilities were stratified by facility type (hospital compared with freestanding), ambulatory surgery status of hospitals (i.e., whether or not the hospital performed such surgery), facility specialty, and geographic region.

The first stage of the design consisted of selection of facilities using systematic random sampling with probabilities proportional to the annual

number of ambulatory surgeries performed. For the stratum of hospitals which, according to the sampling frame data, did not have ambulatory surgery, a national sample of 25 hospitals was selected to permit estimates of surgery in hospitals that either added ambulatory surgery since the frame was selected or differed from the frame.

At the second stage, within sampled facilities, a sample of ambulatory surgery visits was selected using a systematic random sampling procedure. Selection of visits within each facility was performed separately for each location where ambulatory surgery was performed. These locations included main operating rooms; dedicated ambulatory surgery units; cardiac catheterization laboratories; and rooms for laser procedures, endoscopy, and laparoscopy. Locations within hospitals dedicated exclusively to abortion, dentistry, podiatry, or small procedures were not included. The exclusion of these specialty locations, as well as the exclusion of facilities dedicated exclusively to those specialties, was recommended based on the feasibility study for the NSAS that was conducted in 1989–1991. Based on the recommendation of outside experts who were consulted prior to the design of the 2006 NSAS, the 2006 NSAS includes pain block facilities, whereas the 1994–1996 NSAS did not (22). Because NSAS data are collected from a sample of visits, persons with multiple visits during the year may be sampled more than once. NSAS estimates are of the number of visits to or procedures performed in ambulatory surgery facilities, not the number of persons served by these facilities.

Data collection

Sample selection and abstraction of information from medical records were performed at the facilities. Facility staff did the sampling in about 40 percent of facilities that participated in the 2006 survey, and facility staff abstracted the data in about 30 percent of the participating facilities. In the remaining facilities, the work was performed by personnel of the U.S. Census Bureau acting on behalf of NCHS. Data processing and medical coding were performed by the Constella Group Inc., Durham, North Carolina. Editing and estimation were completed at NCHS.

The abstract form ("Technical Notes") contains items relating to the personal characteristics of the patients such as age, sex, race, and ethnicity; and administrative items such as date of procedure, disposition, and expected sources of payment. The medical information includes up to seven diagnoses and six procedures, which were coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM) (23).

A quality control program was conducted on the coding and entering of data from abstracts to electronic form. Approximately 10 percent of the abstractions were independently recoded by an NSAS coder at the Constella Group, Inc., with discrepancies resolved by a chief coder. The overall error rate for the 2006 NSAS was 0.3 percent for diagnosis coding and keying, 0.2 percent for procedure coding and keying, and 0.3 percent for demographic coding and keying.

Estimation

Because of the complex multistage design of the NSAS, the survey data must be inflated or weighted in order to produce national estimates. The estimation procedure produces essentially unbiased national estimates, and has three basic components: inflation by reciprocals of the probabilities of sample selection, adjustment for nonresponse, and population weighting ratio adjustments. These three components of the final weight are described in more detail in another report (22).

Standard errors

The standard error (SE) is primarily a measure of sampling variability that occurs by chance because only a sample, rather than the entire universe, is surveyed. Estimates of the sampling variability for this report were calculated using Taylor approximations in SUDAAN, which takes into account the complex sample design of the NSAS. A description of the software and the approach it uses has been published (24). The SEs of statistics presented in this report are included in each of the tables.

Testing of significance and rounding

In this report, statistical inference is based on the two-sided *t*-test with a critical value of 2.58 (0.01 level of significance). Terms such as "higher" and "less" indicate that differences are statistically significant. Terms such as "similar" or "no difference" mean that no statistically significant difference exists between the estimates being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found not to be significant.

The feasibility of using one weight to calculate estimates and variances was assessed to determine whether the SEs produced from the single-weight variable were for the most part greater than the SEs produced by the variance weights for the same estimates. For certain estimates, the single weights produced variances that underestimated the true variances. This underestimation can lead to Type I errors in which the null hypothesis is incorrectly rejected when using the commonly used significance level of alpha=0.05. As a result, the decision was made that an alpha of 0.01 should be used to reduce the likelihood of committing a Type I error.

Estimates of counts in the tables have been rounded to the nearest thousand. Therefore, figures within tables do not always add to the totals. Rates and percentages were calculated from unrounded figures and may not precisely agree with rates or percentages calculated from rounded data.

Nonsampling error

As in any survey, results are subject to both sampling and nonsampling errors. Nonsampling errors include

reporting and processing errors as well as biases due to nonresponse and incomplete response. The magnitude of the nonsampling errors cannot be computed. However, these errors were kept to a minimum by procedures built into the operation of the survey. To eliminate ambiguities and to encourage uniform reporting, attention was given to the phrasing of items, terms, and definitions. Quality control procedures and consistency and edit checks reduced errors in data coding and processing. The unweighted response rate for the 2006 NSAS was 74.4%. Table 1 presents weighted characteristics of NSAS respondents and nonrespondents, along with weighted response rates. Responding compared with nonresponding distributions were similar, with the exception of higher cooperation among facilities in a nonmetropolitan statistical area. The effect of this differential response is minimized in the visit estimates in most cases, as NSAS uses a nonresponse adjustment factor that takes annual visit volume, specialty, facility type, and geographic region into account. Item nonresponse rates in NSAS are generally low (5% or fewer). However, levels of nonresponse may vary considerably in the survey.

NSAS does not completely measure ambulatory procedures that are performed in locations such as physicians' offices, for example, injections of therapeutic substances, skin biopsies, and certain plastic surgery procedures. The National Ambulatory Medical Care Survey has data about procedures in physicians' offices (17) and the National Hospital Ambulatory Medical Care Survey provides information about procedures in other hospital outpatient and emergency departments (18). As medical technology continues to advance and changes in payment policy promote it, increasing numbers and types of procedures may move from NSAS facilities to elsewhere.

Because certain freestanding facilities and certain specialized locations within hospitals and freestanding facilities are excluded from the NSAS design, ambulatory procedures performed in some specialties are not completely measured by the survey. Excluded specialties include dentistry, podiatry, abortion, family planning, and birthing; and locations that perform small procedures, such as removal of skin lesions, were also excluded. However, procedures in these specialties performed in general operating rooms or other in-scope locations are included in the survey.

The determination of whether an ambulatory surgery facility is a hospital or a freestanding center is based on the universe from which the facility was selected. In most cases, it was apparent whether a facility was a hospital or a freestanding ambulatory surgery center, but some facilities were not easily classified. For example, a "freestanding" facility may be owned by a hospital but located some distance away. If such a facility is separately listed in the 2005 Verispan Freestanding Outpatient Surgery Center Database or in the CMS POS file and is selected into the NSAS sample from this universe, it is considered a freestanding facility. Additional definitions of terms used in the NSAS have been published (22).

Use of tables

The statistics presented in this report are based on a sample, and therefore may differ from the figures that would be obtained if a complete census had been taken. Visits are reported by first-listed diagnosis, which is the one specified as the principal diagnosis on the face sheet or discharge summary of the medical record, or if a principal diagnosis was not specified, the first one listed on the face sheet or discharge summary of the medical record. It was usually the main cause of the visit. The number of first-listed diagnoses is the same as the number of visits.

The estimates shown in this report include surgical procedures, such as tonsillectomy; diagnostic procedures, such as ultrasound; and other therapeutic procedures, such as injection or infusion of cancer chemotherapeutic substance. Up to six procedures are coded for each visit. All-listed procedures include all occurrences of the procedure coded regardless of the order on the medical record.

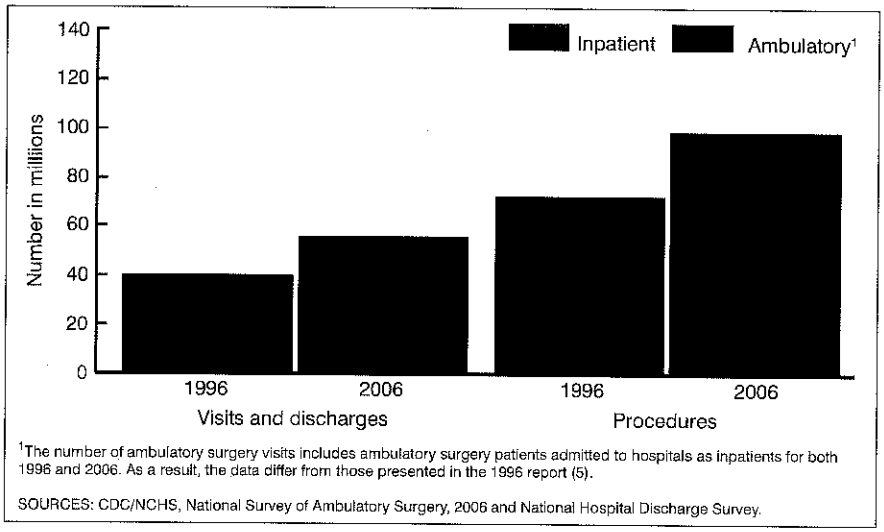
The diagnoses and procedures appear in separate tables of this report, presented by chapter of the ICD–9–CM. Within these chapters, subcategories of diagnoses or procedures are shown. These specific categories were selected primarily because of their large numbers or because they are of special interest.

According to the 2006 NSAS, an estimated 287,000 ambulatory surgery visits with procedures were admitted to the hospital as inpatients. Of these, 269,000 (93.8 percent) were visits to hospitals and 18,000 (6.2 percent) were visits to freestanding centers. In most instances, the ambulatory procedures for these patients become part of their inpatient records. People admitted as inpatients were included in this report, and procedures for these patients were included in the summaries of outpatient procedures, as described in the first version of this report for 1994 (5). These patients were excluded in the 1995 and 1996 *Advance Data Reports* (4,5) and will be excluded to avoid double counting from the Series 13 report in which data from the 2006 NHDS and 2006 NSAS will be presented together, following the same process as reports published using the 1994–1996 data (14–16).

The chances are about 40 in 100 that an estimate from the sample would differ from a complete census by more than the SE. The chances are 9 in 100 that the difference would be more than twice the SE, and about 4 in 100 that the difference would be more than 2.5 times as large as the SE.

The relative standard error (RSE) of an estimate is obtained by dividing the SE by the estimate itself. The RSE is expressed as a percentage of an estimate and can be multiplied by the estimate to obtain the SE. Because of low reliability, estimates with a RSE of more than 30 percent or those based on a sample of fewer than 30 records are replaced by asterisks (*). The estimates that are based on 30 to 59 patient records are preceded by an asterisk (*) to indicate that they also have low reliability.

The population estimates used in computing rates are for the U.S. civilian population, including institutionalized persons, as of July 1, 2006. Rates are computed using adjustments made after the 2000 census (postcensal estimates) of the civilian population of the United States. The data are from unpublished tabulations provided by the U.S. Census Bureau. Facilities are classified by location into one of the four geographic regions of the United States that correspond to those used by the U.S. Census Bureau.



[1]The number of ambulatory surgery visits includes ambulatory surgery patients admitted to hospitals as inpatients for both 1996 and 2006. As a result, the data differ from those presented in the 1996 report (5).

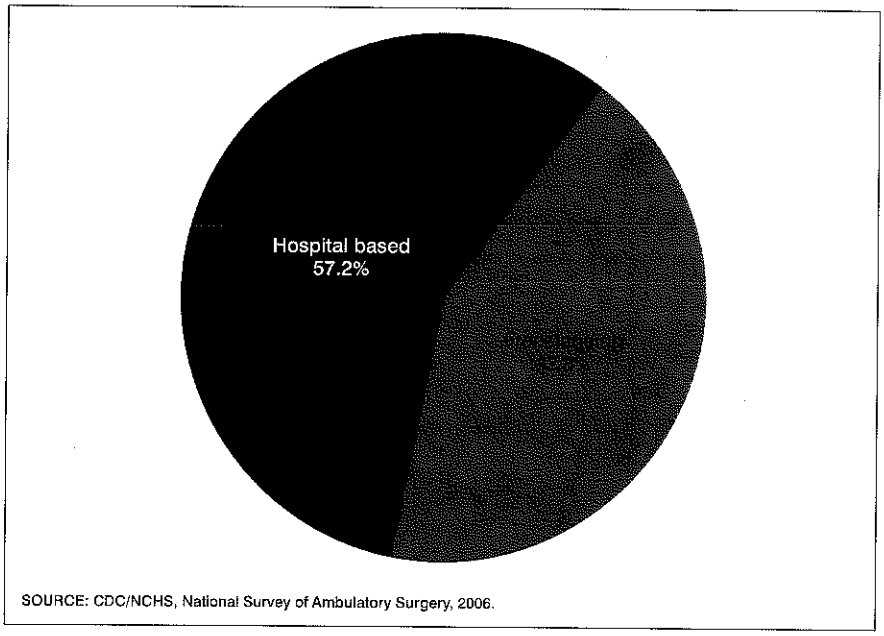
SOURCES: CDC/NCHS, National Survey of Ambulatory Surgery, 2006 and National Hospital Discharge Survey.

Figure 1. Ambulatory surgery visits and discharges of hospital inpatients with procedures: United States, 1996 and 2006 (revised)

Results

Patient and facility characteristics

- In 2006, an estimated 53.3 million surgical and nonsurgical procedures were performed during 34.7 million ambulatory surgery visits (Table 2).
- The 34.7 million ambulatory surgery visits accounted for about 61.6 percent of the combined total of ambulatory surgery visits and inpatient discharges with surgical and nonsurgical procedures (56.4 million) (Figure 1).
- An estimated 19.9 million (57.2 percent) of the ambulatory surgery visits occurred in hospitals and 14.9 million (42.8 percent) occurred in freestanding centers (Table 2, Figure 2).
- From 1996 to 2006, the change in the rate of visits to freestanding centers was larger than that for visits to hospital-based ambulatory surgery centers. The rate of visits to freestanding ambulatory surgery centers increased about 300 percent from 1996 to 2006, while the rate in hospital-based centers was flat (Figure 3).
- Females had significantly more ambulatory surgery visits (20.0 million) than males (14.7 million), and a significantly higher rate of visits (132.0 per 1,000 population) compared with males (100.4 per 1,000 population) (Table 2).
- Although the vast majority of ambulatory surgery visits had routine discharges (93.1 percent), 0.8 percent were admitted as inpatients (Table 3).
- Although general anesthesia alone was provided in 30.7 percent of ambulatory surgery visits, 20.8 percent received anesthesia only intravenously, and 20.8 percent received multiple types of anesthesia (data not shown).

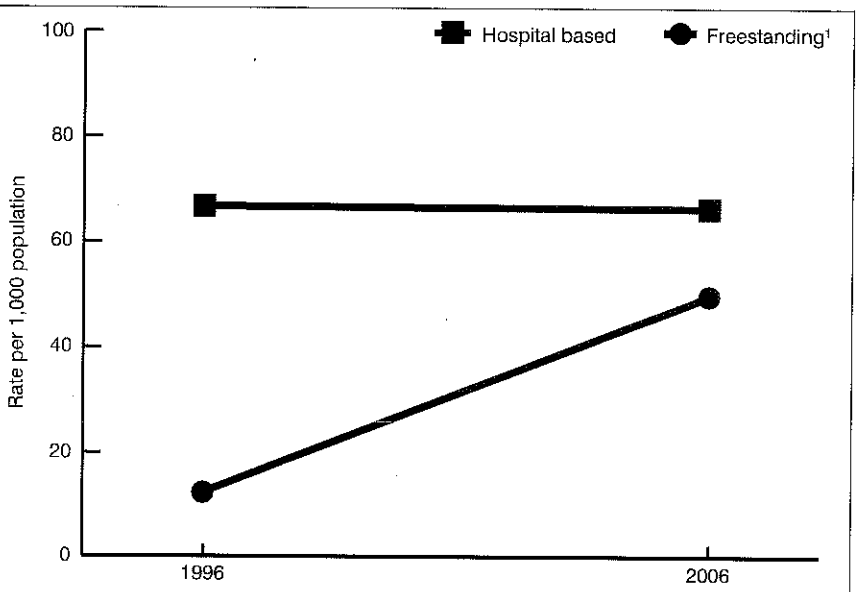


SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery, 2006.

Figure 2. Percent distribution of ambulatory surgery visits by type of facility: United States, 2006

Surgical times for ambulatory surgery visits

- Total time is defined as the length of time from when the patient enters the operating room to the time he or she leaves postoperative care. Operating room time is the length of time the patient is in the operating room. The surgical time is the portion of the



[1]The rate of ambulatory surgery visits includes ambulatory surgery patients admitted to hospitals as inpatients for both 1996 and 2006. As a result, the data differ from those presented in the 1996 report (5).
SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

Figure 3. Rates of ambulatory surgery visits by facility type: United States, 1996 and 2006

time spent in the operating room during which the surgical procedure occurs. Typically, the surgical time is the time from when the incision is made until the wound is closed. After the surgical procedure, the patient recovers in the postoperative room before he or she is discharged; the time spent here is considered the post operative room time. Average times for surgical visits were higher for ambulatory surgery visits to hospital-based ambulatory surgery centers than for visits to freestanding ambulatory surgery centers for the amount of time spent in the operating room (61.7 minutes compared with 43.2 minutes), the amount of time spent in surgery (34.2 minutes compared with 25.1 minutes), the amount of time spent in the postoperative recovery room (79.0 minutes compared with 53.1 minutes), and overall time (146.6 minutes compared with 97.7 minutes) (Table 4).

- The average time spent in surgery also varied with the diagnosis. The average surgical time for inguinal hernia diagnoses was more than twice that for diagnoses of benign neoplasm of the colon (49.4 minutes compared with 21.8 minutes) (Table 5).

Ambulatory procedures

- Females had significantly more ambulatory surgery procedures (30.6 million) than males (22.7 million) and a significantly higher rate of procedures (2,020.2 per 10,000 population) than males (1,548.1 per 10,000 population) (Tables 6,7). This was driven by differences for females between 15 and 64 years of age (Figure 4).
- Although the majority of visits had only one or two procedures performed (59.8 percent and 27.7 percent, respectively), 1.0 percent had five or more procedures performed (Figure 5).
- Frequently performed procedures on ambulatory patients included endoscopy of large intestine (5.7 million), endoscopy of the small intestine (3.5 million), extraction of lens (3.1 million), injection of agent into spinal canal (2.0 million), and insertion of prosthetic lens (2.6 million) (Table 6).
- Females had higher rates per 10,000 population than males for certain ambulatory procedures, such as extraction (125.5 compared with 78.8) and insertion (105.2 compared with 67.4) of lens and endoscopy of the small (134.7 compared with 97.1) and large (217.8 compared with 166.4) intestine (Table 7).
- Ambulatory procedures often performed on children under 15 years included myringotomy with insertion of tube (667,000), tonsillectomy with or without adenoidectomy (530,000), and adenoidectomy without tonsillectomy (132,000) (Table 6).
- Common ambulatory procedures for persons 15–44 years of age were endoscopy of large intestine (779,000); endoscopy of small intestine (770,000); injection of agent into spinal canal (533,000); injection or infusion of therapeutic or prophylactic substance (429,000); and operations on muscle, tendon, facia, and bursa (403,000) (Table 6).
- Ambulatory surgery procedures commonly performed on persons 45–64 years of age were endoscopy of large intestine (2.9 million), endoscopy of small intestine (1.4 million), injection of agent into spinal canal (835,000), and operations on muscle, tendon, fascia and bursa (755,000) (Table 6).
- For persons 65–74 years of age, endoscopy of large intestine (1.2 million), extraction of lens (1.1 million), insertion of lens (923,000), endoscopy of small intestine (648,000), and endoscopic polypectomy of the large intestine (424,000) were the most frequent ambulatory procedures (Table 6).
- Common ambulatory procedures for those 75 years of age or over were extraction of lens (1.3 million), insertion of lens (1.1 million), endoscopy of large intestine (778,000), endoscopy of small intestine (550,000), and injection of agent into spinal canal (336,000) (Table 6).

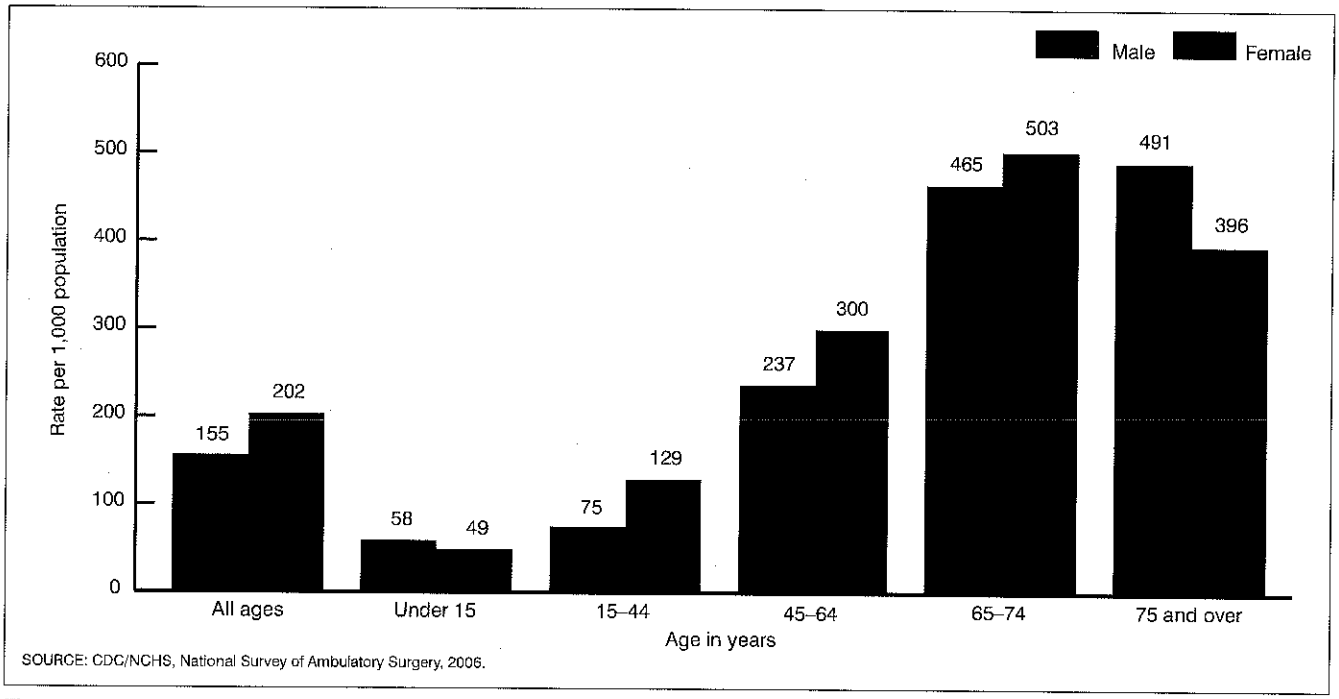


Figure 4. Rate of ambulatory surgery procedures by age and sex: United States, 2006 (revised)

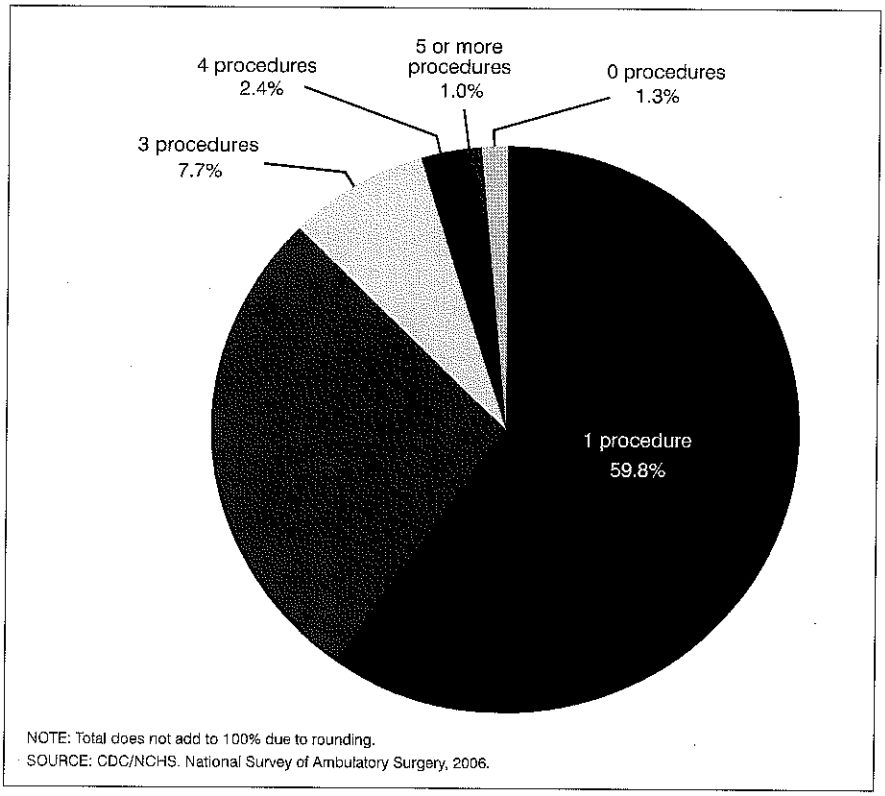


Figure 5. Percent distribution of the number of ambulatory surgery procedures performed per visit: United States, 2006 (revised)

Diagnoses for ambulatory surgery visits

- The leading diagnoses at ambulatory surgery visits included cataract (3.0 million); benign neoplasms (2.0 million), malignant neoplasms (1.2 million), diseases of the esophagus (1.1 million), and diverticula of the intestine (1.1 million) (Table 8).
- Rates of ambulatory surgery visits per 10,000 population varied by gender. For example, the rate of ambulatory surgery visits was higher for females than for males for first-listed diagnoses of cataract (123.5 compared with 77.5) (Table 9).

Discussion

May 2009 revisions of NSAS 2006 data file originally released on October 22, 2008

Identification of a double coding issue with NSAS 2006 data set

The 2006 NSAS public-use data files were released in October 2008. A

researcher contacted NCHS in mid February questioning the fact that the number of myringotomies in the 2006 NSAS was double the number of children under 15 years of age receiving this procedure. In the 1996 NSAS data, there was close to a one-to-one correspondence between these two estimates. The reason for the difference was that in 1996, myringotomy was coded once per record, even if the procedure was performed bilaterally; in 2006, myringotomy was coded twice if performed bilaterally. This inconsistency was unintentional.

Given this inconsistency, the entire 2006 NSAS data set was examined to see if there were other records with multiple identical procedure codes. It was determined that a total of 4,923 records (including myringotomies) of the original 52,233 records in 2006 NSAS had multiple coding (approximately 9%). Double coding was present in only 35 records of 125,000 in the 1996 NSAS.

Coding guidelines followed for the 2006 NSAS data

The 1994–1996 NSAS procedure coding guidelines were based upon *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM) inpatient coding guidelines that were in effect at that time. With the use of these guidelines, multiple coding rarely occurred, even if bilateral or other multiple procedures codes were listed in the record more than one time. Instead of using these ICD–9–CM inpatient coding guidelines, the 2006 NSAS used National Hospital Ambulatory Medical Care Survey (NHAMCS) procedure coding guidelines. Although NHAMCS guidelines were also based on ICD–9–CM codes, they differed in allowing double coding if the following circumstances occurred: if more than one site was specified, if a procedure was bilateral, and if an abstractor recorded a procedure multiple times. In NHAMCS, an editing process removed all double codes that were determined to be inappropriate. However, this step in the editing process was not incorporated into the 2006 NSAS data production, thereby creating the double coding issue.

Table A. A comparison of estimates of procedures from Table 2, by selected characteristics: United States, 2006

Characteristic	Original NSAS (Number in thousands)	Revised NSAS (Number in thousands)	Revised/ original (Percent)	Decrease	Percent decrease
Total procedures	57,062	53,329	93.5	3,733	7
Facility type					
Hospital based	32,320	30,761	95.2	1,559	5
Freestanding	24,742	22,568	91.2	2,174	9
Male					
Hospital based	14,051	13,286	94.6	765	5
Freestanding	10,277	9,395	91.4	882	9
Female					
Hospital-based	18,270	17,475	95.6	795	4
Freestanding	14,465	13,173	91.1	1,292	9
Region					
Northeast	8,551	8,018	93.8	533	6
Midwest	13,583	12,575	92.6	1,008	7
South	25,509	24,023	94.2	1,486	6
West	9,420	8,713	92.5	707	8
Male					
Northeast	3,710	3,486	94.0	224	6
Midwest	5,803	5,321	91.7	482	8
South	10,755	10,143	94.3	612	6
West	4,060	3,730	91.9	330	8
Female					
Northeast	4,841	4,532	93.6	309	6
Midwest	7,780	7,254	93.2	526	7
South	14,754	13,879	94.1	875	6
West	5,359	4,983	93.0	376	7
Metropolitan status					
Metropolitan statistical area	48,874	45,691	93.5	3,183	7
Nonmetropolitan statistical area	8,189	7,638	93.3	551	7
Male					
Metropolitan statistical area	20,821	19,399	93.2	1,422	7
Nonmetropolitan statistical area	3,507	3,282	93.6	225	6
Female					
Metropolitan statistical area	28,053	26,292	93.7	1,761	6
Nonmetropolitan statistical area	4,682	4,356	93.0	326	7

NOTES: Table A is a comparison of the January 28, 2009, *National Health Statistics Report*, Number 11, procedure estimates (taken from Table 2) to the revised estimates in this September 4, 2009, revision. NSAS is the National Survey of Ambulatory Surgery.

Revising the NSAS Data Set and How It Affected the Data

To maintain comparability with the 1994–1996 NSAS data, since multiple codes were not included in the 1996 NSAS, all multiple procedure codes were removed from the 2006 NSAS data. As a result, the estimate for the total number of 2006 NSAS procedures fell from 57,062,000 to 53,329,000, a 6.5% decrease. Categories were differentially affected. Tables A and B show the 2006 NSAS original and the 2006 NSAS revised estimates for some of the major procedure categories included in this and the January 28, 2009, NSAS *National Health Statistics Report*. The tables also include ratios of the revised estimates to the original estimates to show relative changes. As expected, the revised estimates decreased most for bilateral and other multiple site procedures.

Table B. A comparison of estimates of procedures from Table 6, by selected characteristics: United States, 2006

Characteristic	Original NSAS (Number in thousands)	Revised NSAS (Number in thousands)	Revised/ original (Percent)	Decrease	Percent decrease
Total procedures	57,062	53,329	93.5	3,733	7
Age					
Under 15 years	4,034	3,266	81.0	768	19
15–44 years	13,691	12,780	93.3	911	7
45–64 years	21,369	20,167	94.4	1,202	6
65–74 years	9,622	9,182	95.4	440	5
75 years and over	8,345	7,934	95.1	411	5
Sex					
Male	24,328	22,681	93.2	1,647	7
Female	32,734	30,648	93.6	2,086	6
Procedure category					
Nervous system	4,106	3,198	77.9	908	22
Eye	7,296	7,085	97.1	211	3
Ear	1,723	1,114	64.7	609	35
Nose, mouth, and pharynx	3,179	2,864	90.1	315	10
Respiratory system	448	445	99.3	3	1
Cardiovascular system	1,395	1,376	98.6	19	1
Digestive system	14,677	14,414	98.2	263	2
Urinary system	1,799	1,776	98.7	23	1
Male genital organs	655	631	96.3	24	4
Female genital organs	2,503	2,497	99.8	6	0.2
Musculoskeletal system	8,439	7,944	94.1	495	6
Integumentary system	4,108	3,581	87.2	527	13
Misc diagnostic/therapeutic and new technologies	6,387	6,060	94.9	327	5
Other (includes endocrine system, hemic and lymphatic system, and obstetrical procedures	346	344	99.4	2	1

NOTES: Table B is a comparison of the January 28, 2009, *National Health Statistics Reports*, Number 11, procedure estimates (taken from Table 6) to the revised estimates in this September 4, 2009, revision. NSAS is the National Survey of Ambulatory Surgery.

The procedure estimates for the following chapters were most affected by the deletion of multiple codes:

- Operations on the nervous system decreased 22% largely due to multiple coding of injection of agent into spinal canal.
- Operations on the ear decreased 35% largely due to double coding of myringotomy with insertion of tube.
- Operations on the nose, mouth, and pharynx decreased 10%.
- Operations on the integumentary system decreased 13% largely due to multiple coding of excision or destruction of lesion or tissue of skin and subcutaneous tissue.

Since myringotomies are a common procedure for children, estimates for both myringotomies and for overall procedures for children decreased a great deal after double coding was eliminated. The children's estimate decreased by 19% and the myringotomy estimate decreased by 44%.

Steps taken to improve coding in the future

A coding manual for the 2009 Ambulatory Surgical Center (ASC) data (now being gathered through NHAMCS) that clarifies the multiple coding issue is being prepared for coding of NHAMCS data. The differences between CPT and ICD–9–CM coding principles are discussed in the new manual along with what to do if the record contains only CPT codes. For the 2009 coding of ASC data, a crosswalk has been developed to generate ICD–9–CM codes from CPT codes. Instructions detailing how to handle duplicate codes are also included.

When the 2009 NHAMCS data are processed, NCHS will examine all double coding and remove any codes that are found to be inappropriate.

Your suggestions are welcomed on how to handle multiple codes in future ASC data. Please send any suggestions to Nancy Sonnenfeld at nsonnenfeld@cdc.gov.

Steps data users should take upon receiving the revised data

All data analyses based on the original NSAS data set should not be used. Instead, the analyses should be rerun using the revised data set. Similarly, any estimates or standard errors taken from the original NSAS *National Health Statistics Reports* (January 28, 2009) should not be used. Instead, these numbers should be obtained from this revised (September 4, 2009) report. Changes in this report are not limited to procedure estimates and standard errors affected by the method of handling multiple codes. Printing errors were also discovered, which affected some of the standard errors for visits and for procedures. These errors have been corrected in this revised report.

What has changed in the revised NSAS data set

As was indicated previously in the discussion of the data set revision, the estimates of some procedures (PROC1-PROC6), particularly those that were coded multiple times, have changed. They are lower because duplicates have been deleted. The values for other variables that were derived from the procedure data had to be derived again from the newer data set. The variables affected were NUMPROC (number of procedures per visit), SGFLAG1-SGFLAG6 (flags indicating if the procedures were surgical or nonsurgical), and PD1CLASS-PD6CLASS (the Agency for Health Care Research and Quality's Procedure Class Tool variables). Because of the changes in certain estimates, standard errors for these estimates may also have changed.

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Table 1. Characteristics of the 2006 National Survey of Ambulatory Surgery facility respondents and nonrespondents: United States

Facility characteristic	Number of sampled in-scope facilities	Total percent distribution (weighted)	Responding facility percent distribution (weighted)	Nonresponding facility percent distribution (weighted)	Weighted response rate	Standard error
All facilities	587	100.0	100.0	100.0	83.7	2.6
Facility type						
Hospital based	189	49.9	51.2	43.1	85.9	3.8
Freestanding	398	50.1	48.8	56.9	81.5	3.3
Geographic region						
Northeast	90	11.7	12.5	8.2	88.7	4.5
Midwest	126	24.1	23.7	25.9	82.5	6.8
South	222	40.4	41.8	33.2	86.6	3.6
West	149	23.7	22.0	32.8	77.5	5.2
Metropolitan status[1]						
Metropolitan statistical area	521	73.1	70.1	88.6	80.3	2.9
Nonmetropolitan statistical area	66	26.9	29.9	11.4	93.1	3.7
Growth area[2]						
Below 7.8% growth	209	43.3	46.1	29.3	89.0	3.5
Above 7.8% growth	378	56.7	53.9	70.7	80.0	3.4
Poverty status of area[2]						
Below 13.1% in poverty	337	51.9	52.1	51.3	83.9	3.1
Above 13.1% in poverty	250	48.1	47.9	48.7	83.5	4.2
Primary care shortage area[2]						
Nonshortage area	99	22.5	24.3	13.7	90.1	5.0
Shortage area	488	77.5	75.7	86.3	81.8	3.1

[1]Distribution between respondents and nonrespondents is significantly different ($p < 0.05$).

[2]Based on the Area Resource File value for the county in which the facility is located. Growth is based on the population difference between 2006 and 1996. Poverty is based on the percentage of population below the poverty level. Shortage area includes full or partial shortage area for primary care physicians.

SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

Table 2. Number, percent distribution, and rate of ambulatory surgery visits and all-listed procedures, by facility characteristics and sex: United States, 2006

Characteristic	Both sexes		Male		Female	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
			Number in thousands			
Total visits	34,738	1,829	14,707	781	20,032	1,072
Facility type						
Hospital based	19,869	880	8,491	395	11,379	518
Freestanding	14,869	1,603	6,216	674	8,653	939
Region						
Northeast	5,298	645	2,248	273	3,051	385
Midwest	8,047	610	3,378	272	4,669	355
South	15,931	1,540	6,749	656	9,182	897
West	5,462	427	2,331	179	3,130	266
Metropolitan status						
Metropolitan statistical area	29,715	1,943	12,566	825	17,149	1,138
Nonmetropolitan statistical area	5,024	937	2,140	407	2,883	537
			Percent distribution			
Total visits	100.0	...	100.0	...	100.0	...
Facility type						
Hospital based	57.2	2.9	57.7	2.9	56.8	2.9
Freestanding	42.8	2.9	42.3	2.9	43.2	2.9
Region						
Northeast	15.3	1.7	15.3	1.7	15.2	1.8
Midwest	23.2	1.8	23.0	1.8	23.3	1.8
South	45.9	2.7	45.9	2.8	45.8	2.8
West	15.7	1.3	15.9	1.3	15.6	1.4
Metropolitan status						
Metropolitan statistical area	85.5	2.7	85.4	2.8	85.6	2.7
Nonmetropolitan statistical area	14.5	2.7	14.6	2.8	14.4	2.7
			Rate per 1,000 population[1]			
Total visits	116.5	6.1	100.4	5.3	132.0	7.1
Facility type						
Hospital based	66.6	3.0	58.0	2.7	75.0	3.4
Freestanding	49.9	5.4	42.4	4.6	57.0	6.2
Region						
Northeast	96.9	11.8	84.6	10.3	108.5	13.7
Midwest	121.7	9.2	103.8	8.3	139.0	10.6
South	147.0	14.2	127.3	12.4	165.7	16.2
West	79.2	6.2	67.8	5.2	90.5	7.7
Metropolitan status						
Metropolitan statistical area	119.3	7.8	102.7	6.7	135.5	9.0
Nonmetropolitan statistical area	99.6	18.6	85.3	16.2	113.8	21.2

See footnotes at end of table.

Table 2. Number, percent distribution, and rate of ambulatory surgery visits and all-listed procedures, by facility characteristics and sex: United States, 2006—Con.

Characteristic	Both sexes		Male		Female	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
			Number in thousands			
Total procedures	53,329	2,654	22,681	1,138	30,648	1,575
Facility type						
Hospital based	30,761	1,276	13,286	593	17,475	751
Freestanding	22,568	2,328	9,395	971	13,173	1,385
Region						
Northeast	8,018	898	3,486	392	4,532	530
Midwest	12,575	904	5,321	412	7,254	532
South	24,023	2,224	10,143	939	13,879	1,316
West	8,713	690	3,730	299	4,983	430
Metropolitan status						
Metropolitan statistical area	45,691	2,853	19,399	1,213	26,292	1,686
Nonmetropolitan statistical area	7,638	1,387	3,282	613	4,356	791
			Percent distribution			
Total procedures	100.0	...	100.0	...	100.0	...
Facility type						
Hospital based	57.7	2.7	58.6	2.7	57.0	2.8
Freestanding	42.3	2.7	41.4	2.7	43.0	2.8
Region						
Northeast	15.0	1.6	15.4	1.6	14.8	1.6
Midwest	23.6	1.7	23.5	1.8	23.7	1.8
South	45.0	2.6	44.7	2.6	45.3	2.7
West	16.3	1.3	16.4	1.4	16.3	1.4
Metropolitan status						
Metropolitan statistical area	85.7	2.6	85.5	2.7	85.8	2.6
Nonmetropolitan statistical area	14.3	2.6	14.5	2.7	14.2	2.6
			Rate per 1,000 population[1]			
Total procedures	178.8	8.9	154.8	7.8	202.0	10.4
Facility type						
Hospital based	101.3	4.3	89.4	4.0	112.7	4.9
Freestanding	77.5	7.8	65.4	6.6	89.3	9.1
Region						
Northeast	146.6	16.4	131.3	14.7	161.1	18.8
Midwest	190.2	13.7	163.5	12.7	215.9	15.8
South	221.6	20.5	191.3	17.7	250.5	23.8
West	126.3	10.0	108.4	8.7	144.0	12.4
Metropolitan status						
Metropolitan statistical area	183.5	11.5	158.5	9.9	207.7	13.3
Nonmetropolitan statistical area	151.5	27.5	130.8	24.4	172.0	31.2

... Category not applicable.

[1]Rates were calculated using U.S. Census Bureau 2000-based postcensal estimates of the civilian population as of July 1, 2006.

SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

Table 3. Number of ambulatory surgery visits by disposition and principal expected source of payment: United States, 2006

Characteristic	Estimate	Standard error	Percent distribution	Standard error
		Number in thousands		
All visits	34,738	1,829	100	...
Disposition of patient				
Routine[1]	32,356	1,792	93.1	0.9
Observation status	401	66	1.2	0.2
Inpatient admission	287	43	0.8	0.1
Surgery cancelled	79	19	0.2	0.1
Not stated	944	174	2.7	0.5
Other	*	*	*	*
Principal expected source of payment				
Private insurance	18,070	1,045	53.0	1.2
Medicare	10,996	660	32.2	0.9
Medicaid	2,204	189	6.5	0.5
Workers compensation	627	101	1.8	0.3
Other government insurance	309	63	0.9	0.2
Self pay	1,131	185	3.3	0.5
Other	783	170	2.3	0.5

... Category not applicable.
* Figure does not meet standards of reliability or precision.
[1]Patients with routine disposition were those who were discharged to their normal place of residence, i.e., home, nursing home, or prison.
SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

Table 4. Distribution of times for surgical visits by ambulatory surgery facility type: United States, 2006

Calculated time in minutes	Mean	Standard error	25th percentile	Median	75th percentile
			Total		
Total[1]	124.5	3.6	65	100	153
Operating room[2]	53.7	1.4	25	40	65
Surgical[3]	30.3	0.8	11	20	36
Postoperative room[4]	66.9	2.0	32	51	81
			Hospital based		
Total[1]	146.6	5.3	84	120	177
Operating room[2]	61.7	1.6	33	50	75
Surgical[3]	34.2	0.9	13	24	43
Postoperative room[4]	79.0	3.2	25	39	60
			Freestanding		
Total[1]	97.7	3.8	53	76	120
Operating room[2]	43.2	2.0	20	30	50
Surgical[3]	25.1	1.4	9	15	27
Postoperative room[4]	53.1	2.3	29	43	66

[1]Total time was calculated by subtracting the time when the patient entered the operating room from the time the patient left postoperative care.
[2]Operating room time was calculated by subtracting the time when the patient entered the operating room from the time the patient left the operating room.
[3]Surgical time was calculated by subtracting the time the surgery began from the time the surgery ended. Surgical time typically extends from when the first incision is made until the wound is closed.
[4]Postoperative room time was calculated by subtracting the time when the patient entered postoperative care from the time the patient left postoperative care.
SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

Table 5. Average surgical duration by selected diagnoses and ambulatory surgery facility type: United States, 2006

Selected diagnoses and ICD–9–CM codes	Average total time (in minutes)[1]	Standard error	Average surgical time (in minutes)[2]	Standard error
		Total		
Cataract .366	70.2	2.7	18.1	0.7
Benign neoplasm of the colon .211.3	90.3	4.1	21.8	0.7
Diverticula of the intestine .562	79.5	4.2	16.9	0.7
Intervertebral disc disorders .722	82.9	7.2	21.1	3.0
Hemorrhoids .455	86.7	4.0	18.2	0.9
Gastritis and duodenitis .535	91.0	6.5	14.2	1.3
Chronic diseases of tonsils and adenoids .474	155.2	7.9	22.5	1.0
Otitis media and Eustachian tube disorders .381–382	65.7	5.1	12.3	1.0
Carpal tunnel syndrome .354.0	96.0	3.6	18.2	0.9
Inguinal hernia .550	169.0	6.4	49.4	1.6
		Hospital based		
Cataract .366	88.4	3.7	22.7	1.5
Benign neoplasm of the colon .211.3	111.5	7.5	24.6	1.4
Diverticula of the intestine .562	102.7	5.0	19.0	1.7
Intervertebral disc disorders .722	107.4	14.8	29.9	5.4
Hemorrhoids .455	112.0	6.6	20.7	1.3
Gastritis and duodenitis .535	111.4	7.8	17.9	1.7
Chronic diseases of tonsils and adenoids .474	161.6	11.0	23.4	1.5
Otitis media and Eustachian tube disorders .381–382	75.0	4.9	13.5	1.4
Carpal tunnel syndrome .354.0	111.2	5.6	19.1	1.1
Inguinal hernia .550	177.2	7.2	52.0	1.8
		Freestanding		
Cataract .366	57.3	2.4	14.9	0.5
Benign neoplasm of the colon .211.3	77.9	3.0	20.0	0.7
Diverticula of the intestine .562	68.3	4.0	15.9	0.7
Intervertebral disc disorders .722	61.4	5.3	12.8	2.2
Hemorrhoids .455	75.1	4.0	16.9	1.3
Gastritis and duodenitis .535	68.9	6.6	10.0	1.0
Chronic diseases of tonsils and adenoids .474	148.9	10.2	20.6	0.9
Otitis media and Eustachian tube disorders .381–382	56.8	5.8	10.2	0.6
Carpal tunnel syndrome .354.0	83.8	3.2	17.1	1.3
Inguinal hernia .550	145.8	7.7	40.1	2.3

[1]Total time was calculated by subtracting the time when the patient entered the operating room from the time the patient left postoperative care.
[2]Surgical time was calculated by subtracting the time the surgery began from the time the surgery ended. Surgical time typically extends from when the first incision is made until the wound is closed.

NOTE: Procedure categories and code numbers are based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM).

SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

Table 6. Number of ambulatory surgery procedures, by procedure category, sex, and age: United States, 2006

Procedure category and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
	Number in thousands							
All procedures	53,329	22,681	30,648	3,266	12,780	20,167	9,182	7,934
Operations on the nervous system .01–05	3,198	1,272	1,926	*	888	1,385	427	484
Injection of agent into spinal canal .03.91–03.92	1,991	844	1,147	*	533	835	286	336
Release of carpal tunnel .04.43	577	179	398	*	143	279	73	81
Operations on the eye .08–16	7,085	2,803	4,283	103	266	1,651	2,289	2,775
Operations on eyelids .08	386	137	249	*29	39	156	75	87
Extraction of lens .13.1–13.6	3,058	1,154	1,904	*	38	610	1,070	1,335
Insertion of prosthetic lens (pseudophakos) .13.7	2,582	987	1,595	*	33	524	923	1,098
Operations on the ear .18–20	1,114	568	545	858	118	59	*38	41
Myringotomy with insertion of tube .20.01	715	382	333	667	*32	*	*	*
Operations on the nose, mouth, and pharynx .21–29	2,864	1,441	1,423	1,050	937	617	162	97
Incision, excision, and destruction of nose .21.1,21.3–21.4,21.6	293	142	151	*	144	77	*34	*18
Turbinectomy .21.6	196	100	96	*	110	54	*	*
Repair and plastic operations on the nose .21.8	308	160	147	*	153	100	*27	*
Operations on nasal sinuses .22	606	328	278	*	222	276	*	*
Tonsillectomy with or without adenoidectomy .28.2–28.3	737	314	423	530	186	*	*	–
Adenoidectomy without tonsillectomy .28.6	140	83	57	132	*	*	–	–
Operations on the respiratory system .30–34	445	225	220	*34	70	176	88	*77
Bronchoscopy with or without biopsy .33.21–33.24,33.27	173	71	102	*	*	*67	*43	*
Operations on the cardiovascular system .35–39,00.50–00.51,00.53–00.55,00.61–00.66	1,376	712	664	*	165	605	284	312
Cardiac catheterization .37.21–37.23	492	280	212	*	*41	238	123	88
Operations on the digestive system .42–54	14,414	6,500	7,914	*	2,824	6,448	2,925	1,956
Dilation of esophagus .42.92	341	140	201	*	*37	152	83	66
Endoscopy of small intestine with or without biopsy .45.11–45.14,45.16	3,467	1,423	2,044	*	770	1,390	648	550
Endoscopy of large intestine with or without biopsy .45.21–45.25	5,741	2,438	3,304	*	779	2,921	1,233	778
Endoscopic polypectomy of large intestine .45.42	1,399	788	611	*	69	701	424	207
Laparoscopic cholecystectomy .51.23	503	87	416	*	229	193	*	*
Hernia repair .53.0–53.1,53.2–53.9	920	724	196	73	298	331	133	84
Repair of inguinal hernia .53.0–53.1	526	482	*45	39	139	186	88	74
Operations on the urinary system .55–59	1,776	932	844	*	375	624	369	356
Cystoscopy with or without biopsy .57.31–57.33	751	406	345	*	147	271	157	169
Operations on the male genital organs .60–64	631	631	...	166	146	143	109	67
Operations on the female genital organs .65–71	2,497	...	2,497	*	1,633	689	109	*60
Hysteroscopy .68.12	313	...	313	–	159	121	*	*
Dilation and currettage of uterus .69.0	611	...	611	–	334	227	*29	*
Operations on the musculoskeletal system .76–84,00.70–00.73,00.80–00.84	7,944	3,856	4,088	295	2,602	3,696	871	479
Partial excision of bone .76.2–76.3,77.6–77.8	449	231	218	*	121	228	57	*31
Reduction of fracture .76.7,79.0–79.3	495	310	185	102	213	115	*35	*29
Injection of therapeutic substance into joint or ligament .76.96,81.92	218	87	131	*	45	112	32	*26
Removal of implanted devices from bone .76.97,78.6	212	108	104	27	85	58	*	*
Excision and repair of bunion and other toe deformities .77.5	461	68	394	*	115	226	83	*30
Arthroscopy of knee .80.26	956	502	455	*	358	448	103	*32
Excision of semilunar cartilage of knee .80.6	690	384	307	*	204	352	90	*42
Replacement or other repair of knee .81.42–81.47,81.54–81.55,00.80–00.84	463	260	203	*	216	190	*35	*
Operations on muscle, tendon, fascia, and bursa .82–83	1,465	642	823	55	403	755	165	88

See footnotes at end of table.

Table 6. Number of ambulatory surgery procedures, by procedure category, sex, and age: United States, 2006—Con.

Procedure category and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
	Number in thousands							
Operations on the integumentary system .85–86	3,581	1,045	2,535	166	1,223	1,415	435	341
Biopsy of breast .85.11–85.12	261	*	250	*	79	130	*28	*
Local excision of lesion of breast (lumpectomy) .85.21	329	*	317	*	110	133	*52	*
Excision or destruction of lesion or tissue of skin and subcutaneous tissue .86.2–86.4	1,092	542	550	100	332	395	139	127
Miscellaneous diagnostic and therapeutic procedures and new technologies[1] .87–99.00	6,060	2,617	3,442	242	1,456	2,517	999	846
Arteriography and angiocardiography using contrast material .88.4–88.5	1,054	561	492	–	*74	471	297	213
Diagnostic ultrasound .88.7,00.21–00.25,00.28,00.29	322	159	162	*	53	147	70	50
Injection or infusion of therapeutic or prophylactic substance .99.1–99.2	1,462	529	933	35	429	599	202	196
Operations on the endocrine system, operations on the hemic and lymphatic system, and obstetrical procedures .06–07,40–41,72–75	344	78	266	*	77	140	*78	*41

* Figure does not meet standards of reliability or precision.
. . . Category not applicable.
– Quantity zero.
[1]Chapter 00 codes included in this category: 00.01–00.03, 00.09, 00.10–00.18, 00.21–00.25, 00.28–00.29, 00.31–00.35, 00.39, 00.40–00.43, 00.45–00.48, 00.52, 00.74–00.76, and 00.91–00.93.

NOTES: Procedure categories and code numbers are based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM). The standard error (SE) of an estimate can be obtained by multiplying the estimate by the corresponding relative standard error (RSE). The RSE can be obtained by dividing the SE of the rate by the rate in Table 7.

SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

Table 7. Rate and standard error for the rate of ambulatory surgery procedures, by procedure category, sex, and age: United States, 2006

Procedure category and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
	Rate per 10,000 population[1]							
All procedures	1,788.3	1,548.1	2,020.2	537.5	1,019.2	2,695.9	4,854.0	4,325.3
Operations on the nervous system .01–05	107.2	86.9	126.9	*	70.8	185.2	225.7	263.8
Injection of agent into spinal canal .03.91–03.92	66.8	57.6	75.6	*	42.5	111.6	151.3	183.4
Release of carpal tunnel .04.43	19.3	12.2	26.2	*	11.4	37.3	38.7	44.2
Operations on the eye .08–16	237.6	191.3	282.3	17.0	21.2	220.8	1,210.0	1,513.0
Operations on eyelids .08	12.9	9.4	16.4	*4.7	3.1	20.9	39.6	47.5
Extraction of lens .13.1–13.6	102.5	78.8	125.5	*	3.0	81.6	565.7	727.6
Insertion of prosthetic lens (pseudophakos) .13.7	86.6	67.4	105.2	*	2.6	70.1	488.2	598.7
Operations on the ear .18–20	37.3	38.8	35.9	141.2	9.4	7.9	*20.2	22.3
Myringotomy with insertion of tube .20.01	24.0	26.1	21.9	109.7	*2.6	*	*	*
Operations on the nose, mouth, and pharynx .21–29	96.0	98.3	93.8	172.9	74.7	82.5	85.8	53.1
Incision, excision, and destruction of nose .21.1,21.3–21.4,21.6	9.8	9.7	9.9	*	11.5	10.3	*18.1	*9.6
Turbinectomy .21.6	6.6	6.8	6.4	*	8.8	7.2	*	*
Repair and plastic operations on the nose .21.8	10.3	11.0	9.7	*	12.2	13.3	*14.4	*
Operations on nasal sinuses .22	20.3	22.4	18.3	*	17.7	36.9	*	*
Tonsillectomy with or without adenoidectomy .28.2–28.3	24.7	21.4	27.9	87.2	14.9	*	*	–
Adenoidectomy without tonsillectomy .28.6	4.7	5.6	3.8	21.8	*	*	–	–
Operations on the respiratory system .30–34	14.9	15.4	14.5	*5.6	5.6	23.6	46.3	*42.1
Bronchoscopy with or without biopsy .33.21–33.24,33.27	5.8	4.8	6.8	*	*	*9.0	*22.7	*
Operations on the cardiovascular system .35–39,00.50–00.51,00.53–00.55,00.61–00.66	46.1	48.6	43.8	*	13.2	80.9	150.0	169.9
Cardiac catheterization .37.21–37.23	16.5	19.1	14.0	*	*3.2	31.9	65.0	48.0
Operations on the digestive system .42–54	483.3	443.7	521.7	*	225.2	861.9	1,546.3	1,066.2
Dilation of esophagus .42.92	11.4	9.6	13.2	*	*3.0	20.4	43.7	35.8
Endoscopy of small intestine with or without biopsy .45.11–45.14,45.16	116.3	97.1	134.7	*	61.4	185.9	342.6	299.6
Endoscopy of large intestine with or without biopsy .45.21–45.25	192.5	166.4	217.8	*	62.1	390.4	651.6	424.3
Endoscopic polypectomy of large intestine .45.42	46.9	53.8	40.3	*	5.5	93.7	223.9	112.6
Laparoscopic cholecystectomy .51.23	16.9	5.9	27.4	*	18.2	25.9	*	*
Hernia repair .53.0–53.1,53.2–53.9	30.9	49.4	12.9	11.9	23.8	44.3	70.6	46.0
Repair of inguinal hernia .53.0–53.1	17.7	32.9	*2.9	6.5	11.1	24.9	46.6	40.2
Operations on the urinary system .55–59	59.6	63.6	55.7	*	29.9	83.5	195.3	194.1
Cystoscopy with or without biopsy .57.31–57.33	25.2	27.7	22.7	*	11.7	36.2	83.1	92.2
Operations on the male genital organs .60–64	21.2	43.1	...	27.4	11.6	19.2	57.4	36.7
Operations on the female genital organs .65–71	83.7	...	164.6	*	130.2	92.1	57.4	*32.7
Hysteroscopy .68.12	10.5	...	20.7	–	12.7	16.2	*	*
Dilation and currettage of uterus .69.0	20.5	...	40.2	–	26.7	30.3	*15.4	*
Operations on the musculoskeletal system .76–84,00.70–00.73,00.80–00.84	266.4	263.2	269.5	48.6	207.5	494.1	460.5	261.3
Partial excision of bone .76.2–76.3,77.6–77.8	15.1	15.8	14.4	*	9.6	30.5	29.9	*17.0
Reduction of fracture .76.7,79.0–79.3	16.6	21.2	12.2	16.8	17.0	15.4	*18.5	*16.0
Injection of therapeutic substance into joint or ligament .76.96,81.92	7.3	5.9	8.6	*	3.6	14.9	16.9	*14.2
Removal of implanted devices from bone .76.97,78.6	7.1	7.3	6.9	4.4	6.8	7.7	*	*
Excision and repair of bunion and other toe deformities .77.5	15.5	4.6	26.0	*	9.1	30.3	44.1	*16.5
Arthroscopy of knee .80.26	32.1	34.2	30.0	*	28.5	59.9	54.3	*17.7
Excision of semilunar cartilage of knee .80.6	23.1	26.2	20.2	*	16.3	47.1	47.8	*22.8
Replacement or other repair of knee .81.42–81.47,81.54–81.55,00.80–00.84	15.5	17.7	13.4	*	17.2	25.4	*18.6	*
Operations on muscle, tendon, fascia, and bursa .82–83	49.1	43.8	54.2	9.0	32.1	100.9	87.3	47.8

See footnotes at end of table.

Table 7. Rate and standard error for the rate of ambulatory surgery procedures, by procedure category, sex, and age: United States, 2006—Con.

Procedure category and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
				Rate per 10,000 population[1]				
Operations on the integumentary system .85–86	120.1	71.3	167.1	27.3	97.5	189.2	229.9	186.1
Biopsy of breast .85.11–85.12	8.8	*	16.5	*	6.3	17.4	*14.7	*
Local excision of lesion of breast (lumpectomy) .85.21	11.0	*	20.9	*	8.8	17.8	*27.4	*
Excision or destruction of lesion or tissue of skin and subcutaneous tissue .86.2–86.4	36.6	37.0	36.3	16.4	26.5	52.8	73.4	69.2
Miscellaneous diagnostic and therapeutic procedures and new technologies[2] .87–99,00	203.2	178.6	226.9	39.8	116.1	336.4	528.1	461.4
Arteriography and angiocardiography using contrast material .88.4–88.5	35.3	38.3	32.5	–	*5.9	62.9	156.8	116.0
Diagnostic ultrasound .88.7,00.21–00.25,00.28,00.29	10.8	10.9	10.7	*	4.2	19.7	36.8	27.5
Injection or infusion of therapeutic or prophylactic substance .99.1–99.2	49.0	36.1	61.5	5.7	34.2	80.1	107.0	107.0
Operations on the endocrine system, operations on the hemic and lymphatic system, and obstetrical procedures .06–07,40–41,72–75	11.5	5.3	17.5	*	6.1	18.7	*41.2	*22.5
				Standard error				
All procedures	89.00	77.65	103.83	72.44	57.38	148.54	286.03	231.38
Operations on the nervous system .01–05	11.32	10.57	12.94	*	9.57	19.50	27.43	37.71
Injection of agent into spinal canal .03.91–03.92	8.97	8.72	10.01	*	7.31	15.38	23.29	29.95
Release of carpal tunnel .04.43	2.07	1.55	2.99	*	1.95	5.05	6.50	9.35
Operations on the eye .08–16	21.50	16.25	27.63	3.06	3.11	21.09	142.35	134.99
Operations on eyelids .08	1.36	1.33	1.95	*1.30	0.58	3.23	6.31	8.37
Extraction of lens .13.1–13.6	10.02	7.09	13.29	*	0.54	9.41	67.74	67.42
Insertion of prosthetic lens (pseudophakos) .13.7	9.02	6.28	12.08	*	0.49	8.58	63.85	57.88
Operations on the ear .18–20	6.87	6.09	8.04	30.27	1.87	1.43	*5.08	6.62
Myringotomy with insertion of tube .20.01	5.20	5.28	5.41	25.32	*0.73	*	*	*
Operations on the nose, mouth, and pharynx .21–29	10.76	10.54	12.78	25.76	8.67	12.86	16.80	10.80
Incision, excision, and destruction of nose .21.1,21.3–21.4,21.6	1.28	1.34	1.83	*	2.14	1.63	*4.72	*2.33
Turbinectomy .21.6	0.95	1.14	1.23	*	1.45	1.35	*	*
Repair and plastic operations on the nose .21.8	1.17	1.58	1.24	*	1.66	2.12	*3.82	*
Operations on nasal sinuses .22	3.27	3.64	4.08	*	3.36	9.02	*	*
Tonsillectomy with or without adenoidectomy .28.2–28.3	4.15	3.52	5.17	16.93	2.15	*	*	–
Adenoidectomy without tonsillectomy .28.6	0.99	1.41	0.86	4.79	*	*	–	–
Operations on the respiratory system .30–34	1.98	2.17	2.48	*1.45	1.31	4.51	9.96	*8.10
Bronchoscopy with or without biopsy .33.21–33.24,33.27	0.97	0.78	1.63	*	*	*2.32	*6.07	*
Operations on the cardiovascular system .35–39,00.50–00.51,00.53–00.55,00.61–00.66	5.69	6.51	5.44	*	2.05	11.89	23.17	24.91
Cardiac catheterization .37.21–37.23	2.51	3.07	2.24	*	*0.84	5.78	12.17	11.18
Operations on the digestive system .42–54	41.17	39.15	44.18	*	20.69	77.38	158.44	94.26
Dilation of esophagus .42.92	1.63	1.55	2.14	*	*0.80	3.45	9.02	7.33
Endoscopy of small intestine with or without biopsy .45.11–45.14,45.16	10.46	9.45	12.04	*	7.33	18.77	32.51	29.46
Endoscopy of large intestine with or without biopsy .45.21–45.25	21.68	19.32	24.41	*	10.15	43.49	87.41	46.99
Endoscopic polypectomy of large intestine .45.42	5.76	6.72	5.30	*	1.25	11.00	36.55	14.02
Laparoscopic cholecystectomy .51.23	1.51	0.84	2.79	*	2.25	2.98	*	*
Hernia repair .53.0–53.1,53.2–53.9	2.42	4.22	1.29	2.58	2.20	4.99	10.61	7.07
Repair of inguinal hernia .53.0–53.1	1.48	2.87	*0.56	1.17	1.39	2.93	8.53	6.97
Operations on the urinary system .55–59	4.82	5.39	5.38	*	3.99	9.10	24.40	20.98
Cystoscopy with or without biopsy .57.31–57.33	2.95	3.40	3.05	*	2.29	4.82	12.46	12.97
Operations on the male genital organs .60–64	1.87	3.81	...	5.07	1.35	3.06	8.85	6.77
Operations on the female genital organs .65–71	7.20	...	14.15	*	11.67	9.85	11.27	*8.52
Hysteroscopy .68.12	1.60	...	3.14	–	2.37	2.54	*	*
Dilation and currettage of uterus .69.0	2.17	...	4.27	–	3.07	4.00	*3.48	*

See footnotes at end of table.

000507 (10/11/13)

Table 7. Rate and standard error for the rate of ambulatory surgery procedures, by procedure category, sex, and age: United States, 2006—Con.

Procedure category and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
	Standard error							
Operations on the musculoskeletal system .76–84,00.70–00.73,00.80–00.84	19.47	21.20	20.32	5.85	19.10	38.44	48.77	24.82
Partial excision of bone .76.2–76.3,77.6–77.8	1.45	1.92	1.59	*	1.33	3.98	5.48	*3.78
Reduction of fracture .76.7,79.0–79.3	1.68	2.44	1.37	2.21	2.28	2.67	*4.88	*3.33
Injection of therapeutic substance into joint or ligament .76.96,81.92	0.87	1.00	1.16	*	0.78	2.26	3.20	*3.27
Removal of implanted devices from bone .76.97,78.6	0.94	1.29	1.01	1.20	1.27	1.17	*	*
Excision and repair of bunion and other toe deformities .77.5	1.79	0.84	3.30	*	1.69	4.23	8.82	*4.01
Arthroscopy of knee .80.26	3.72	4.43	3.69	*	3.98	7.18	9.35	*4.45
Excision of semilunar cartilage of knee .80.6	1.99	2.86	1.80	*	1.88	4.51	6.94	*4.92
Replacement or other repair of knee .81.42–81.47,81.54–81.55,00.80–00.84	1.97	2.81	1.64	*	2.86	3.28	*3.95	*
Operations on muscle, tendon, fascia, and bursa .82–83	5.22	3.37	8.29	1.75	4.43	12.84	13.25	7.76
Operations on the integumentary system .85–86	8.53	6.42	13.24	3.92	9.50	14.66	20.62	19.98
Biopsy of breast .85.11–85.12	1.26	*	2.43	*	1.23	2.93	*3.56	*
Local excision of lesion of breast (lumpectomy) .85.21	1.17	*	2.29	*	1.45	2.22	*6.37	*
Excision or destruction of lesion or tissue of skin and subcutaneous tissue .86.2–86.4	3.20	3.92	3.33	2.57	3.24	5.25	13.11	10.15
Miscellaneous diagnostic and therapeutic procedures and new technologies[2] .87–99.00	16.60	15.67	19.36	5.56	14.75	30.74	48.83	47.14
Arteriography and angiocardiography using contrast material .88.4–88.5	5.40	6.50	4.91	–	*1.61	10.60	27.50	25.38
Diagnostic ultrasound .88.7,00.21–00.25,00.28,00.29	1.76	1.79	2.12	*	0.95	3.86	8.70	6.49
Injection or infusion of therapeutic or prophylactic substance .99.1–99.2	7.20	4.86	10.46	1.09	7.30	13.78	16.48	13.21
Operations on the endocrine system, operations on the hemic and lymphatic system, and obstetrical procedures .06–07,40–41,72–75	1.16	0.77	1.98	*	1.07	2.53	*7.97	*5.08

* Figure does not meet standards of reliability or precision.
– Quantity zero.
. . . Category not applicable.
[1]Rates were calculated using U.S. Census Bureau 2000-based postcensal estimates of the civilian population as of July 1, 2006.
[2]Chapter 00 codes included in this category: 00.01–00.03, 00.09, 00.10–00.18, 00.21–00.25, 00.28–00.29, 00.31–00.35, 00.39, 00.40–00.43, 00.45–00.48, 00.52, 00.74–00.76, 00.91–00.93.

NOTES: Procedure categories and code numbers are based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM). The relative standard error (RSE) can be obtained by dividing the standard error (SE) of the rate by the rate. The SE of a number in Table 6 can be obtained by multiplying the RSE by the estimate.

SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

000508 (10/11/13)

Table 8. Number of ambulatory surgery visits by first-listed diagnosis, sex, and age: United States, 2006

Category of first-listed diagnosis and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
	Number in thousands							
All conditions	34,738	14,707	20,032	2,471	8,351	12,948	5,887	5,081
Infectious and parasitic diseases .001–139	145	64	81	*	*	*42	*	*
Neoplasms .140–239	3,285	1,626	1,659	69	381	1,474	772	589
Malignant neoplasms .140–208,230–234	1,173	534	639	*	117	446	285	314
Malignant neoplasm of skin .172–173,176.0,198.2	303	164	139	*	34	87	59	123
Malignant neoplasm of breast .174–175,198.81	235	*	234	–	*35	121	*52	*
Benign neoplasms .210–229	2,000	1,039	961	53	241	985	468	253
Benign neoplasm of colon .211.3	1,389	785	604	–	90	730	380	189
Lipoma .214	126	61	64	*	*23	76	*	*
Endocrine, nutritional and metabolic diseases, and immunity disorders .240–279	266	74	192	*	91	103	*34	*
Diseases of the nervous system and sense organs .320–389	5,308	2,114	3,194	729	412	1,243	1,317	1,607
Carpal tunnel syndrome .354.0	552	171	381	–	138	263	66	86
Cataract .366	3,009	1,135	1,874	*	34	592	1,066	1,313
Disorders of the eyelid .373–374	174	71	103	*	*12	58	45	48
Otitis media and Eustachian tube disorders .381–382	623	324	299	577	*	*	*	*
Diseases of the circulatory system .390–459	1,736	832	904	*	256	860	353	264
Heart disease .391–392.0,393–398,402,404,410–416,420–429	540	318	222	*	*41	241	131	128
Hemorrhoids .455	715	287	427	*	151	411	108	*45
Diseases of the respiratory system .460–519	1,294	591	703	572	396	207	81	*38
Deviated nasal septum .470	134	77	57	*	75	42	*	*
Chronic sinusitis .473	141	82	59	*	52	56	*	*
Chronic disease of tonsils and adenoids .474	680	273	407	496	172	*	–	–
Diseases of the digestive system .520–579	6,808	3,081	3,727	326	1,597	2,688	1,242	955
Diseases of teeth and supporting structures .520–525	221	114	107	171	*	*	*	*
Diseases of esophagus .530	1,132	531	601	*	255	447	224	177
Gastritis and duodenitis .535	703	228	475	*	170	257	146	118
Hernia .550–553	1,141	764	377	64	335	418	174	149
Inguinal hernia .550	515	470	*45	33	131	189	91	71
Noninfectious enteritis and colitis .555–558	228	102	126	*	81	87	*34	*
Diverticula of intestine .562	1,135	513	622	*	*59	522	306	248
Cholelithiasis .574	376	*64	312	*	178	130	*	*
Diseases of the genitourinary system .580–629	2,932	847	2,085	115	1,143	1,050	358	267
Calculus of kidney and ureter .592	381	178	204	*	144	165	*40	*31
Benign mammary dysplasias .610	94	–	94	–	*35	*45	*	*
Lump or mass in breast .611.72	198	*	191	*	83	85	*	*
Disorders of menstruation and other abnormal vaginal bleeding .626,627.0–627.1	481	...	481	–	250	201	*	*
Complications of pregnancy, childbirth, and the puerperium .630–677	322	...	322	–	315	*	–	–
Abortion and ectopic and molar pregnancy .630–639	260	...	260	–	253	*	–	–
Diseases of the skin and subcutaneous tissue .680–709	631	292	339	56	224	233	*	49
Sebaceous cyst .706.2	134	69	65	*	*44	53	*	*
Diseases of the musculoskeletal system and connective tissue .710–739	4,523	1,875	2,648	67	1,336	2,035	599	486
Arthropathies and related disorders .710–719	809	378	431	*	276	378	89	52
Internal derangement of knee .717	321	177	144	*	116	150	*33	*
Intervertebral disc disorders .722	861	404	456	–	312	389	93	67
Lumbago .724.2	156	64	91	–	35	57	31	33
Rheumatism, excluding back .725–729	968	382	586	*26	287	484	114	57
Acquired deformities of toe .735	287	58	229	*	74	121	61	*28

See footnotes at end of table.

000509 (10/11/13)

Table 8. Number of ambulatory surgery visits by first-listed diagnosis, sex, and age: United States, 2006—Con.

Category of first-listed diagnosis and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
Congenital anomalies .740–759	479	184	*	132	126	*	*	*
Symptoms, signs, and ill-defined conditions .780–799	1,390	548	842	*	403	520	185	147
Abdominal pain .789.0	167	51	116	*	53	71	*	*
Injury and poisoning .800–999	2,230	1,255	976	169	777	848	270	166
Fractures .800–829	513	321	192	102	237	107	*32	*35
Current tear of medial cartilage or meniscus of knee .836.0	424	253	171	*	120	231	53	*20
Supplementary classifications .V01–V85	3,134	1,245	1,890	74	778	1,406	503	373
Visit for sterilization .V25.2	292	50	242	*	263	*	–	–
Diseases of the blood and blood-forming organs, mental disorders, and certain conditions originating in the perinatal period .280–289,290–319,760–779	255	80	174	*	*47	88	*47	*62
Anemias .280–285	189	*58	131	*	*	*61	*40	*62

* Figure does not meet standards of reliability or precision.
– Quantity zero.
. . . Category not applicable.

NOTES: Diagnostic categories and code numbers are based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM). The standard error (SE) of an estimate can be obtained by multiplying the estimate by the corresponding relative standard error (RSE). The RSE can be obtained by dividing the SE of the rate by the rate in Table 9.

SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

000510 (10/11/13)

Table 9. Rate and standard error for the rate of ambulatory surgery visits by first-listed diagnosis, sex, and age: United States, 2006

Category of first-listed diagnosis and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
	Rate per 10,000 population[1]							
All conditions	1,164.9	1,003.8	1,320.4	406.7	666.0	1,731.0	3,111.9	2,769.8
Infectious and parasitic diseases .001–139	4.9	4.4	5.4	*	*	*5.6	*	*
Neoplasms .140–239	110.2	111.0	109.4	11.4	30.4	197.0	408.2	320.9
Malignant neoplasms .140–208,230–234	39.3	36.4	42.1	*	9.3	59.6	150.9	171.1
Malignant neoplasm of skin .172–173,176.0,198.2	10.2	11.2	9.2	*	2.7	11.6	31.2	67.0
Malignant neoplasm of breast .174–175,198.81	7.9	*	15.4	–	*2.8	16.1	*27.4	*
Benign neoplasms .210–229	67.1	70.9	63.3	8.7	19.2	131.7	247.3	137.7
Benign neoplasm of colon .211.3	46.6	53.6	39.8	–	7.1	97.6	200.9	103.1
Lipoma .214	4.2	4.2	4.2	*	*1.8	10.2	*	*
Endocrine, nutritional and metabolic diseases, and immunity disorders .240–279	8.9	5.1	12.7	*	7.3	13.8	*18.2	*
Diseases of the nervous system and sense organs .320–389	178.0	144.3	210.5	120.1	32.8	166.1	696.1	876.3
Carpal tunnel syndrome .354.0	18.5	11.7	25.1	–	11.0	35.1	35.1	46.6
Cataract .366	100.9	77.5	123.5	*	2.7	79.2	563.7	715.6
Disorders of the eyelid .373–374	5.8	4.8	6.8	*	*0.9	7.7	24.0	26.0
Otitis media and Eustachian tube disorders .381–382	20.9	22.1	19.7	95.0	*	*	*	*
Diseases of the circulatory system .390–459	58.2	56.8	59.6	*	20.4	115.0	186.8	144.1
Heart disease .391–392.0,393–398,402,404,410–416,420–429	18.1	21.7	14.7	*	*3.2	32.2	69.2	69.7
Hemorrhoids .455	24.0	19.6	28.2	*	12.0	54.9	57.1	*24.3
Diseases of the respiratory system .460–519	43.4	40.3	46.3	94.2	31.5	27.7	42.6	*20.9
Deviated nasal septum .470	4.5	5.3	3.8	*	6.0	5.6	*	*
Chronic sinusitis .473	4.7	5.6	3.9	*	4.1	7.5	*	*
Chronic disease of tonsils and adenoids .474	22.8	18.6	26.8	81.7	13.7	*	–	–
Diseases of the digestive system .520–579	228.3	210.3	245.7	53.6	127.4	359.3	656.7	520.6
Diseases of teeth and supporting structures .520–525	7.4	7.8	7.1	28.1	*	*	*	*
Diseases of esophagus .530	37.9	36.2	39.6	*	20.3	59.8	118.2	96.5
Gastritis and duodenitis .535	23.6	15.5	31.3	*	13.6	34.3	77.0	64.4
Hernia .550–553	38.3	52.1	24.9	10.6	26.7	55.8	92.2	81.4
Inguinal hernia .550	17.3	32.1	*3.0	5.4	10.5	25.3	48.0	38.9
Noninfectious enteritis and colitis .555–558	7.6	6.9	8.3	*	6.4	11.7	*18.2	*
Diverticula of intestine .562	38.1	35.0	41.0	*	*4.7	69.8	161.7	135.0
Cholelithiasis .574	12.6	*4.4	20.6	*	14.2	17.4	*	*
Diseases of the genitourinary system .580–629	98.3	57.8	137.4	18.9	91.1	140.4	189.1	145.5
Calculus of kidney and ureter .592	12.8	12.1	13.4	*	11.5	22.0	*21.2	*16.8
Benign mammary dysplasias .610	3.2	–	6.2	–	*2.8	*6.0	*	*
Lump or mass in breast .611.72	6.6	*	12.6	*	6.6	11.4	*	*
Disorders of menstruation and other abnormal vaginal bleeding .626,627.0–627.1	16.1	...	31.7	–	20.0	26.9	*	*
Complications of pregnancy, childbirth, and the puerperium .630–677	10.8	...	21.2	–	25.1	*	–	–
Abortion and ectopic and molar pregnancy .630–639	8.7	...	17.1	–	20.2	*	–	–
Diseases of the skin and subcutaneous tissue .680–709	21.2	19.9	22.3	9.3	17.9	31.2	*	27.0
Sebaceous cyst .706.2	4.5	4.7	4.3	*	*3.5	7.1	*	*
Diseases of the musculoskeletal system and connective tissue .710–739	151.7	128.0	174.6	11.0	106.5	272.1	316.9	264.7
Arthropathies and related disorders .710–719	27.1	25.8	28.4	*	22.0	50.6	46.9	28.3
Internal derangement of knee .717	10.8	12.1	9.5	*	9.2	20.0	*17.2	*
Intervertebral disc disorders .722	28.9	27.6	30.1	–	24.9	52.0	49.1	36.4
Lumbago .724.2	5.2	4.4	6.0	–	2.8	7.6	16.6	17.8
Rheumatism, excluding back .725–729	32.5	26.1	38.6	*4.2	22.9	64.7	60.5	31.1
Acquired deformities of toe .735	9.6	3.9	15.1	*	5.9	16.2	32.2	*15.5

See footnotes at end of table.

Table 9. Rate and standard error for the rate of ambulatory surgery visits by first-listed diagnosis, sex, and age: United States, 2006—Con.

Category of first-listed diagnosis and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
	Rate per 10,000 population[1]							
Congenital anomalies .740–759	16.1	12.6	*	21.7	10.0	*	*	*
Symptoms, signs, and ill-defined conditions .780–799	46.6	37.4	55.5	*	32.2	69.5	97.7	80.3
Abdominal pain .789.0	5.6	3.5	7.7	*	4.2	9.4	*	*
Injury and poisoning .800–999	74.8	85.6	64.3	27.9	62.0	113.4	142.6	90.4
Fractures .800–829	17.2	21.9	12.7	16.8	18.9	14.3	*17.0	*19.1
Current tear of medial cartilage or meniscus of knee .836.0	14.2	17.3	11.3	*	9.5	30.9	28.0	*10.7
Supplementary classifications .V01–V85	105.1	84.9	124.6	12.2	62.1	187.9	265.9	203.4
Visit for sterilization .V25.2	9.8	3.4	16.0	*	20.9	*	–	–
Diseases of the blood and blood-forming organs, mental disorders, and certain conditions originating in the perinatal period .280–289,290–319,760–779	8.5	5.5	11.5	*	*3.8	11.8	*25.1	*33.8
Anemias .280–285	6.3	*4.0	8.6	*	*	*8.2	*21.1	*33.8
	Standard error							
All conditions	61.32	53.33	70.69	54.26	35.76	100.68	195.86	156.70
Infectious and parasitic diseases .001–139	0.90	0.85	1.24	*	*	*1.37	*	*
Neoplasms .140–239	7.96	8.89	7.90	1.94	2.75	16.81	39.52	25.97
Malignant neoplasms .140–208,230–234	2.76	3.20	3.01	*	1.22	5.11	15.04	18.58
Malignant neoplasm of skin .172–173,176.0,198.2	1.26	1.60	1.21	*	0.61	1.92	5.43	13.56
Malignant neoplasm of breast .174–175,198.81	0.77	*	1.52	–	*0.76	2.17	*5.07	*
Benign neoplasms .210–229	6.27	7.19	6.04	1.55	2.18	13.86	31.43	14.94
Benign neoplasm of colon .211.3	5.42	6.13	5.18	–	1.68	12.00	28.25	12.22
Lipoma .214	0.61	0.84	0.84	*	*0.46	1.93	*	*
Endocrine, nutritional and metabolic diseases, and immunity disorders .240–279	1.10	0.84	1.76	*	1.38	2.07	*4.00	*
Diseases of the nervous system and sense organs .320–389	13.69	10.58	17.50	22.75	3.62	13.98	75.05	75.91
Carpal tunnel syndrome .354.0	2.02	1.51	2.92	–	1.95	4.87	6.23	9.54
Cataract .366	9.90	6.98	13.19	*	0.50	9.24	67.68	66.28
Disorders of the eyelid .373–374	0.65	0.76	0.88	*	*0.25	1.34	4.50	4.36
Otitis media and Eustachian tube disorders .381–382	4.19	3.94	4.65	20.45	*	*	*	*
Diseases of the circulatory system .390–459	5.11	6.22	5.23	*	2.71	11.07	22.02	19.84
Heart disease .391–392.0,393–398,402,404,410–416,420–429	2.68	3.57	2.37	*	*0.86	5.61	12.87	13.80
Hemorrhoids .455	3.16	3.20	3.61	*	2.39	7.12	9.11	*5.26
Diseases of the respiratory system .460–519	5.73	5.15	6.92	20.07	3.55	4.41	7.87	*5.32
Deviated nasal septum .470	0.66	0.92	0.84	*	1.17	1.37	*	*
Chronic sinusitis .473	0.71	1.00	0.84	*	0.85	1.66	*	*
Chronic disease of tonsils and adenoids .474	4.48	3.48	5.71	18.27	2.03	*	–	–
Diseases of the digestive system .520–579	18.04	16.10	20.74	8.11	11.77	31.61	64.45	47.47
Diseases of teeth and supporting structures .520–525	1.21	1.38	1.35	4.99	*	*	*	*
Diseases of esophagus .530	4.31	4.28	4.86	*	2.81	7.88	17.63	12.02
Gastritis and duodenitis .535	3.12	2.19	4.38	*	2.43	4.92	13.40	11.48
Hernia .550–553	3.38	4.71	2.88	2.33	2.90	5.97	11.16	11.74
Inguinal hernia .550	1.58	3.09	*0.56	1.13	1.33	3.49	8.56	6.92
Noninfectious enteritis and colitis .555–558	1.42	1.38	2.11	*	1.68	2.28	*4.54	*
Diverticula of intestine .562	5.25	6.01	5.21	*	*1.03	12.67	22.33	19.19
Cholelithiasis .574	1.20	*0.71	2.22	*	1.98	2.42	*	*
Diseases of the genitourinary system .580–629	5.71	4.23	8.89	3.46	5.70	10.17	20.18	18.20
Calculus of kidney and ureter .592	1.32	1.54	1.60	*	1.95	2.73	*4.20	*4.63
Benign mammary dysplasias .610	0.61	–	1.21	–	*0.69	*1.48	*	*
Lump or mass in breast .611.72	1.07	*	2.04	*	1.22	2.57	*	*
Disorders of menstruation and other abnormal vaginal bleeding .626,627.0–627.1	1.90	...	3.73	–	2.59	3.25	*	*

See footnotes at end of table.

Table 9. Rate and standard error for the rate of ambulatory surgery visits by first-listed diagnosis, sex, and age: United States, 2006—Con.

Category of first-listed diagnosis and ICD–9–CM code	Total	Sex		Age				
		Male	Female	Under 15 years	15–44 years	45–64 years	65–74 years	75 years and over
	Standard error							
Complications of pregnancy, childbirth, and the puerperium .630–677	1.35	. . .	2.65	–	3.17	*	–	–
Abortion and ectopic and molar pregnancy .630–639	1.27	. . .	2.50	–	2.99	*	–	–
Diseases of the skin and subcutaneous tissue .680–709	3.02	3.02	4.06	2.04	2.41	7.03	*	5.30
Sebaceous cyst .706.2	0.69	1.11	0.77	*	*0.77	1.44	*	*
Diseases of the musculoskeletal system and connective tissue .710–739	11.91	11.38	13.53	1.64	10.18	21.94	28.02	32.52
Arthropathies and related disorders .710–719	2.96	3.44	3.01	*	3.58	5.37	6.84	4.84
Internal derangement of knee .717	1.79	2.69	1.36	*	2.22	3.04	*4.09	*
Intervertebral disc disorders .722	4.49	4.23	5.10	–	5.40	7.26	9.32	6.28
Lumbago .724.2	0.93	0.95	1.18	–	0.80	1.51	4.55	4.40
Rheumatism, excluding back .725–729	2.26	2.23	3.08	*0.97	2.12	5.56	7.55	5.40
Acquired deformities of toe .735	1.35	0.81	2.21	*	1.21	2.78	8.32	*3.65
Congenital anomalies .740–759	4.79	2.66	*	3.51	2.75	*	*	*
Symptoms, signs, and ill-defined conditions .780–799	7.79	6.81	9.04	*	4.91	12.20	15.95	11.22
Abdominal pain .789.0	0.95	0.71	1.49	*	0.89	2.16	*	*
Injury and poisoning .800–999	5.15	6.22	5.27	3.51	5.05	8.65	20.49	11.84
Fractures .800–829	1.49	2.23	1.31	2.23	2.20	2.51	*4.74	*4.17
Current tear of medial cartilage or meniscus of knee .836.0	1.58	2.46	1.28	*	1.54	3.80	5.29	*2.77
Supplementary classifications .V01–V85	8.88	8.70	10.44	2.06	5.93	19.34	31.05	24.27
Visit for sterilization .V25.2	1.15	0.52	2.20	*	2.43	*	–	–
Diseases of the blood and blood-forming organs, mental disorders, and certain conditions originating in the perinatal period .280–289,290–319,760–779	1.19	1.12	1.71	*	*0.74	2.78	*6.55	*7.27
Anemias .280–285	1.01	*0.93	1.42	*	*	*2.09	*5.94	*7.27

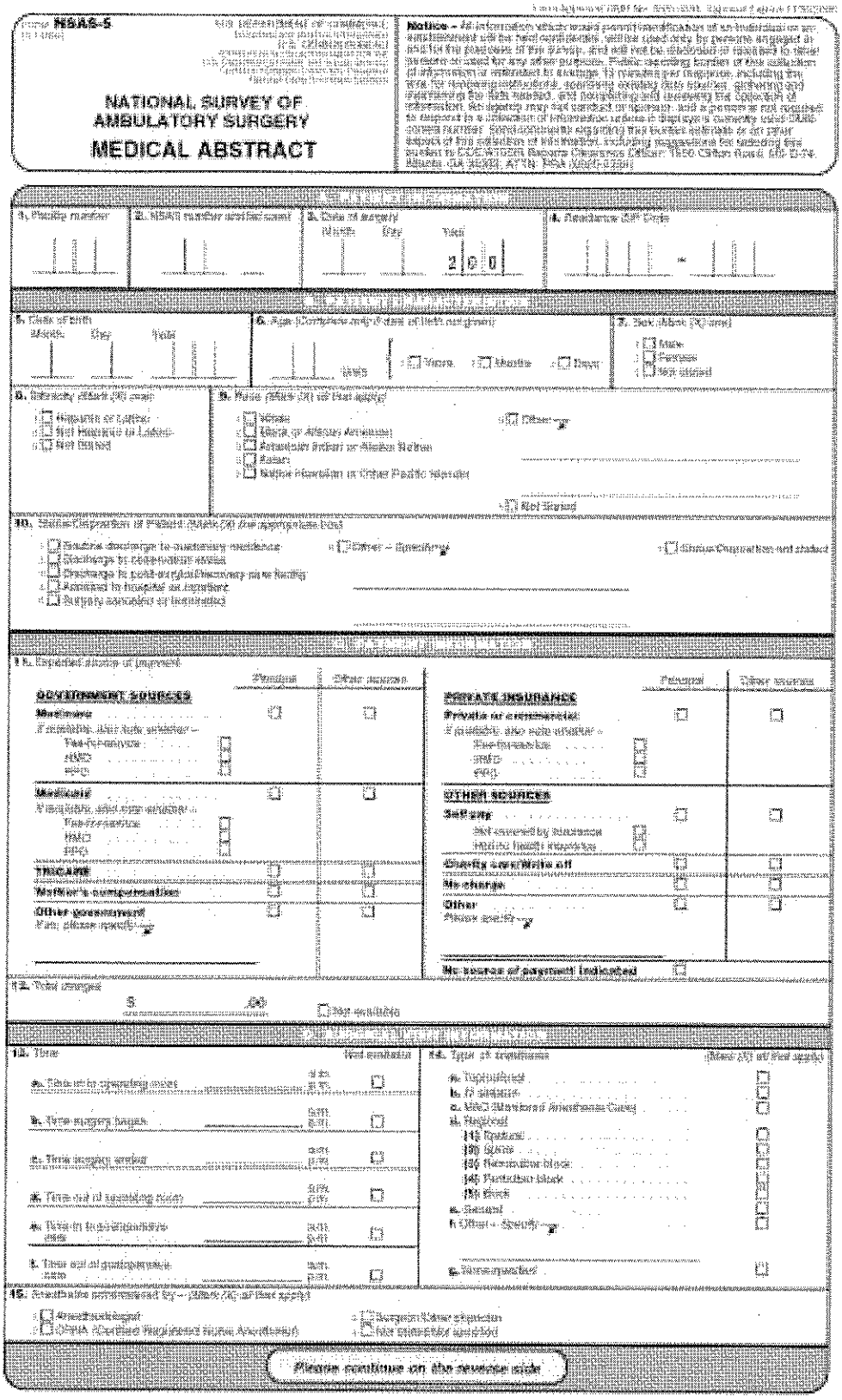
* Figure does not meet standards of reliability or precision.
– Quantity zero.
. . . Category not applicable.
†Rates were calculated using U.S. Census Bureau 2000-based postcensal estimates of the civilian population as of July 1, 2006.

NOTES: Diagnostic categories and code numbers are based on the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM). The relative standard error (RSE) can be obtained by dividing the standard error (SE) of the rate by the rate. The SE of a number in Table 8 can be obtained by multiplying the RSE by the estimate.

SOURCE: CDC/NCHS, National Survey of Ambulatory Surgery.

000513 (10/11/13)

Technical Notes



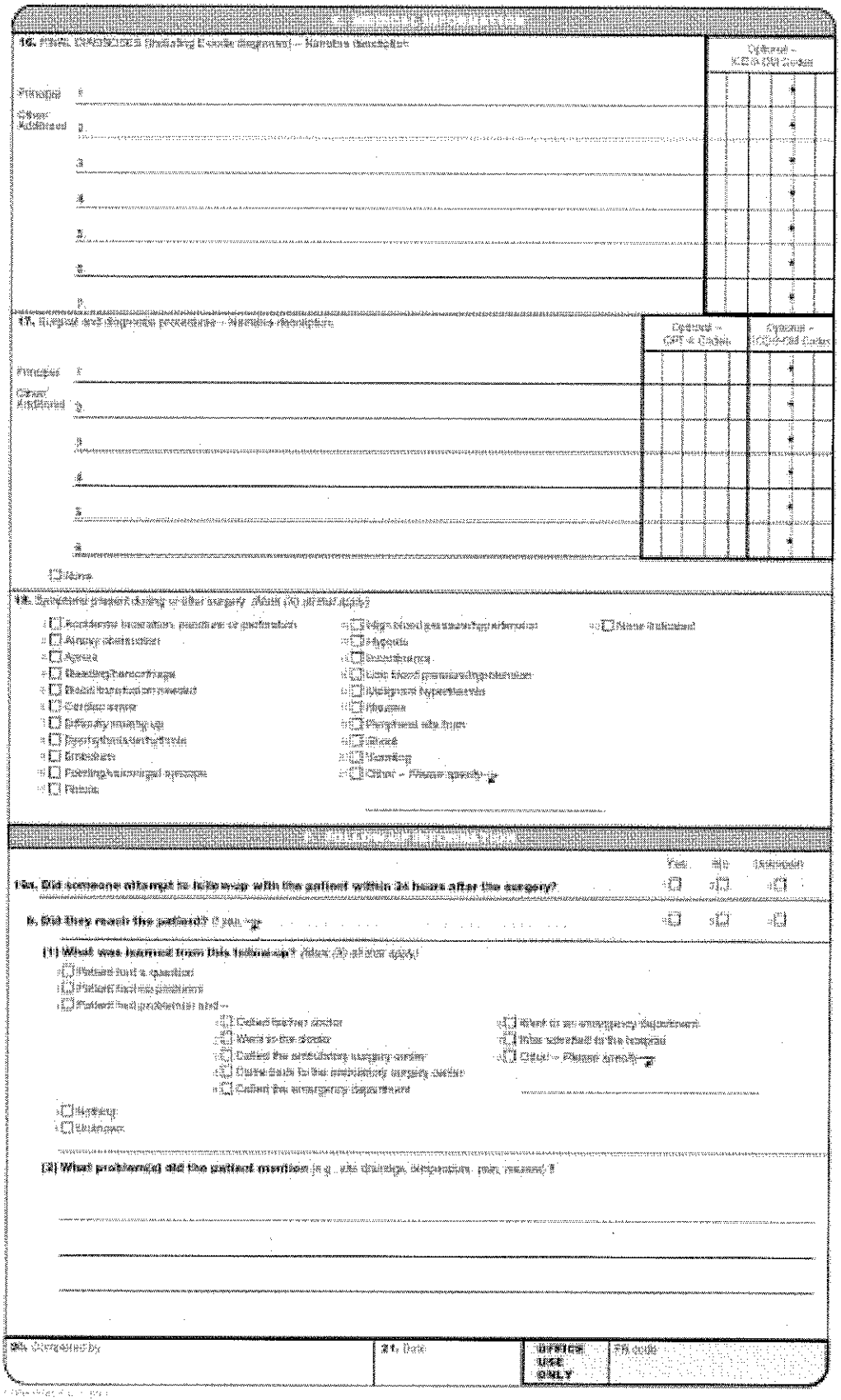
NAMCS-5

NATIONAL SURVEY OF AMBULATORY SURGERY

MEDICAL ABSTRACT

Please continue on the reverse side

000514 (10/11/13)



16. [illegible] — Numeric description

Optional – ICD-9-CM Codes

Principal: 1.
Other/Additional: 2. 3. 4. 5. 6. 7.

17. [illegible] procedures – Numeric description

Optional – CPT-4 Codes | Optional – ICD-9-CM Codes

Principal: 1.
Other/Additional: 2. 3. 4. 5. 6.

☐ None

18. Someone present during or after surgery (Mark (X) all that apply)

- ☐ Accidental laceration, puncture or perforation
- ☐ Allergic reaction
- ☐ Apnea
- ☐ Bleeding/hemorrhage
- ☐ Blood transfusion needed
- ☐ Cardiac arrest
- ☐ Difficulty moving up
- ☐ Hypothermia/shivering
- ☐ Infection
- ☐ Fainting/syncope/near syncope
- ☐ Nausea
- ☐ Hypertension requiring medication
- ☐ Hypoxia
- ☐ Incontinence
- ☐ Low blood pressure/hypotension
- ☐ Malignant hyperthermia
- ☐ Nausea
- ☐ Peripheral nerve injury
- ☐ Shock
- ☐ Vomiting
- ☐ Other – Please specify:
- ☐ None indicated

19a. Did someone attempt to follow-up with the patient within 24 hours after the surgery? Yes ☐ No ☐ Unknown ☐

b. Did they reach the patient? Yes ☐ No ☐ Unknown ☐

(1) What was learned from this follow-up? (Mark (X) all that apply)

- ☐ Patient had a question
- ☐ Patient had no problems
- ☐ Patient had problem(s) and –
  - ☐ Called his/her doctor
  - ☐ Went to the doctor
  - ☐ Called the ambulatory surgery center
  - ☐ Came back to the ambulatory surgery center
  - ☐ Called the emergency department
  - ☐ Went to an emergency department
  - ☐ Was admitted to the hospital
  - ☐ Other – Please specify:
- ☐ Surgery
- ☐ Unknown

(2) What problem(s) did the patient mention (e.g., site drainage, temperature, pain, nausea)?

20. Completed by | 21. Date | OFFICE USE ONLY | FS code

Acknowledgments

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000516 (10/11/13)

EXHIBIT 27

MidState Medical Center and The Hospital of Central Connecticut

FY 2012 Inpatient Orthopedic Discharges

By Patient Origin

Patient Town of Origin	HOCC	% Discharges
NEW BRITAIN	**285**	**32.5%**
SOUTHINGTON	**180**	**20.5%**
BERLIN	**100**	**11.4%**
BRISTOL	66	7.5%
PLAINVILLE	**61**	**7.0%**
NEWINGTON	**48**	**5.5%**
FARMINGTON	15	1.7%
MERIDEN	**10**	**1.1%**
ROCKY HILL	9	1.0%
WEST HARTFORD	9	1.0%
CHESHIRE	**9**	1.0%
BURLINGTON	6	0.7%
PLYMOUTH	6	0.7%
MIDDLETOWN	6	0.7%
HARTFORD	5	0.6%
AVON	4	0.5%
WETHERSFIELD	4	0.5%
CROMWELL	4	0.5%
PROSPECT	4	0.5%
WATERBURY	4	0.5%
EAST HARTFORD	3	0.3%
WOLCOTT	3	0.3%
BLOOMFIELD	2	0.2%
SIMSBURY	2	0.2%
SOUTH WINDSOR	2	0.2%
DEEP RIVER	2	0.2%
DURHAM	2	0.2%
BRANFORD	2	0.2%
WALLINGFORD	**2**	**0.2%**
DANBURY	1	0.1%
FAIRFIELD	1	0.1%
RIDGEFIELD	1	0.1%
MARLBOROUGH	1	0.1%
WINDSOR	1	0.1%
BARKHAMSTED	1	0.1%
HARWINTON	1	0.1%
NEW MILFORD	1	0.1%
WATERTOWN	1	0.1%
WOODBURY	1	0.1%
EAST HADDAM	1	0.1%
WESTBROOK	1	0.1%
HAMDEN	1	0.1%
SOUTHBURY	1	0.1%
EAST LYME	1	0.1%
GRISWOLD+LISBON	1	0.1%
LYME	1	0.1%
OLD LYME	1	0.1%
HEBRON	1	0.1%
STAFFORD+UNION+S.SPRG	1	0.1%
VERNON	1	0.1%
Total	**876**	100.0%

Patient Town of Origin	MidState	% Discharges
MERIDEN	**244**	**41.7%**
WALLINGFORD	**165**	**28.2%**
CHESHIRE	**68**	**11.6%**
SOUTHINGTON	17	2.9%
NORTH HAVEN	9	1.5%
BERLIN	**8**	**1.4%**
HAMDEN	6	1.0%
NORTH BRANFORD	6	1.0%
MIDDLEFIELD	5	0.9%
BRISTOL	4	0.7%
WATERBURY	4	0.7%
DURHAM	4	0.7%
NAUGATUCK	4	0.7%
NEWINGTON	**3**	**0.5%**
NORWALK	3	0.5%
HADDAM	3	0.5%
WEST HAVEN	3	0.5%
MIDDLETOWN	2	0.3%
PROSPECT	2	0.3%
EAST HARTFORD	2	0.3%
SIMSBURY	2	0.3%
DANBURY	2	0.3%
EAST HAVEN	2	0.3%
PLAINVILLE	**1**	**0.2%**
CROMWELL	1	0.2%
BRANFORD	1	0.2%
WATERTOWN	1	0.2%
EAST HADDAM	1	0.2%
EAST LYME	1	0.2%
NEWTOWN	1	0.2%
STRATFORD	1	0.2%
WESTPORT	1	0.2%
GLASTONBURY	1	0.2%
WINDSOR LOCKS	1	0.2%
TORRINGTON	1	0.2%
OLD SAYBROOK	1	0.2%
ANSONIA	1	0.2%
MILFORD	1	0.2%
ORANGE	1	0.2%
ELLINGTON	1	0.2%
Total	**585**	100.0%

% of Total Inpatient Discharges from Berlin, Newington, New Britain, Plainville, Southington, Meriden, Wallingford, and Cheshire	**81.0%**

MidState Medical Center and The Hospital of Central Connecticut
FY 2012 Outpatient Orthopedic Surgery
By Patient Origin

Patient Town of Origin	HOCC	% Discharges
NEW BRITAIN	**544**	29.1%
SOUTHINGTON	**322**	17.2%
BERLIN	**193**	10.3%
NEWINGTON	**149**	8.0%
PLAINVILLE	**142**	7.6%
BRISTOL	128	6.8%
FARMINGTON	49	2.6%
WEST HARTFORD	27	1.4%
MERIDEN	**27**	1.4%
MIDDLETOWN	24	1.3%
ROCKY HILL	22	1.2%
AVON	15	0.8%
CROMWELL	15	0.8%
WETHERSFIELD	14	0.7%
PLYMOUTH	14	0.7%
HARTFORD	11	0.6%
CHESHIRE	**11**	0.6%
WOLCOTT	11	0.6%
BURLINGTON	10	0.5%
HARWINTON	9	0.5%
EAST HARTFORD	8	0.4%
GLASTONBURY	6	0.3%
WATERBURY	6	0.3%
MANCHESTER	5	0.3%
SOUTH WINDSOR	5	0.3%
OLD SAYBROOK	5	0.3%
CANTON	4	0.2%
PORTLAND	4	0.2%
WESTBROOK	4	0.2%
WALLINGFORD	**4**	0.2%
MADDBOROUGH	3	0.2%
SIMSBURY	3	0.2%
WINDSOR	3	0.2%
WINCHESTER	3	0.2%
GUILFORD	3	0.2%
PROSPECT	3	0.2%
OLD LYME	3	0.2%
WATERFORD	3	0.2%
TOLLAND	3	0.2%
NEW HARTFORD	2	0.1%
TORRINGTON	2	0.1%
WOODBURY	2	0.1%
EAST HAMPTON	2	0.1%
MIDDLEFIELD	2	0.1%
NAUGATUCK	2	0.1%
NORTH BRANFORD	2	0.1%
COLCHESTER	2	0.1%
EAST LYME	2	0.1%
GROTON	2	0.1%
NORWICH	2	0.1%
TRUMBULL	1	0.1%
BLOOMFIELD	1	0.1%
ENFIELD	1	0.1%
HARTLAND	1	0.1%
WINDSOR LOCKS	1	0.1%
BETHLEHEM	1	0.1%
COLEBROOK	1	0.1%
LITCHFIELD	1	0.1%
MORRIS	1	0.1%
NORFOLK	1	0.1%
THOMASTON	1	0.1%
WATERTOWN	1	0.1%
CHESTER	1	0.1%
DURHAM	1	0.1%
EAST HADDAM	1	0.1%
BEACON FALLS	1	0.1%
DERBY	1	0.1%
HAMDEN	1	0.1%
MADISON	1	0.1%
MIDDLEBURY	1	0.1%
MILFORD	1	0.1%
NEW HAVEN	1	0.1%
NORTH HAVEN	1	0.1%
SEYMOUR	1	0.1%
SOUTHBURY	1	0.1%
WEST HAVEN	1	0.1%
GRISWOLD-LISBON	1	0.1%
LEBANON	1	0.1%
LYME	1	0.1%
SALEM	1	0.1%
COLUMBIA	1	0.1%
ELLINGTON	1	0.1%
HEBRON	1	0.1%
MANSFIELD	1	0.1%
WINDHAM	1	0.1%
Total	**1,872**	100.0%

Patient Town of Origin	MidState	% Discharges
MERIDEN	**469**	38.3%
WALLINGFORD	**326**	26.7%
CHESHIRE	**89**	7.3%
SOUTHINGTON	**69**	5.6%
MIDDLETOWN	22	1.8%
BERLIN	**20**	1.6%
DURHAM	19	1.6%
BRISTOL	15	1.2%
CROMWELL	14	1.1%
WATERBURY	14	1.1%
HAMDEN	12	1.0%
NEW BRITAIN	**10**	0.8%
NEW HAVEN	10	0.8%
NORTH HAVEN	10	0.8%
WEST HAVEN	9	0.7%
WOLCOTT	8	0.7%
MIDDLEFIELD	7	0.6%
NORTH BRANFORD	7	0.6%
NAUGATUCK	6	0.5%
PROSPECT	6	0.5%
PORTLAND	5	0.4%
EAST HAVEN	5	0.4%
DANBURY	4	0.3%
WATERTOWN	4	0.3%
MADISON	4	0.3%
SEYMOUR	4	0.3%
GLASTONBURY	3	0.2%
PLAINVILLE	**3**	0.2%
HADDAM	3	0.2%
KILLINGWORTH	3	0.2%
BRANFORD	3	0.2%
STRATFORD	2	0.2%
NEWINGTON	**2**	0.2%
ROCKY HILL	2	0.2%
LITCHFIELD	2	0.2%
THOMASTON	2	0.2%
WESTBROOK	2	0.2%
BETHANY	2	0.2%
GUILFORD	2	0.2%
ORANGE	2	0.2%
BETHEL	1	0.1%
BRIDGEPORT	1	0.1%
BROOKFIELD	1	0.1%
NORWALK	1	0.1%
BURLINGTON	1	0.1%
HARTFORD	1	0.1%
SOUTH WINDSOR	1	0.1%
SUFFIELD	1	0.1%
WEST HARTFORD	1	0.1%
TORRINGTON	1	0.1%
DEEP RIVER	1	0.1%
EAST HADDAM	1	0.1%
BEACON FALLS	1	0.1%
DERBY	1	0.1%
MIDDLEBURY	1	0.1%
MILFORD	1	0.1%
WOODBRIDGE	1	0.1%
COLCHESTER	1	0.1%
EAST LYME	1	0.1%
GROTON	1	0.1%
ELLINGTON	1	0.1%
HEBRON	1	0.1%
Total	**1,223**	100.0%

% of Total Inpatient Discharges from Berlin, Newington, New Britain, Plainville, Southington, Meriden, Wallingford, and Cheshire	**77%**

EXHIBIT 28

International Orthopaedics (SICOT) (2007) 31: 23–26
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ORIGINAL PAPER

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Obesity increases the likelihood of total joint replacement surgery among younger adults

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Abstract We conducted a retrospective review of medical charts of patients, aged 18 to 59 years old, who underwent either a total knee replacement (TKR) or total hip replacement (THR) from January 2002 to December 2004. Of the 204 study subjects, 52% had a TKR while 48% had a THR. Obesity was significantly associated with the need for a TKR or THR when comparing the study group to adults of similar age in the general population ($P< 0.0001$). Seventy-two percent (146) of the study group was obese and 21% (42) overweight (BMI 25.0 to 29.9 kg/m^2) compared to only 26% (596) obese and 34% (732) overweight in the general population. Patients undergoing a TKR were significantly more likely to be obese (BMI>30 kg/m^2) than those having a THR, 83% (89) compared to 59% (57) ($P< .0006$). Our findings support those previously observed in the elderly population. Primary and secondary prevention programs aimed at reducing obesity are strongly recommended.

Résumé Nous avons réalise une étude rétrospective chez les patients âgés de 18 à 59 ans et ayant nécessité la mise en place d'une prothèse totale de hanche ou du genou de janvier 2002 à décembre 2004. 204 patients ont été étudiés : 52% pour une prothèse du genou, 48% pour une prothèse de hanche. L'obésité est un facteur significativement associé à la nécessité de la mise en place d'une prothèse totale du genou ou d'une prothèse de hanche. Si l'on compare ce groupe, à un groupe similaire de personnes du même âge dans la population générale ($p<0.001$). 70% soit 146 patients du groupe étudié étaient obèses et 21%, soit 42 patients, en surpoids (BMI 25.0–29.9 Kg/m^2) comparé à 26%, soit 596 patients obèses et 34% soit 732 patients en surpoids de la population générale. Les patients nécessitant un remplacement du genou étaient en surcharge pondérale plus importante que les patients nécessitant une prothèse de hanche (BMI> 30 kg/m^2) 83% soit 89 patients contre 59% soit 57 patients. Il nous apparaît donc important à la lumière de ces constatations de préconiser une prévention de réduction de l'obésité dans la population.

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Introduction

Obesity has doubled and reached epidemic proportions in the United States over the last 30 years [2]. Recent prevalence data show that 30%, or over 60 million adults, 20 years of age and over are classified as obese [3]. Another 35% of adults are overweight [2]. Obesity has many associated health risks including type 2 diabetes mellitus, hypertension, coronary artery disease, cancer, and destructive arthritis [7]. Men and women from all ethnic, socioeconomic, and age groups are affected.

Osteoarthritis (OA) is the most common joint disease and is one of the most prevalent symptomatic health problems for older individuals. It is well known that age tends to be an overriding risk factor for the development of OA [1]. In a younger age group, one would tend to think of secondary causes, including joint injury, aseptic necrosis, and joint dysplasias [1], contributing to the development of OA.

OA can affect any synovial joint but most commonly occurs in the hand, foot, knee, spine, and hip joints [6]. Several risk factors have been identified for OA including age, obesity, gender, prior joint trauma, and work or sports activity [1, 7, 11–13]. Of the aforementioned, age is the overriding risk factor for OA [1]. Studies have shown that

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OA of the hip or knee affects approx. 5% of the population, with prevalence increasing with age as 9.5% of individuals older than 62 years being affected [1, 13]. Recent literature suggests that as individuals age, the chondrocyte function decreases, affecting the ability to synthesize appropriate aggrecans, leading to irregular proteoglycan aggregates that are less responsive to cytokines and mechanical forces [1].

Obesity has drawn interest in recent studies because of its modifiable status and its association with OA [1, 5, 8, 10–13]. Two dominant theories have been proposed to explain the association between obesity and the onset of OA. The biomechanical theory proposes that obesity leads to repetitive application of increased axial loading forces across the joint surface leading to degeneration of the articular cartilage and sclerosis of the subchondral bone. A second hypothesis is that excess fat may have a direct metabolic effect on cartilage by enhancing irregular growth and inhibiting repair of the articular cartilage [12].

A number of studies have focused on the relationship between obesity, OA, and total joint replacement among the elderly [5, 10, 11]. Marks and Allegrante [11] found a correlation between increasing BMI and the need for a THR in males and females age 23 to 94 years [11]. Additionally, Manek et al.[10] found a strong association between high BMI and the presence of knee OA in a study of female twins with a mean age of 54.5 years. Coggon et al. [5] found an increased relative risk of knee OA with increased weight. The relative risk reported for developing OA ranged from 0.1 (95% CI, 0.0 to 0.5) for normal individuals (BMI<20 kg/m^2) to 13.6 (95% CI, 5.1 to 36.2) for morbidly obese individuals (BMI>36 kg/m^2) [5]. However, few studies have examined the relationship between obesity and total joint replacement among individuals less than 60 years old.

The aim of this study was to investigate whether being overweight or obese is associated with the need for TKR or THR in non-elderly adults, i.e., those less than 60 years old. Also, we studied the relationship between being overweight or obese and the type of procedure performed, TKR or THR.

Materials and methods

Since studies have shown an increased prevalence of OA and TKR/THR with age, we chose to focus our study on the non-elderly to reduce the impact of age as a causative factor in this study of total joint replacement. A total of 305 patients, aged 18 to 59 years, received a TKR (Current Procedural Terminology Code 27130) or THR (Current Procedural Terminology Code 27447) from 1 January 2002 to 31 December 2004 at MeritCare Medical Center in Fargo, ND or in the outreach facilities of Bemidji and Detroit Lakes, MN. Of these, 204 were included in our study with the remaining 101 patients being excluded because height or weight was missing. A patient's weight was considered valid if measured within 40 days prior to surgery and height was valid if within three years of the surgery date. Age, gender, and procedure performed were also documented.

Individual Body Mass Index (BMI) was calculated by dividing the weight in kilograms by the height in meters squared (kg/m^2). Individual BMI was categorized according to the Centers for Disease Control and Prevention (CDC) guidelines [4]. Patients were classified as underweight if their BMI was<18.5, normal weight if it was 18.5 to 24.9, overweight if it was 25.0 to 29.9, and obese if it was >30.

North Dakota Behavioral Risk Factor Surveillance System (BRFSS) data from 2002 to 2004 was used to generate an age-matched (18 to 59 years old) "general population" sample. BRFSS is an ongoing, state-based, random-digit-dialed telephone survey of the non-institutionalized U.S. population aged 18 years or older. From this sample the annual number and percentage of individuals in each BMI category was used to calculate a three-average with each category, which was used to compare to the study population.

Analyses were performed using SAS software V9.1 (SAS Institute, Cary, NC). A specific SAS procedure (PROC surveymeans) was used for the BRFSS data to compute weighted frequencies by taking into account the complex survey design. The data were compared and analyzed using a chi-square test. A p-value of less than 0.05 was considered to be significant.

Results

The study group consisted of 204 subjects, with 41% (83) male and 59% (121) female. Of these, 52% (107) underwent TKR compared to 48% (97) THR. Males accounted for 29% (31) and females accounted for 71% (76) of the 107 TKR. Of the 97 THR, 54% (52) were male and 46% (45) were female (Table 1).

Table 1 Age, gender, and BMI comparisons of total knee replacement and total hip replacement patients

	Total knee replacement 52% (n = 107)	Total hip replacement 48% (n = 97)
Age:		
Median (range)	52 (32–59)	51 (18–59)
Gender		
Male	29 (31)	54 (52)
Female	71 (76)	46 (45)
BMI:		
Median (range)	35.4 (21.4–62)	30.4 (22.3–48.4)
BMI*:		
Normal (<24.9)	5 (5)	11 (11)
Overweight (25.0–29.9)	12 (13)	30 (29)
Obese (>30.0)	83 (89)	59 (57)

*P<0.0006

Table 2 BMI comparison of total knee replacement (TKR) or total hip replacement (THR) patients and general population

BMI (kg/m^2)	TKR or THR patients 100% (204)	General population 100% (2161)
Normal (<24.9)	8 (16)	40 (833)
Overweight (25.0–29.9)	21 (42)	34 (732)
*Obese (≥30.0)	72 (146)	26 (596)

*P<0.0001

Patients undergoing a TKR were significantly more likely to be obese (BMI>30 kg/m^2) than those having a THR, 83% (89) compared to 59% (57) (P<0.0006; Table 1). Obesity was strongly associated with the need for a TKR or THR when comparing the study group to similar-aged non-elderly adults in the general population (P<0.0001; Table 2). Seventy-two percent (146) of the study group was obese and 21% (42) overweight (BMI 25.0–29.9 kg/m^2) compared to only 26% (596) being obese and 34% (732) overweight in the general population (Table 2).

Discussion

We found that obesity is strongly associated with the need for a total joint replacement among adults less than 60 years old. Seventy-two percent of our study group was classified as obese compared to only 26% of the general population. When analyzing our data specific to the type of procedure, TKR or THR, patients undergoing a TKR were significantly more likely to be obese than those having a THR, 83% compared to 59%. Others have found a similar relationship in elderly populations. Wendelboe et al. found an association between increasing BMI and the need for total joint replacement in elderly patients, aged 55 to 74 years [13]. Coggin et al. [5] studied subjects older than 45 years who had a TKR and found the median BMI to be 28.1 or overweight, whereas our study population showed an obese median BMI of 35.4. Additionally, Manek et al. [10] found a strong association between high BMI and the presence of knee OA in a study of female twins with a mean age of 54.5 years. Previous studies also showed moderate evidence of an association between hip OA and obesity [6, 8, 9, 11, 13]. Wendelboe et al. [13] also found a relationship between increasing BMI and THR surgery. Flugsrud et al. [6] also showed an increasing relative risk with an increasing BMI, both in males and females.

One possible explanation for the discrepancy between the BMI in the THR group when compared to TKR may be due to avascular necrosis of the hip. During data collection, we noted avascular necrosis of the hip to be a fairly common indication for having THR. Avascular necrosis would be a secondary cause of OA and necessitate the need for joint replacement regardless of their BMI.

We acknowledge some limitations regarding our study. First, all heights and weights were collected from the electronic patient record. We assumed that all heights and weights were measured; however, we cannot rule out the possibility that the person who entered the data chose to enter a patient's self-reported information. Most self-reported weight is noted for being underestimated, especially for females [13]. However, this would likely serve to further corroborate our findings rather than refute them. Secondly, it is possible that individuals in the general population sample could have undergone a total joint replacement at the study hospital and, thus, simultaneously were a part of our study group. Since our general population sample was randomized, this limitation could not be avoided. However, we feel the chance of an individual being included in both the study group and general population is slim, and thus the impact, if there was any, on the study findings is minimal.

In summary, our study found a strong association between obesity and the need for TKR or THR in non-elderly adults. These findings support those previously observed in the elderly population. As the prevalence of overweight and obese individuals continues to rise, an increase in the number of total joint replacements may rise accordingly. Primary and secondary prevention programs aimed at reducing obesity are strongly recommended in light of the continuing rise in the number of adults classified as overweight or obese.

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ORIGINAL CONTRIBUTION

Scan for Author Video Interview

Total Knee Arthroplasty Volume, Utilization, and Outcomes Among Medicare Beneficiaries, 1991-2010

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Xin Lu, MS
Stephen L. Kates, MD
Jasvinder A. Singh, MD, MPH
Yue Li, PhD
Brian R. Wolf, MD, MS

Context Total knee arthroplasty (TKA) is one of the most common and costly surgical procedures performed in the United States.

Objective To examine longitudinal trends in volume, utilization, and outcomes for primary and revision TKA between 1991 and 2010 in the US Medicare population.

Design, Setting, and Participants Observational cohort of 3 271 851 patients (aged ≥65 years) who underwent primary TKA and 318 563 who underwent revision TKA identified in Medicare Part A data files.

Main Outcome Measures We examined changes in primary and revision TKA volume, per capita utilization, hospital length of stay (LOS), readmission rates, and adverse outcomes.

Results Between 1991 and 2010 annual primary TKA volume increased 161.5% from 93 230 to 243 802 while per capita utilization increased 99.2% (from 31.2 procedures per 10 000 Medicare enrollees in 1991 to 62.1 procedures per 10 000 in 2010). Revision TKA volume increased 105.9% from 9650 to 19 871 while per capita utilization increased 59.4% (from 3.2 procedures per 10 000 Medicare enrollees in 1991 to 5.1 procedures per 10 000 in 2010). For primary TKA, LOS decreased from 7.9 days (95% CI, 7.8-7.9) in 1991-1994 to 3.5 days (95% CI, 3.5-3.5) in 2007-2010 ($P<.001$). For primary TKA, rates of adverse outcomes resulting in readmission remained stable between 1991-2010, but rates of all-cause 30-day readmission increased from 4.2% (95% CI, 4.1%-4.2%) to 5.0% (95% CI, 4.9%-5.0%) ($P<.001$). For revision TKA, the decrease in hospital LOS was accompanied by an increase in all-cause 30-day readmission from 6.1% (95% CI, 5.9%-6.4%) to 8.9% (95% CI, 8.7%-9.2%) ($P<.001$) and an increase in readmission for wound infection from 1.4% (95% CI, 1.3%-1.5%) to 3.0% (95% CI, 2.9%-3.1%) ($P<.001$).

Conclusions Increases in TKA volume have been driven by both increases in the number of Medicare enrollees and in per capita utilization. We also observed decreases in hospital LOS that were accompanied by increases in hospital readmission rates.

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TOTAL KNEE ARTHROPLASTY (TKA) is a common and safe procedure typically performed for relief of symptoms in patients with severe knee arthritis. Available data suggest that approximately 600 000 TKA procedures are performed annually in the United States at a cost of approximately $15 000 per procedure ($9 billion per year in aggregate).[1-4] While TKA does not typically reduce mortality, the procedure results in marked improvements in health-related quality of life and functional status and is highly cost-effective.[2,5] Total knee arthroplasty is now among the most common major surgical procedures performed in the United States.[6]

The increase in TKA can be viewed as an indication of the success of this procedure in safely reducing pain and improving functional status for an aging population.[7,8] However, the increase in TKA can also be viewed as yet another source of strain on government, insurers, individuals, and businesses struggling with unremitting growth in health care spending.[9-11] Despite the clinical and economic policy importance of TKA, there are few analyses evaluating recent trends over time in use of and outcomes associated with TKA.[1,12-14]

Thus, the primary objective of our study was to evaluate longitudinal

See also pp 1217 and 1266.

Author Video Interview available at www.jama.com.

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trends in primary and revision TKA volume, per capita utilization, and outcomes in the US Medicare population. The secondary objective was to examine patient and hospital factors associated with increased risk for hospital readmission given the growing likelihood of bundled payments for orthopedics in the near future.[15,16]

METHODS

Data

We linked 2 sequential Medicare Provider Analysis and Review (MedPAR) Part A data files (the first covering the period from 1991-2005 and the second from 2006-2010), each containing a 100% sample of hospitalizations for fee-for-service beneficiaries. These data were used to identify all enrollees aged 65 years and older who underwent primary or revision TKA between 1991 and 2010. Patients were identified using *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* procedure codes 81.54 for primary and codes 80.06, 81.55, 00.80, 00.81, 00.82, 00.83, and 00.84 for revision TKA.[17-20]

The Part A files contain a range of data collected from discharge abstracts for all hospitalized fee-for-service Medicare enrollees including patient demographics; *ICD-9-CM* codes for primary and secondary diagnoses and procedures; admission source (eg, emergency department or transfer from outside hospital); admission and discharge dates; discharge disposition (eg, home, nursing home, inpatient rehabilitation, transfer to another acute care hospital, dead); death occurring up to 3 years after discharge; each patient's unique Medicare beneficiary number allowing for identification of patient readmissions; and each hospital's unique 6-digit identification number. Comorbid conditions present on the index admission were identified using algorithms described by Elixhauser et al,[21,22] which consider 30 specific conditions and exclude comorbid conditions that may represent complications of care or that are related to the primary reason for hospitalization. This project was approved by the University of Iowa Institutional Review Board.

Our intention was to examine changes in volume, utilization, and outcomes of patients undergoing primary and revision TKA procedures. To generate appropriate analytical cohorts, we applied several inclusion and exclusion criteria (eFigure 1 and eFigure 2, available at http://www.jama.com). First, we excluded Medicare HMO enrollees because the MedPAR data are incomplete for enrollees in such plans.

Second, we limited our cohort to the first primary (or revision) TKA performed on a given patient during any 30-day period using methods we have described previously.[23] We also excluded bilateral or staged procedures that occurred within the 30-day window; this exclusion is necessary because Medicare data historically have not included sidedness for a specific procedure. Thus, for a patient who underwent 2 primary TKA procedures in close temporal proximity, it is impossible to know if this represented an initial primary procedure followed by an early complication requiring a second procedure or a planned bilateral (ie, staged) procedure.

Third, because primary TKA is most often an elective procedure whereas revision TKA can be either an elective or more urgent procedure, we applied separate exclusion criteria to the primary and revision TKA populations in accordance with prior studies as described below. For primary TKA (eFigure 1), we sequentially excluded patients admitted through the emergency department (n=18 497) and patients admitted after transfer from another acute care hospital (n=3295); these exclusion criteria were developed to select a population of primary elective TKA patients. The revision TKA population (eFigure 2) did not exclude these types of patients because revision TKA can be an emergent or unscheduled procedure and thus exclusion of these populations would not make sense.

Statistical Analysis

We examined the demographic characteristics and prevalence of key comorbid conditions for patients who underwent TKA between 1991 and 2010; for simplicity, data are presented separately for each 4-year period (eg, 1991-1994, 1995-1998, etc). We examined changes in the mean number of comorbid conditions per patient during each 4-year period. We used analysis of variance for comparisons of continuous variables and the χ^2 test for categorical variables and tested for differences in linear trends. All analyses were performed separately for primary and revision TKA patients.

We used graphical methods to plot the annual primary and revision TKA Medicare volume over time. We calculated per capita TKA utilization rates by dividing the number of procedures performed each year by the number of beneficiaries enrolled in the fee-for-service Medicare program and plotted these results graphically.

We compared linear trends in several important outcomes of interest for primary and revision TKA: hospital length of stay (LOS); discharge disposition; selected arthroplasty complications resulting in readmission within 30 days of discharge; and all-cause readmission rates within 30 days of discharge. Discharge disposition was categorized as home, skilled or intermediate care (which also incorporated outpatient rehabilitation), inpatient rehabilitation, and other. We examined changes in the rates of 6 separate adverse outcomes occurring during the index admission (mortality) or readmission within 30 days of discharge (mortality, pulmonary embolism, deep vein thrombosis, wound infection, postoperative sepsis, and myocardial infarction) that have been examined in prior studies of arthroplasty using administrative data.[20,24,25]

We also examined changes in rates of a composite outcome representing the occurrence of one or more of the individual adverse outcomes as well as all-cause readmission within 30 days of discharge. To evaluate the reasons for readmission among the primary and revision TKA cohorts, we applied the Agency for Healthcare Research and

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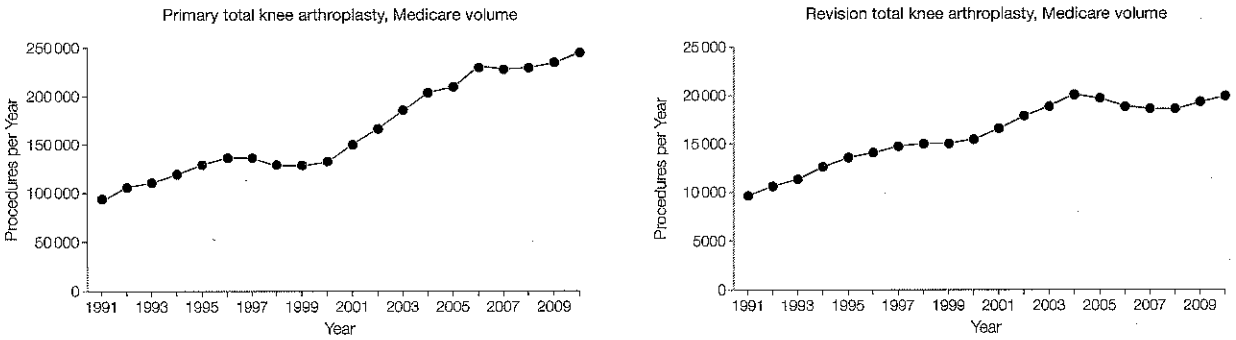
Figure 1. Primary and Revision Total Knee Athroplasty Medicare Volume Between 1991 and 2010



Y-axis shown in blue indicates range from 0 to 25 000 procedures per year.

Quality (AHRQ) Clinical Classification Software (CCS).[26] This software synthesizes more than 14 000 *ICD-9-CM* codes into 231 mutually exclusive clinically meaningful disease categories. For each 4-year study period, we examined the 5 most common categories associated with readmission and the proportion of all readmissions during each period that were associated with each category; this allowed us to examine how the causes of readmission have changed over time.

We used standard logistic regression to calculate risk-adjusted 30-day readmission rates and composite outcome [(observed/adjusted) × unadjusted 20-year rates] and used standard linear regression to calculate risk-adjusted hospital LOS [(observed –adjusted) + unadjusted 20-year LOS].[27] These models adjusted for age (categorized as 65-69 years, 70-74, 75-79, and ≥80 years), sex, race (categorized as white, black, and other), and comorbidities to account for the changing demographics of the TKA populations over time.[28] Race was included in these models to allow us to account for previously documented racial disparities in joint arthroplasty when calculating standardized utilization rates for our analysis.[29,30] We used graphical methods to plot discharge disposition, hospital LOS, readmission rates, and composite outcome between 1991 and 2010. All analyses were conducted separately for the primary and revision TKA cohorts.

We conducted several supplemental analyses of interest. Focusing on the most recent 4 years of data (2007-2010), we examined the relationship between patient and hospital factors and hospital readmission; as in prior analyses, primary and revision TKA were examined separately. We used bivariate methods to compare differences in patient and hospital factors among patients who did and did not experience readmission within 30 days of discharge. We then examined both patient-level and hospital-level factors that may have affected the 30-day readmission rate by employing a series of 4 standard logistic regression models that progressively adjusted for an increasing array of factors. In all models, the dependent variable was a binary variable with the value of 1 if a given patient was readmitted and 0 if not.

Model 1 adjusted for patient demographics alone (ie, age, race, sex); model 2 added adjustment for the number of comorbidities; model 3 added adjustment for hospital teaching status (major, minor, and nonteaching) and hospital procedural volume (calculated separately for the primary and revision TKA cohort and categorized by hospital volume quartiles); and model 4 added additional adjustment for each patient's hospital LOS, modeled in its log-transformed state. In all 4 models, we also included calendar year (2007, 2008, 2009, and 2010) to account for underlying temporal trends. We conducted several sensitivity analyses. In particular, we repeated our analyses after adding back excluded populations (eg, primary TKA cases admitted through the emergency department). We also repeated our analyses looking at 90-day outcomes rather than 30-day outcomes.

All P values are 2-tailed, with $P < .05$ deemed statistically significant. All statistical analyses were performed using SAS version 9.2.

RESULTS

Our final study population included 3 271 851 elective primary TKAs and 318 563 revision TKAs between 1991 and 2010. The total number of fee-for-service Medicare enrollees increased from 29 892 351 in 1991 to 39 250 746 in 2010, whereas the number of primary TKA procedures increased from 93 230 in 1991 to 243 802 in 2010 (an increase of 161.5%) (FIGURE 1). The number of revision TKA procedures increased from 9650 in 1991 to 19 871 in 2010 (an increase of 105.9%) (Figure 1).

During the same period, the per capita utilization of primary TKA increased by 99.2% (FIGURE 2) and the per capita utilization of revision TKA increased by 56.8% (Figure 2). For primary TKA, the mean (SD) age increased from 73.8 (5.8) years (95% CI, 73.8-73.8 years) in 1991-1994 to 74.2 (6.2) years (95% CI, 74.2-74.2 years) in 2007-2010, ($P < .001$). The preva-

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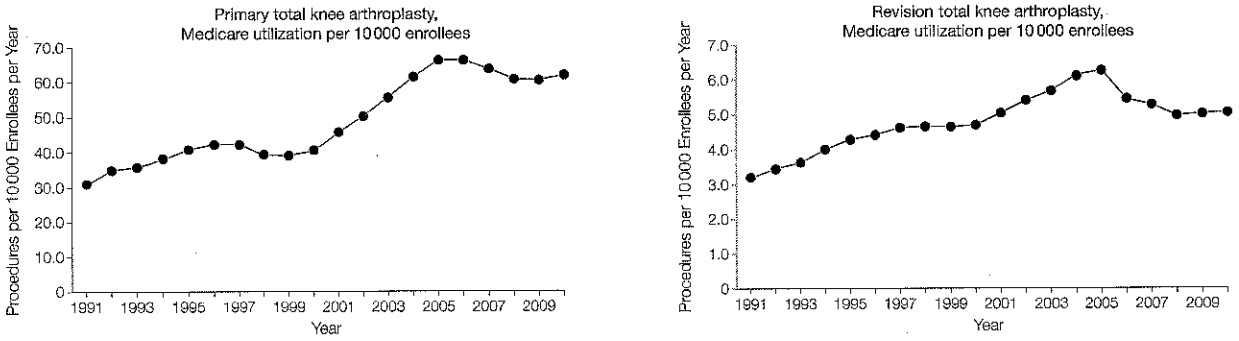
lence of diabetes increased from 10.5% (95% CI, 10.4%-10.6%) to 21.7% (95% CI, 21.6%-21.7%) and the prevalence of obesity increased from 4.0% (95% CI, 3.9%-4.0%) to 11.5% (95% CI, 11.4%-11.6%; $P<.001$ for each). Trends were similar for revision TKA (TABLE 1). In particular, the mean (SD) age increased from 74.2 (5.9) years (95% CI, 74.1-74.3 years) in 1991-1994 to 74.8 (6.5) years (95% CI, 74.7-74.8 years) in 2007-2010 ($P<.001$). The prevalence of diabetes increased from 11.0% (95% CI, 10.7%-11.3%) to 24.2% (95% CI, 23.9%-24.5%) and the prevalence of obesity increased from 3.7% (95% CI, 3.5%-3.8%) to 10.1% (95% CI, 9.9%-10.3%) ($P<.001$ for each).

For primary TKA, the mean hospital LOS declined from 7.9 days (95% CI, 7.8-7.9) in 1991-1994 to 3.5 days (95% CI, 3.5-3.5) in 2007-2010 (TABLE 2), a relative decline of 55.7% ($P<.001$). The percentage of patients discharged home after primary TKA declined from 67.5% (95% CI, 67.3%-67.6%) in 1991-1994 to 39.9% (95% CI,

Figure 2. Primary and Revision Medicare Total Knee Athroplasty Utilization Between 1991 and 2010



Y-axis shown in blue indicates range from 0 to 7 procedures per year per 10 000 enrollees. The range of variability (1 SD) in primary total knee arthroplasty (TKA); procedures per 10 000 Medicare enrollees for 1991 was 31.0 to 31.4; for 2010, 5.0 to 5.1. For revision TKA, the range of variability (1 SD; procedures per 10 000 Medicare enrollees) for 1991 was 3.2 to 3.3; for 2010, 5.0 to 5.1.

Table 1. Characteristics of Medicare Beneficiaries Receiving Primary and Revision Total Knee Arthroplasty (TKA) Between 1991 and 2010[a]

	Primary TKA					Revision TKA				
Characteristics	1991-1994	1995-1998	1999-2002	2003-2006	2007-2010	1991-1994	1995-1998	1999-2002	2003-2006	2007-2010
No. of hospitalizations	431 050	530 128	578 614	816 497	915 562	44 120	57 785	65 197	76 526	74 935
Age, mean (SD), y	73.8 (5.8)	74.5 (5.9)	74.7 (5.9)	74.7 (5.9)	74.2 (6.2)	74.2 (5.9)	75.2 (6.1)	75.4 (6.2)	75.3 (6.3)	74.8 (6.5)
Women, No. (%)	283 353 (65.7)	346 827 (65.4)	379 650 (65.6)	535 181 (65.5)	592 777 (64.7)	26 772 (60.7)	35 062 (60.7)	38 948 (59.7)	44 654 (58.4)	43 535 (58.1)
Race, No. (%)[b]										
White	389 996 (90.5)	487 200 (91.9)	529 078 (91.4)	744 882 (91.2)	831 082 (90.8)	39 850 (90.3)	52 787 (91.4)	58 781 (90.2)	68 770 (89.9)	66 981 (89.4)
Black	21 515 (5.0)	28 685 (5.4)	30 563 (5.3)	42 442 (5.2)	49 477 (5.4)	2531 (5.7)	3704 (6.4)	4606 (7.1)	5413 (7.1)	5581 (7.4)
Other	7376 (1.7)	10 774 (2.0)	16 654 (2.9)	25 908 (3.2)	32 195 (3.5)	622 (1.4)	975 (1.7)	1586 (2.4)	2078 (2.7)	2158 (2.9)
Missing	12 163 (2.8)	3469 (0.7)	2314 (0.4)	3265 (0.4)	2808 (0.3)	1117 (2.5)	319 (0.6)	224 (0.3)	265 (0.3)	215 (0.3)
Comorbidity, No. (%)										
Diabetes	45 158 (10.5)	69 141 (13.0)	89 230 (15.4)	152 877 (18.7)	198 241 (21.7)	4863 (11.0)	8660 (15.0)	11 638 (17.9)	16 358 (21.4)	18 129 (24.2)
CHF	14 732 (3.4)	22 041 (4.2)	24 940 (4.3)	37 622 (4.6)	35 652 (3.9)	2173 (4.9)	3966 (6.9)	5147 (7.9)	6909 (9.0)	5893 (7.9)
Obesity	17 092 (4.0)	27 415 (5.2)	35 684 (6.2)	67 120 (8.2)	105 251 (11.5)	1619 (3.7)	2906 (5.0)	3956 (6.1)	6115 (8.0)	7555 (10.1)
Renal failure	1742 (0.4)	2383 (0.4)	3443 (0.6)	12 531 (1.5)	37 335 (4.1)	330 (0.7)	556 (1.0)	950 (1.5)	2525 (3.3)	5088 (6.8)
No. of comorbid conditions, mean (SD)	1.2 (1.2)	1.4 (1.3)	1.6 (1.3)	1.9 (1.4)	2.1 (1.4)	1.2 (1.2)	1.6 (1.4)	1.8 (1.4)	2.2 (1.5)	2.3 (1.5)

Abbreviation: CHF, congestive heart failure.
[a] P values (test for trend) are less than .001 for all comparisons except age (primary TKA, $P=.56$; revision TKA, $P=.46$).
[b] The race category of other includes Asian, Hispanic, North American Native, or other not specified individuals.

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39.8%-40.0%) in 1999-2002 before increasing to 56.2% (95% CI, 56.1%-56.3%) in 2007-2010 (Table 2 and eFigure 3, available at http://www.jama.com); alternatively the percentage of patients discharged to inpatient rehabilitation increased from 14.6% (95% CI, 14.5%-14.7%) in 1991-1994 to 29.4% (95% CI, 29.3%-29.5%) in 1999-2002 before declining to 11.4% (95% CI, 11.3%-11.4%) in 2007-20120 and discharge to outpatient rehabilitation facilities increased steadily throughout the study period. Unadjusted mortality within 30 days after discharge decreased from 0.5% (95% CI, 0.4%-0.5%) in 1991-1994 to 0.3% (95% CI, 0.3%-0.3%) in 2007-2010, a 40% relative reduction ($P<.001$). Unadjusted rates of most other adverse outcomes remained relatively stable over the study period as did the rate of the composite outcome (Table 2).

In contrast, all-cause 30-day readmission rates increased from 4.2% (95% CI, 4.1%-4.2%) in 1991-1994 to 5.0% (95% CI, 4.9%-5.0%) in 2007-2010 ($P<.001$)(Table 2). In adjusted analyses, we found that although hospital LOS for primary TKA declined throughout the study period (eFigure 4), both 30-day all-cause readmission rates (eFigure 5) and rates of the composite outcome (eFigure 6) declined initially, but have been increasing in recent years. In an analysis of the diagnoses and conditions associated with readmission after primary TKA, we observed relatively little change over time (eTable 1) with surgical and cardiac complications being relatively common as well as gastrointestinal hemorrhage and infection, particularly in recent years.

For revision TKA, the mean hospital LOS declined from 8.9 days (95% CI, 8.8-8.9) in 1991-1994 to 5.0 days (95% CI, 5.0-5.0) in 2007-2010, a relative decline of 43.8% ($P<.001$; TABLE 3). Trends in discharge disposition after revision TKA (Table 3 and eFigure 3) demonstrated a similar pattern to that which was observed for primary TKA, a decline in discharges to home or inpatient rehabilitation and an increase in discharge to skilled care and outpatient rehabilitation. Mortality within 30 days of discharge increased modestly from 0.7% (95% CI, 0.6%-0.7%) in 1991-1994 to 0.9% (95% CI, 0.8%-0.9%) in 2007-2010 (a 28.6% relative increase) and readmission for wound infection, hemorrhage, sepsis, and myocardial infarction each increased by more than 100% ($P<.001$ for each). For revision TKA, the unadjusted rate of the composite outcome increased from 2.7% (95% CI, 2.6%-2.9%) in 1991-1994 to 5.3% (95% CI, 5.2%-5.5%) in 2007-2010 ($P<.001$). All-cause unadjusted readmission rates within 30 days of discharge increased from 6.1% (95% CI, 5.9%-6.4%) to 8.9% (95% CI, 8.7%-9.2%) during the study period (eFigure 5). The most common causes of readmission after revision TKA are displayed in eTable 2.

In adjusted analyses, revision TKA demonstrated a steady decrease in hos-

Table 2. Unadjusted Outcomes (LOS, Complication Rates, and 30-Day Readmission Rates) for Primary Total Knee Arthroplasty (TKA) Between 1991 and 2010[a]

	Mean % (95% CI)				
	1991-1994	1995-1998	1999-2002	2003-2006	2007-2010
No. of hospitalizations	431 050	530 128	578 614	816 497	915 562
LOS					
Mean, d (95% CI)	7.9 (7.8-7.9)	4.9 (4.9-5.0)	4.3 (4.3-4.3)	3.9 (3.9-3.9)	3.5 (3.5-3.5)
Median, d (IQR)	7 (6-9)	4 (4-6)	4 (3-5)	3 (3-4)	3 (3-4)
Discharge disposition					
Home	67.5 (67.3-67.6)	46.6 (46.4-46.7)	39.9 (39.8-40.0)	45.3 (45.2-45.4)	56.2 (56.1-56.3)
Outpatient skilled/intermediate care/rehabilitation	16.6 (16.5-16.7)	29.1 (29.0-29.2)	28.4 (28.2-28.5)	26.1 (26.0-26.2)	30.1 (30.0-30.2)
Inpatient rehabilitation	14.6 (14.5-14.7)	22.8 (22.7-23.0)	29.4 (29.3-29.5)	25.6 (25.5-25.7)	11.4 (11.3-11.4)
Other	1.3 (1.3-1.4)	1.5 (1.4-1.5)	2.4 (2.3-2.4)	3.0 (3.0-3.0)	2.3 (2.3-2.3)
Complications within 30 d of discharge					
Mortality	0.5 (0.4-0.5)	0.4 (0.4-0.5)	0.4 (0.3-0.4)	0.3 (0.3-0.3)	0.3 (0.3-0.3)
Pulmonary embolism	0.2 (0.2-0.2)	0.2 (0.2-0.2)	0.2 (0.2-0.2)	0.2 (0.2-0.2)	0.3 (0.3-0.3)
Deep vein thrombosis	0.4 (0.4-0.4)	0.4 (0.4-0.4)	0.3 (0.3-0.3)	0.3 (0.3-0.3)	0.4 (0.4-0.4)
Wound infection	0.7 (0.6-0.7)	0.6 (0.6-0.6)	0.6 (0.5-0.6)	0.4 (0.4-0.4)	0.4 (0.4-0.4)
Hemorrhage	0.1 (0.1-0.1)	0.1 (0.1-0.1)	0.2 (0.2-0.2)	0.2 (0.2-0.3)	0.3 (0.3-0.3)
Sepsis	0.1 (0.1-0.1)	0.1 (0.1-0.1)	0.1 (0.1-0.1)	0.1 (0.1-0.2)	0.2 (0.2-0.2)
Myocardial infarction	0.2 (0.2-0.2)	0.2 (0.2-0.3)	0.3 (0.2-0.3)	0.3 (0.3-0.3)	0.3 (0.3-0.3)
Composite outcome[b]	1.9 (1.9-2.0)	1.9 (1.8-1.9)	1.8 (1.7-1.8)	1.7 (1.6-1.7)	1.9 (1.9-1.9)
All-cause readmission at 30 d	4.2 (4.1-4.2)	4.1 (4.1-4.2)	4.0 (4.0-4.1)	4.5 (4.5-4.6)	5.0 (4.9-5.0)

Abbreviations: IQR, interquartile range; LOS, length of stay

[a] P values (test for trend) are less than .001 for all comparisons except for LOS ($P=.001$) and deep vein thrombosis ($P=.001$).

[b] Composite outcome is the occurrence of one or more of the following within 30 days of discharge: death, pulmonary embolism, deep vein thrombosis, wound infection, hemorrhage, sepsis, or myocardial infarction.

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pital LOS (eFigure 4) accompanied by an initial decline in readmissions that has reversed in recent years (eFigure 5) and by an increase in both unadjusted and adjusted rates of the composite outcome (eFigure 6).

In bivariate comparison of patients who were and were not readmitted within 30 days after primary TKA (TABLE 4), we found that patients who were readmitted were older than those who were not readmitted (mean age, 75.6 vs 74.1 years, $P<.001$), less likely to be women, more likely to be black, and had a higher number of comorbid conditions (mean number of conditions 2.1 among nonreadmitted vs 2.5 among readmitted, $P<.001$). Findings were generally similar for the revision TKA cohort (Table 4). In our regression analyses focusing on primary TKA readmissions (TABLE 5), several patient-level factors were associated with increased odds of hospital readmission including older age, black race, male sex, greater number of comorbid conditions, and longer hospital LOS during the index admission. Hospital factors including minor teaching and nonteaching status (as compared with major teaching) as well as greater primary TKA hospital volume were associated with decreased patient readmission rates (Table 5). Results for revision TKA were generally similar (Table 5). Results of sensitivity analyses (available by request from the authors) were similar to the main results described above.

COMMENT

In an analysis of Medicare administrative data from 1991-2010, we identified a number of interesting trends related to TKA. First, we found a marked increase in the volume of primary TKA procedures being performed, an increase that appeared to be driven not only by an increase in the number of Medicare enrollees but also a substantial increase in the per-capita utilization of TKA procedures. Second, we observed changes in patients' discharge disposition over time with a decline in the use of inpatient rehabilitation and an increase in the use of outpatient rehabilitation. Third, we found a significant decrease in hospital LOS that was accompanied by increasing readmission rates over the past decade.

Primary Medicare TKA volume increased approximately 162% from 93 230 in 1991 to 243 802 in 2010 and revision volume increased 106% from 9650 in 1991 to 19 871 in 2010. These figures suggest that growth in primary and revision TKA volume is being driven by both an increase in the number of Medicare enrollees and an increase in per capita arthroplasty utilization. Our findings extend those of a limited body of prior research that has demonstrated increasing volume and per capita utilization of knee arthroplasty.[1,31,32] This growth is likely driven by a combination of factors including an expansion in the types of patients considered likely to benefit from TKA, an aging population, and an increasing prevalence of certain conditions that

Table 3. Unadjusted Outcomes (LOS, Complication Rates, and 30-Day Readmission Rates) for Revision Total Knee Arthroplasty (TKA) Between 1991 and 2010[a]

	Mean % (95% CI)				
	1991-1994	1995-1998	1999-2002	2003-2006	2007-2010
No. of hospitalizations	44 120	57 785	65 197	76 526	74 935
LOS					
Mean, d (95% CI)	8.9 (8.8-8.9)	6.0 (5.9-6.0)	5.5 (5.5-5.6)	5.3 (5.3-5.3)	5.0 (5.0-5.0)
Median, d (IQR)	7 (5-10)	5 (4-6)	4 (3-6)	4 (3-6)	4 (3-5)
Discharge disposition					
Home	70.0 (69.6-70.4)	50.8 (50.4-51.2)	43.3 (43.0-43.7)	44.9 (44.5-45.2)	50.2 (49.8-50.5)
Outpatient skilled/intermediate care/rehabilitation	17.5 (17.1-17.8)	29.3 (28.9-29.7)	30.0 (29.6-30.3)	29.8 (29.4-30.1)	33.8 (33.5-34.2)
Inpatient rehabilitation	10.9 (10.6-11.2)	18.2 (17.9-18.5)	24.1 (23.7-24.4)	20.7 (20.4-20.9)	11.1 (10.9-11.3)
Other	1.7 (1.5-1.8)	1.7 (1.6-1.8)	2.7 (2.5-2.8)	4.7 (4.6-4.9)	4.9 (4.7-5.0)
Complications within 30 d of discharge					
Mortality	0.7 (0.6-0.7)	0.7 (0.6-0.7)	0.8 (0.7-0.9)	0.8 (0.7-0.9)	0.9 (0.8-0.9)
Pulmonary embolism	0.2 (0.1-0.2)	0.2 (0.1-0.2)	0.2 (0.1-0.2)	0.2 (0.1-0.2)	0.3 (0.2-0.3)
Deep vein thrombosis	0.3 (0.2-0.3)	0.3 (0.2-0.3)	0.3 (0.2-0.3)	0.3 (0.3-0.4)	0.4 (0.4-0.5)
Wound infection	1.4 (1.3-1.5)	1.5 (1.4-1.6)	1.7 (1.6-1.8)	2.2 (2.1-2.3)	3.0 (2.9-3.1)
Hemorrhage	0.1 (0.1-0.2)	0.3 (0.3-0.4)	0.5 (0.5-0.6)	0.6 (0.6-0.7)	0.7 (0.6-0.8)
Sepsis	0.2 (0.1-0.2)	0.3 (0.2-0.3)	0.3 (0.3-0.4)	0.6 (0.5-0.6)	0.8 (0.7-0.8)
Myocardial infarction	0.2 (0.2-0.3)	0.3 (0.3-0.4)	0.4 (0.3-0.4)	0.4 (0.4-0.5)	0.5 (0.4-0.5)
Composite outcome[b]	2.7 (2.6-2.9)	3.0 (2.9-3.2)	3.6 (3.4-3.7)	4.3 (4.2-4.5)	5.3 (5.2-5.5)
All-cause readmission at 30 d	6.1 (5.9-6.4)	6.2 (6.0-6.4)	6.5 (6.3-6.7)	7.7 (7.5-7.9)	8.9 (8.7-9.2)

Abbreviations: IQR, interquartile range; LOS, length of stay
[a] P values (test for trend) are less than .001 for all comparisons except LOS ($P=.005$).
[b] Composite outcome is the occurrence of one or more of the following within 30 days of discharge: death, pulmonary embolism, deep vein thrombosis, wound infection, hemorrhage, sepsis, or myocardial infarction.

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predispose patients to osteoarthritis, most notably obesity.[33]

It is important to note the apparent stabilization of joint arthroplasty utilization in recent years. Our findings extend the work of Bini and colleagues[34] who found evidence of slowing growth in joint arthroplasty utilization within the Kaiser-Permanente health care system between 2000 and 2009. It is unclear whether this slowing of joint arthroplasty growth is the result of the protracted US economic downturn, saturation of patient demand for arthroplasty, changes in reimbursement, or changes in provider beliefs about the risks and benefits of arthroplasty.[35,36]

The growth in TKA should prompt consideration of whether too many (or too few) of these procedures are being performed both in aggregate and among key patient subgroups defined by race, sex, or age.[30,37,38] Any effort to answer this question raises the issues of TKA indications and appropriateness. A number of clinical practice guidelines for TKA have been developed to guide clinicians and policy makers in evaluating appropriateness.[39-43] These guidelines typically suggest consideration of TKA for patients with severe functional limitation unresponsive to conservative management (ie, medications and physical therapy).

While Cobos et al[44] estimated that as many as 25% of TKA procedures performed in Spain might be considered inappropriate, few such studies have been performed in the United States.[12] Conducting studies investigating appropriateness has historically been difficult because of a lack of a national joint arthroplasty registry, although there have been encouraging developments recently to suggest that this may change.[45,46] Thus, it is difficult to determine the extent to which the growth in TKA utilization represents growth in appropriate use of a highly effective procedure or overuse of a highly reimbursed procedure for which indications still depend on clinical judgment. It is likely that both factors are at play.

Our finding of significant changes in patient's discharge dispositions following TKA over the 20-year study period is important and hints at the complexities of restraining cost growth. The increase in the percentage of TKA patients discharged to inpatient rehabilitation and skilled care during the 1990s is consistent with prior reports.[47] These reports typically relate the increased use of post–acute care to the implementation of the prospective payment system for acute care hospitals in 1983, which in turn created a powerful incentive for hospitals to reduce hospital LOS by rapidly discharging patients to post–acute care settings when patients were too ill to safely be discharged home.[48,49] However, the rapid increase in Medicare post–acute care spending in the 1990s prompted passage of the Balanced Budget Act (BBA) of 1997 and implementation of a prospective payment system for outpatient skilled care in 1998 and inpatient rehabilitation in 2002.[48,50] Our results are consistent with the anticipated effects of these policy changes, a reduction in the use of post–acute care and an increase in the percentage of patients being discharged home after TKA since 2004.

The finding of declining hospital LOS accompanied by increasing readmission rates mirrors results of a number of recent studies.[51,52] The results of our study as well as other publications suggest that there are limitations to what extent LOS can be reduced and that cost savings from further LOS reductions are unlikely to materialize.[51,52] In particular, there is an inherent tradeoff between shorter hospital LOS, greater

Table 4. Characteristics of Medicare Beneficiaries Receiving Primary and Revision Total Knee Arthroplasty (TKA) Who Did and Did Not Experience Readmission Within 30 Days of Discharge (2007-2010)[a]

	Primary TKA		Revision TKA	
Characteristics	No Readmission	Readmission	No Readmission	Readmission
Hospitalizations, No. (%)	869 867 (95.0)	45 695 (5.0)	68 231 (91.1)	6704 (8.9)
Age, y[b]	74.1 (74.1-74.1)	75.6 (75.6-75.7)	74.7 (74.6-74.7)	75.7 (75.5-75.9)
Sex, women[c]	65.0 (64.9-65.1)	60.5 (60.0-60.9)	58.3 (57.9-58.6)	56.3 (55.1-57.5)
Race[c]				
White	90.8 (90.8-90.9)	89.7 (89.4-90.0)	89.5 (89.3-89.7)	88.3 (87.5-89.0)
Black	5.3 (5.3-5.4)	6.6 (6.4-6.9)	7.3 (7.1-7.5)	8.6 (7.9-9.2)
Other	3.5 (3.5-3.6)	3.3 (3.2-3.5)	2.9 (2.8-3.0)	2.9 (2.5-3.3)
Missing	0.3 (0.3-0.3)	0.3 (0.3-0.4)	0.3 (0.2-0.3)	0.3 (0.1-0.4)
Comorbidity[c]				
Diabetes	21.5 (21.4-21.5)	25.4 (25.0-25.8)	24.0 (23.7-24.3)	26.3 (25.2-27.3)
CHF	3.7 (3.7-3.8)	7.4 (7.1-7.6)	7.3 (7.1-7.5)	13.7 (12.8-14.5)
Obesity	11.5 (11.4-11.6)	11.1 (10.8-11.4)	10.2 (10.0-10.4)	8.8 (8.1-9.5)
Renal failure	3.9 (3.9-4.0)	7.0 (6.8-7.2)	6.4 (5.7-7.1)	10.7 (8.4-12.9)
No. of comorbid conditions[b]	2.1 (2.1-2.1)	2.5 (2.5-2.5)	2.3 (2.3-2.3)	2.7 (2.6-2.7)

Abbreviation: CHF, congestive heart failure

[a] P values test for bivariate association are less than .001 for all comparisons except obesity (primary TKA, $P<.01$), and sex (revision TKA, $P<.002$).

[b] Age and number of comorbid conditions are presented as mean (95% CI) unless otherwise specified.

[c] Sex, race, and comorbidity are presented as % (95% CI). The race category of other includes Asian, Hispanic, North American Native, or other not specified individuals.

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need for post–acute care, and higher readmission rates.

A number of other findings merit mention. Our finding of increased comorbidity over time likely reflects a combination of factors including increasingly aggressive coding practices and increasing prevalence of certain comorbidities (eg, diabetes and obesity).[53,54] The increasing rates of many surgical complications including myocardial infarction, infection, and hemorrhage particularly after revision TKA accompanied by a much smaller increase in mortality is interesting. It seems likely that many of these increases reflect more aggressive testing combined with detection bias resulting from newer more sensitive diagnostic tests (eg, troponin for myocardial infarction or D-dimer for deep vein thrombosis) rather than a true increase in surgical complications.[55] However it is also possible that the incidence of certain complications such as myocardial infarction may be increasing, perhaps as a consequence of a greater burden of obesity and diabetes.

Arguably, the most concerning complication is the increase in readmissions for infection in the revision TKA cohort. While there are well recognized limitations in administrative data for identifying surgical site infections,[56,57] our findings should not be discounted prematurely.[58,59] There are several potential explanations for increasing infection rates in the revision TKA population. One possibility is that the increase in infections represents an increase in revision TKAs being performed specifically to treat infected prostheses. If this were the case, the increase in revision TKA procedures performed would constitute infections that were "present on admission."[60,61] Alternatively, it is possible that the increase in infections represents a real increase in postoperative surgical infections after revision TKA perhaps as a consequence of the increasingly resistant organisms colonizing hospitals. It is also possible that reduced hospital LOS may lead to reduced vigilance for early signs of superficial wound infection in the

Table 5. Factors Associated With Increased Odds of Readmission for Primary and Revision Total Knee Arthroplasty (TKA) (2007-2010)

	OR (95% CI)							
	Primary TKA				Revision TKA			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Age, y								
65-74	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
75-84	1.5 (1.4-1.5)	1.4 (1.4-1.5)	1.4 (1.4-1.5)	1.4 (1.4-1.4)	1.2 (1.2-1.3)	1.2 (1.2-1.3)	1.2 (1.2-1.3)	1.2 (1.1-1.2)
≥85	2.0 (1.9-2.1)	1.9 (1.9-2.0)	1.9 (1.9-2.0)	1.8 (1.8-1.9)	1.6 (1.5-1.8)	1.6 (1.5-1.7)	1.6 (1.5-1.7)	1.4 (1.3-1.5)
Race								
White	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Black	1.4 (1.3-1.4)	1.3 (1.2-1.3)	1.3 (1.2-1.3)	1.2 (1.2-1.3)	1.3 (1.1-1.4)	1.2 (1.1-1.3)	1.2 (1.1-1.3)	1.1 (1.0-1.2)
Other	1.0 (0.9-1.0)	1.0 (1.0-1.1)	1.0 (0.9-1.0)	0.9 (0.9-1.0)	1.0 (0.9-1.2)	1.0 (0.9-1.2)	1.0 (0.9-1.2)	0.9 (0.8-1.1)
Sex								
Women	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Men	1.2 (1.2-1.3)	1.3 (1.2-1.3)	1.3 (1.2-1.3)	1.3 (1.2-1.3)	1.1 (1.0-1.2)	1.1 (1.1-1.2)	1.1 (1.1-1.2)	1.1 (1.0-1.2)
No. of comorbidities								
0		1 [Reference]	1 [Reference]	1 [Reference]		1 [Reference]	1 [Reference]	1 [Reference]
1-2		1.3 (1.3-1.4)	1.3 (1.3-1.4)	1.3 (1.2-1.3)		1.2 (1.1-1.4)	1.2 (1.1-1.4)	1.2 (1.0-1.3)
3-4		1.9 (1.9-2.0)	1.9 (1.8-2.0)	1.8 (1.7-1.8)		1.7 (1.5-1.9)	1.7 (1.5-1.9)	1.4 (1.3-1.6)
>4		2.7 (2.6-2.8)	2.7 (2.5-2.8)	2.3 (2.2-2.5)		2.3 (2.0-2.6)	2.3 (2.0-2.6)	1.8 (1.6-2.1)
Teaching status								
Major			1 [Reference]	1 [Reference]			1 [Reference]	1 [Reference]
Minor			0.9 (0.9-1.0)	0.9 (0.9-1.0)			0.9 (0.8-0.9)	0.9 (0.9-1.0)
Nonteaching			0.9 (0.9-0.9)	0.9 (0.9-0.9)			0.8 (0.8-0.9)	0.9 (0.9-1.0)
Hospital volume[a]								
Quartile 1			1 [Reference]	1 [Reference]			1 [Reference]	1 [Reference]
Quartile 2			0.8 (0.8-0.9)	0.9 (0.8-0.9)			0.9 (0.8-1.1)	1.0 (0.8-1.1)
Quartile 3			0.8 (0.7-0.8)	0.8 (0.8-0.9)			0.9 (0.8-1.0)	1.0 (0.8-1.1)
Quartile 4			0.7 (0.7-0.7)	0.8 (0.7-0.8)			0.8 (0.7-1.0)	0.9 (0.8-1.1)
Ln (LOS)				1.9 (1.9-2.0)				2.1 (2.0-2.2)
Year								
2007	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
2008	1.0 (1.0-1.0)	1.0 (1.0-1.0)	1.0 (1.0-1.0)	1.0 (1.0-1.0)	1.0 (1.0-1.1)	1.0 (1.0-1.1)	1.0 (1.0-1.1)	1.1 (1.0-1.1)
2009	1.0 (0.9-1.0)	0.9 (0.9-1.0)	0.9 (0.9-1.0)	1.0 (1.0-1.0)	1.0 (1.0-1.1)	1.0 (1.0-1.1)	1.0 (1.0-1.1)	1.1 (1.0-1.2)
2010	1.0 (0.9-1.0)	1.0 (0.9-1.0)	1.0 (0.9-1.0)	1.0 (1.0-1.0)	1.0 (0.9-1.1)	1.0 (0.9-1.1)	1.0 (0.9-1.1)	1.0 (1.0-1.1)

Abbreviation: LOS, length of stay; OR, odds ratio
[a] eTable 3 lists hospital volume by quartile (available at http://www.jama.com).

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postoperative period resulting in higher rates of serious infectious complications. In either case, the increase in infection rates associated with revision TKA warrants close attention.

In addition, the increase in primary TKA utilization (99%) has been larger than the increase in revision TKA utilization (51%) over the past 20 years. It is possible that this reflects the durability of modern implants and improved surgical technique resulting in a reduced likelihood that patients undergoing primary TKA will require a revision procedure in the future.[62] Alternatively, it is possible that the rapid increase in primary TKA over the past 20 years will eventually result in a substantial increase in demand for revision TKA procedures as prosthetic devices wear over time, a possibility that would have significant clinical and economic implications.[35]

Our study has a number of limitations. First, our study was limited to fee-for-service Medicare beneficiaries who constitute approximately 60% of the TKA population.[14,31] Our findings should be extrapolated with caution to other populations including younger patients and Medicare managed care enrollees. Second, our study relied upon administrative data and thus we were unable to evaluate a number of important arthroplasty outcomes including functional status and patient satisfaction. Third, we lacked clinical detail and therefore were unable to determine the indications for TKA at the level of the individual patient. Likewise, we lacked chart review data for identification of TKA outcomes and complications. Fourth, we focused our analysis on TKA adverse outcomes resulting in hospital readmission within 30 days of discharge. We were unable to identify complications that did not result in an inpatient admission and our 30-day follow up interval would not capture certain late complications (eg, infection) that may become apparent over a longer time period.[25]

In summary, over the past 20 years, increases in TKA volume have been driven by both an increase in the number of Medicare enrollees and increase in per capita utilization. We also observed decreased hospital LOS that was accompanied by increased hospital readmission rates and rising rates of infections complications.

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Study concept and design: Cram, Lu, Wolf.
Acquisition of data: Cram, Lu.
Analysis and interpretation of data: Cram, Lu, Kates, Singh, Li, Wolf.
Drafting of the manuscript: Cram, Lu, Kates.
Critical revision of the manuscript for important intellectual content: Cram, Singh, Li, Wolf.
Statistical analysis: Lu.
Obtained funding: Cram.
Administrative, technical, or material support: Cram, Lu, Singh, Li, Wolf.
Study supervision: Cram, Kates, Wolf.
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Online-Only Material: eFigures 1-6, eTables 1-3, and the Author Video Interview are available at http://www.jama.com.

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Obesity and Total Joint Arthroplasty
A Literature Based Review

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ABSTRACT

The prevalence of obesity in the population is unlikely to decline, and is likely to contribute to the increasing demand for hip or knee arthroplasty. Conflicting data exist on the risk and benefits of total joint arthroplasty in obese patients. The purpose of this manuscript is to define and identify areas of concern for obese patients undergoing total joint arthroplasty. A workgroup of total joint arthroplasty surgeons from the American Association of Hip and Knee Surgeons (AAHKS) was tasked with identifying key questions regarding obesity and total joint arthroplasty. The workgroup evaluated the available literature and sought to create a review regarding obesity and total joint arthroplasty to complement and guide the surgeon-patient discussion in addition to identifying areas of future research.

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Obesity has reached epidemic proportions with over 502 million people classified as obese worldwide [1]. In the United States, the age adjusted prevalence of obesity is 32% for men and 36% for women and is now a major health care concern [2]. Flegal et al demonstrated an alarming increase in the prevalence of obesity between 1999 and 2008, with the combined obesity and overweight prevalence of 68.0% [2]. Care for obese is costly to the health care system and may account for as much as 21% of all U.S. medical costs [3].

Both biomechanical and physiological mechanisms are compromised by obesity leading to the development of osteoarthritis [4]. Higher BMI results in elevated articular cartilage loading forces which may eventually cause tissue damage. In addition, adipose tissue releases adipokine, a protein that results in excess cartilage inflammation and degradation [5]. Thus obesity significantly contributes to a higher rate of osteoarthritis and ultimately total joint arthroplasty utilization. The risk of developing knee osteoarthritis is nearly four fold for obese men and five fold for obese women [6]. Individuals with a Body Mass Index (BMI) greater than 40 are 8.5 times more likely to need THA compared to matched non-obese individuals [7]. In 1990, Fehring et al [8] noted that 31% of their total joint arthroplasty patients were obese. In 2005, this proportion had increased to 52.1%. This compared to an overall population prevalence of obesity in the same year of 24%.

The notion that obese patients are at an increased risk for complications following total joint arthroplasty has been pointed out in the literature, but must be examined in context. Obesity risk assessment is compounded by the fact that obesity is rarely an isolated diagnosis, and tends to cluster with other co-morbidities that may independently lead to increased risk such as diabetes mellitus, coronary artery disease, hyperlipidemia, hypertension, and sleep apnea [9]. The majority of the current literature reports an increase in perioperative complications associated with total joint arthroplasty for obese patients. The benefits that total joint arthroplasty affords the obese, namely decreased pain and increased function, must then be balanced against the reported increased risk of perioperative morbidity. That risk/benefit needs to include the assessment of the possibility of timely weight loss as a reliable part of conservative care.

It has been predicted that by the year 2030 the demand for primary hip arthroplasty will exceed 500,000 cases and the demand for primary knee arthroplasty will be nearly 3.5 million cases [10]. Given the prevalence of obesity, a significant percentage of these cases will be in patients outside the normal BMI range. The prevalence of obesity is not likely to decline, and is likely that it will contribute to the increasing demand for hip or knee arthroplasty.

With these issues in mind, the purpose of this manuscript is to define and identify areas of concern for obese patients undergoing

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total joint arthroplasty. A workgroup of total joint arthroplasty surgeons from the American Association of Hip and Knee Surgeons was tasked with identifying key questions regarding obesity and total joint arthroplasty. This is not a literature replete with prospective, randomized studies, nor do the cohort studies available lend themselves to formal meta-analysis. The workgroup evaluated the available literature and sought to create a review regarding obesity and total joint arthroplasty to complement and guide the surgeon-patient discussion in addition to identifying areas of future research.

Methods

A workgroup of twelve surgeons was convened to identify issues related to total joint arthroplasty in obese patients. Each physician is an active member of the American Association of Hip and Knee Surgeons (AAHKS) including members of the Evidence Based Medicine (EBM) committee.

Four key areas of concern regarding obesity and total joint arthroplasty were developed. Each question was assigned to three members of the group. Each subgroup then evaluated the current literature with regards to the proposed questions and formulated a general consensus on the particular topic. Each topic was then circulated among the entire group for changes and/or additions to reach a final consensus among the group and formulate a single manuscript.

The four core areas that were addressed by the workgroup included:

1. A. What is the current definition and classification of obesity, and B. What impact does obesity have on the development of osteoarthritis and need for total joint arthroplasty?
2. Are perioperative medical and surgical complications increased following total joint arthroplasty in obese patients?
3. What are patient related outcomes following total joint arthroplasty in obese patients?
4. Can a threshold be determined for obese patients (BMI or other metrics) beyond which complications for obese patients are unacceptable and should preclude the utilization of total joint arthroplasty?

Findings of the Workgroup

1. A. What is the current definition and classification of obesity?

Body mass index (BMI) is commonly used to determine the classification of adults into the categories of underweight, normal, and overweight. BMI is calculated according to height and weight of the individual utilizing the formula:

$$\mathrm{BMI} = \mathrm{weight(kg)}/\mathrm{height}^2\left(m^2\right) \text{ or BMI} = \left[\mathrm{weight(pounds)}/\mathrm{height}^2\left(\mathrm{inches}^2\right)\right] x703$$

Several criticisms of using BMI as a measure of obesity include the fact that it does not distinguish between weight associated with muscle versus weight associated with adipose tissue. In addition, it does not take into account the distribution of adiposity, nor does it allow for differences across populations and genders. It is, however, widely accepted as a measure of obesity due to the ease of data collection for large cohorts.

The World Health Organization (WHO) published on the global epidemic of obesity in 2000 [9]. The WHO classification of obesity is noted in Table 1. Class III obesity has been further categorized into the terms "Morbidly-Obese" and "Super-Obese" in the bariatric surgery literature [11]. Morbid obesity is defined as a BMI of 40.00–49.99 kg/m^2 and super obesity is defined as a BMI of ≥50.00 kg/m^2.

Table 1
World Health Organization Classification of Obesity [9].

Classification	BMI (kg/m^2)	Risk of Comorbidities
Underweight	<18.50	Low (but risk of other clinical problems increased)
Normal range	18.50–24.99	Average
Overweight:	≥25.00	
Preobese	25.00–29.99	Increased
Obese class I	30.00–34.99	Moderate
Obese class II	35.00–39.99	Severe
Obese class III	≥40.00	Very severe

1 B. What is the impact that obesity has on the development of osteoarthritis and need for total joint arthroplasty?

The question of whether obesity is related to the development of osteoarthritis (OA) is complicated by the confounding fact that BMI is a reflection of overall weight rather than fat distribution. It may be weight alone, rather than fat composition that predisposes an individual to OA [12]. The variability of study designs in obesity/OA literature makes meta-analysis difficult. The methods of studies examining the correlation between obesity and OA have varied in their definitions of obesity as well as selecting cohorts for comparison (i.e. some studies compare the highest and lowest quintiles while others use groups based on BMI). The measured endpoints also differ between studies, with some reporting radiographic findings and some reporting arthroplasty as the endpoint. Obesity (BMI ≥30) has been strongly associated with the development of knee OA but not hip OA in several studies [13–15]. Some have reported a significant link between obesity and the development of osteoarthritis in both hip and knee OA, although the strength of association was stronger in knees as compared to hips [16,17].

Despite differences in definitions and study designs, some clear patterns have emerged from the published literature. The link between obesity and the risk of knee osteoarthritis was classically demonstrated by the Framingham Study group [18]. This study, published in 1988, predated the WHO obesity classification. The study design assessed the relative risk of OA among the heaviest quintile of weight with the lightest 3 quintiles, as measured at a baseline examination. The cohort was followed for 18 biennial examinations and knee radiographs were obtained at the 18th examination. The age-adjusted relative risk of men in the heaviest quintile was 1.51 (95% Confidence Interval (CI), 1.14–1.98). The age-adjusted relative risk of women in the heaviest quintile was stronger, 2.07 (95% CI 1.67–2.55).

A population based case–control study demonstrated that relative to a BMI of 20–24.9 kg/m^2, the risk of knee OA was 0.1% (95% CI 0–0.5) for a BMI <20 kg/m^2, increasing to 13.6 (95% CI 5.1–36.2) for a BMI of ≥36 kg/m^2 [19]. Similar data from longitudinal population studies exist in studies from Norway [13] and Sweden [16].

Given the higher incidence of OA in the obese, it is not unexpected that a correlation between obesity and the need for hip or knee arthroplasty exists as well [17,19–21]. The relative risk of women with a BMI ≥30 kg/m^2 requiring arthroplasty compared to women <22.5 kg/m^2 is greater for knee (10.51 (95% CI 9.52–11.62)) than for hip (2.47 (95% CI 2.25–2.71)) [20]. A study of male construction workers noted that BMI is a predictor of OA, even within a normal BMI range [21]. The relative risk of hip arthroplasty was more than double for patients with a BMI of 20–24 kg/m^2 as compared to patients with a BMI of 17–19 kg/m^2. An increase of BMI of 5 kg/m^2 nearly doubled the risk of knee arthroplasty. The age at which arthroplasty is performed may also be affected by BMI. Patients with a BMI ≥35 kg/m^2 may require arthroplasty 7 years earlier, on average, as compared to patients with a BMI ≤25 kg/m^2 [22].

2. Are perioperative medical/surgical complications increased following total joint arthroplasty in the obese patient?

Wound Healing/Infection

Wound healing complications and infection, particularly deep infection, are among the most concerning complications for surgeons and patients alike. A deep infection may ultimately lead to resection or removal of the prosthesis, joint fusion, or amputation, and almost always requires reoperation. There is a clear increase in wound healing complications and deep infection in reports examining joint replacement surgery in the obese. In a single-center analysis of 7181 primary hip and knee arthroplasties for osteoarthritis, Jamsen and colleagues [23] demonstrated that the infection rate increased from 0.37% in patients with a normal body mass index to 4.66% in the morbidly obese group. Furthermore, Malinzak et al showed that in both hip and knee patients a BMI greater than 50 increased the odds ratio of infection to 21.3 [24].

In a study of 60 patients with an average BMI of 39.9, Nunez and co-workers [25] demonstrated almost twice the risk (11.6% vs. 6.6%) of in hospital wound problems as well as three times the rate of deep infections after total knee arthroplasty compared to controls (5.0% vs. 1.6%). Ersozlu et al confirmed that superficial infections were more common in morbidly obese and obese patients undergoing TKA [26].

In regard to total hip arthroplasty Lubbeke and colleagues have shown a dramatic risk of deep infection for obese women with BMI greater than 30 [27]. This group of patients had a 16.1 rate ratio for deep infection compared with non-obese women undergoing THA. Bozic et al further demonstrated that obesity is an independent predictor of periprosthetic infection in a large cohort of Medicare patients undergoing THA [28]. Namba et al reviewed 1071 THA surgeries and demonstrated that obesity was associated with a higher infection rate [29].

Respiratory Complications

There is no question that there is an association between obesity and obstructive sleep apnea (OSA) [5,30]. Sixty to 90% of OSA patients are obese, with indices of obesity such as BMI strongly and directly related to the severity of the OSA [31]. Obstructive sleep apnea is associated with general risks to a patient's health including cardiac disease, hypertension, and the risk of sudden death after surgery due to oversedation. In a study by Gupta et al [32], the authors noted that total joint surgery patients with OSA had a 39% risk of complications compared to 18% in the patients without OSA. Serious complications occurred in 24% of the patients with OSA compared with only 9% in the patients without OSA. In addition to sleep apnea, there might be higher risk in the obese patient for developing thrombosis and potentially a pulmonary embolism.

Thromboembolic Disease

Thromboembolic disease has been a major concern for orthopaedic patients for decades, and prevalence has been shown to increase with patient immobilization and surgical trauma [33]. Obese total joint patients often are slower to mobilize and usually require more invasive surgical exposure. Altintas et al demonstrated in their analysis that the most common risk factors for venous thromboembolism (VTE) in orthopaedic patients are obesity and prolonged immobilization [34]. Furthermore, obesity, history of deep vein thrombosis (DVT), delayed post-operative ambulation, and female sex were considered risk factors for VTE as determined by White et al [35]. Multiple reports identify obese patients as being at elevated risk for thromboembolic disease (TED) in the post-operative period [36–38]. The recent AAOS network meta-analysis regarding VTE, however, did not identify any risk factor other than previous thrombotic event as raising the risk higher than the already higher risk that undergoing joint arthroplasty already entails.

Complications Specific to Total Joint Arthroplasty

Revision Surgery

Chee and colleagues [39] compared 55 consecutive total hip arthroplasties (THA) performed on 53 morbidly obese patients with osteoarthritis with a matched group of 55 total hip arthroplasties in 53 non-obese patients, and followed them prospectively for five years. Survival at five years using revision surgery as an endpoint, was 90.9% for the morbidly obese and 100% for the non-obese patients. This was due to a higher rate of complications (22% vs. 5%, $P=0.012$) in the morbidly obese group, which included dislocation and both superficial and deep infection.

Spicer et al, evaluated the clinical and radiographic outcome of total knee arthroplasty (TKA) in 326 TKAs with BMI >30 and compared them to a matched group of 425 TKAs with BMI <30 [40]. There was no appreciable difference in the ten year survivorship and functional improvement appeared to be independent of BMI, but a subgroup of patients with BMI greater than 40 had a 5 fold increase in the rate of focal osteolysis on radiographs. Morbidly obese patients were found to be at higher risk of revision. Bordini et al, studied a population of subjects treated with cemented total knee arthroplasty between 2000 and 2005 [41]. A total of 9735 knee prostheses were implanted in 8892 patients; 18.9% of the patients were normal weight (BMI <25), 48.2% were overweight (25>Body Mass Index ≤30), 31.1% were obese (30>BMI ≤40), and 1.8% were morbidly obese (BMI >40). Mean and range of follow-up were respectively 3.1 and 1.5–6 years. While revision rates and complications were not statistically different among the groups, all showed higher trends in the morbidly obese groups. Foran et al demonstrated a statistically significant difference in survival, revision rates and complications in 78 TKA done in obese and morbidly obese patients when they were age matched to a group of nonobese patients [42]. In addition, they were able to demonstrate that these rates increased in the morbidly obese group (BMI >40) compared to nonobese.

Component Malposition

As technology has advanced and surgical technique has been enhanced, larger patients still pose significant surgical dilemmas for exposure and component positioning. Investigators at the Harris Laboratory [43] used postoperative radiographs on 2061 consecutive patients who received a THA or hip resurfacing from 2004 to 2008 to determine factors that correlated with malpositioned acetabular components. There was an increased risk of malpositioning for minimally invasive surgical approach, low volume surgeons, and obese patients. Jarvenpaa et al stratified patients as obese (BMI >30) and nonobese (BMI <30) for 100 patients undergoing total knee arthroplasty [44]. They found a statistically significant difference in post operative complications in the obese group compared to non-obese group. Technical errors were noted in 17 of the obese patients compared to 5 in the non-obese group ($P<0.007$). Ritter et al demonstrated that excessive varus or valgus alignment was detrimental to TKA survival, and that failures due to malalignment were increased with abnormal BMI [45].

Prosthesis Loosening

Clinical and radiographic success of total joint arthroplasty is also not as robust in obese patients. Aseptic acetabular failure has been shown to be related to obesity [46], and a pooled analysis demonstrated that aseptic loosening was increased in obese patients undergoing primary THA [47].

Amin et al, compared a group of 41 morbidly obese patients (BMI >40) to a matched cohort of 41 non-obese patients (BMI <30) undergoing total knee arthroplasty [48]. At less than four years after

operation, the morbidly obese had a higher incidence of radiolucent lines on post-operative radiographs (29% and 7%, respectively, $P=0.02$), a higher rate of complications (32% and 0%, respectively, $P=0.001$) including superficial and deep infections, and inferior survivorship using revision and pain as end-points (72.3% and 97.6%, respectively, $P=0.02$). Other authors have also noted a trend for obesity to influence the rate of aseptic loosening [49] and long term survival [42]. Ritter et al demonstrated that TKA survival was related to obesity, with greater obesity associated with increased failure and loosening [45].

THA Dislocation

Of the potential complications associated with THA, obese patients have higher dislocation rates. Lubbeke et al studied the gender differences in outcomes of obesity following total hip arthroplasty [27]. Of the 2,186 patients that underwent primary THA, 23.6% were in obese patients. Obese was defined as BMI >30 and was not stratified beyond this. The incidence rate of dislocation was 2.3× higher in the obese than non-obese and obese women were at the highest risk (rate ratio 3.0). Grant et al evaluated 255 males in a VA population undergoing primary THA and demonstrated an increased risk of dislocation in the morbidly obese group (BMI >40) compared to the obese and non-obese group (BMI >30) [50]. A pooled analysis demonstrated that dislocation was increased in obese patients undergoing primary THA [47]. Lastly, Davis et al recently showed a 4.42 times higher dislocation rate in THA patients with a BMI of greater than 35, compared with those with a BMI of less than 25 [51].

Cost and Length of Stay

Although not typically thought of as a complication, cost and length of stay (LOS) have to be considered in an era of relative health care fiscal contraction. These measures are sometimes a surrogate for "quality". In our current health care environment "zero-tolerance" is being invoked as policy for post-operative complications and surrogates for quality are derived from insensitive but easily retrieved parameters. An analysis of LOS, cost, and readmission rates is salient when considering surgery in the obese population.

Obesity has been implicated in increased length of stay for both hip and knee arthroplasty [52]. The relationship of body weight to increased length of stay and increased charges for hospital services for obese patients undergoing elective surgery has been well documented [52]. This is particularly an issue for the so-called "super-obese," those patients with a BMI greater than 45 [53]. In this grouping of patients with a BMI greater than 45, in house complications were 8.44 times more likely than non-obese patients, and the risk of in-hospital complications, complications within 1 year, readmission, and length of stay all increased measurably for each 5 unit increase in BMI. This relationship of increased cost and length of stay has also been demonstrated for total knee patients in the rehabilitation setting with a BMI greater than 30 [54].

Association of Obesity and Outcomes Following Total Hip and Knee Arthroplasty

The goal of Total Joint Arthroplasty (TJA) is to improve the physical function and quality of life in individuals with symptomatic osteoarthritis while minimizing the adverse effects and treatment risks to patients. Understanding the effect that factors such as obesity can have on the functional outcomes of surgery provides better probability of positive prognostic performance and reducing costs of clinical care [55].

Total Knee Arthroplasty

Many investigations have been conducted to develop a better insight into the adverse effects of obesity on both short-term and long-term outcomes of TKA [4,49,56–58]. This understanding provides surgeons and health care providers with more optimal post-operative rehabilitation guidelines and may help with lowering overall cost. In addition, patients are provided more realistic expectations about the outcomes of surgery which prepares them to overcome difficulties during post-op recovery [57].

Although previous studies have reported conflicting results regarding the association of obesity and the outcome of TKA, the reduction of excess BMI has been consistently recommended, especially in morbidly obese individuals [59]. Some studies indicate that obese individuals experience lower quality of life and performance after TKA [48,59–61] and significantly higher risk of post-op infections [29,56,62–64]. Stickles et al investigated the effect of obesity on 1011 primary TKA patients and concluded that the performance of the obese individuals quantified by Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and the Short Form-36 (SF-36) was significantly lower. Additionally, the 1-year follow up indicated that higher BMI negatively affected the ascending and descending capabilities in these individuals [61]. Smith et al used Hospital for Special Surgery (HSS) questionnaires to investigate the effects of obesity and concluded that TKA outcome was altered as depicted by lower HSS scores in obese individuals [65]. In a more recent study, HSS scores were used to assess the performance of 535 patients who underwent TKA. Results indicated significantly lower HSS scores in obese individuals compared to the peer-matched non-obese patients [66]. In 2012 Colllins et al reported on 445 consecutive primary TKAs prospectively followed up to nine years. Clinical outcomes of non-obese (BMI <30) were compared to obese (BMI >30) patients. Significant improvements in outcome were seen and sustained in all groups nine years after TKA. However, lower function scores were seen at all follow-up periods prior to nine years in the highly obese subset group with BMI >35. No significant difference was found in revision or implant survival between obese and non-obese patients nine years after TKA [67].

There are, however, other investigations reporting contradictory findings with no significant differences observed between obese and non-obese individuals in regard to the outcome of TKA [42,49,68,69]. In addition Singh et al indicated that no significant association was detected between the perceived pain outcomes and patients BMI in a 2-year and 5-year primary TKA follow-up [57]. In an even more recent study, the British National Joint Registry assessed patient-reported outcome measures relating to TKA in 13,673 patients who fulfilled criteria for analysis. Preoperative and postoperative assessments using the Oxford Knee Score and general health EuroQol 5D questionnaires were carried out. The improvements in patient-reported outcome measures experienced by patients were similar, irrespective of BMI, although wound complications were significantly higher ($P<0.001$) at a rate of 17% in patients with BMI between 40 and 60 [70].

Despite contradictory findings, the aforementioned studies indicate the beneficial effects of TKA on the improvement of performance and quality of life. Investigations on the satisfaction level after TKA indicated no significant differences between obese and non-obese individuals [26,68,71,72]. Therefore TKA may be considered as the primary treatment for severe knee osteoarthritis in obese patients [58]. Expectations are for a steady, but slower improvement in the severe obese compared to non-obese patients post operatively [73]. There does appear to be a functional "glass ceiling" in obese patients, based on their co-morbid state rather than their joint arthroplasty [40,42].

Total Hip Arthroplasty

Increase in BMI has shown significant increase in the rate of THA utilization. Individuals with Class III obesity are 8.5 times more likely to need THA compared to matched non-obese individuals [7]. Stickles et al investigated the quality of life and performance of 592 patients

who underwent primary THA and concluded that WOMAC and SF-36 scores were significantly lower in obese individuals (WOMAC of 48.4 for nonobese vs. WOMAC of 39.9 for obese). They observed, however, no significant effect of obesity on the surgery satisfaction and pre to post-op physical and mental status changes, and concluded that higher BMI was not significantly associated with worse outcomes of THA in obese patients [61].

Additionally, Michalka et al have not reported significant differences in the short term outcome of THA in 191 patients (57 obese patients). They only reported that obese individuals had poorer performance in the 6 minute walk test (6MWT). It was argued that the 6MWT could not be conducted prior to the operation due to severe pain in the patients. Therefore no comparison could be made between the two groups with regards to overall improvement in this test. McCalden et al have also investigated 3290 THAs and reported similar outcome suggesting that obese patients enjoyed similar improvements in performance assessed by WOMAC, Harris hip score, and Short-form 12 in a 2-year follow-up study [74].

4. Can a threshold be determined for obese patients (BMI or other metrics) beyond which complications for obese patients are unacceptable and should preclude the utilization of total joint arthroplasty?

The current literature on obesity and its impact on total joint arthroplasty was reviewed. A short synopsis of relevant published articles on obesity and total joint arthroplasty is included in the appendix. Below is a summation of those articles. Given the body of work already presented, an attempt was made to determine if a threshold of Body Mass Index could be established, above which complications associated with total joint arthroplasty are unacceptably high.

There are several issues with the current literature that must be taken into consideration when trying to answer this question. Many of the current studies contain only small numbers of patients, particularly when evaluating patients with higher BMI and comparing them to a larger cohort of nonobese patients. Therefore, many studies are underpowered to be able to show a true difference in outcomes, complications or revision rates. The majority of studies do not stratify patients based on BMI. Most studies classify obesity as a dichotomous variable of obese (BMI >30) and nonobese (BMI $\leq$30).

In addition, and perhaps most importantly, the majority of studies do not further sub classify patients with associated comorbidities. It is well established that obese patients have an increased prevalence of associated conditions, such as diabetes, hypertension, cardiac disease, obstructive sleep apnea and malnutrition. Many of these comorbidities have been shown to be independent risk factors for the development of periprosthetic joint infection and perioperative complications.

Several recent studies published in 2012 have looked at threshold for BMI and associated complications following total joint arthroplasty and bear mentioning here. Schwarzkopf et al [53] evaluated the outcomes of "super-obese" patients undergoing total joint arthroplasty. This retrospective study determined that Super-obese patients had an odds ratio (OR) of 8.44 for developing inhospital complications. Most importantly, each incremental 5-U increase in BMI above 45 was associated with an increased risk of inhospital (OR, 1.69) and outpatient complications (OR, 2.71), and readmission (OR, 2.0). Length of stay was increased by 13.8% for each 5-U increase in BMI above 45. In addition, Kamath et al [75] determined that BMI >35 was an independent risk factor for unplanned admission to the intensive care unit following elective total hip arthroplasty.

Jamsen et al [23], determined in a multivariate analysis, morbid obesity (BMI >40) was an independent risk factor for the development deep periprosthetic infection. In addition, diabetes nearly doubled the risk for development of deep periprosthetic infection, and this effect was highest in the morbidly obese, diabetic group. Namba, et al [76], evaluated risk factors associated with surgical site infection in 30,491 total hip arthroplasties performed between 2001 and 2009. In a multivariate analysis, Body mass index >35 was associated with a 2.37× increased risk for development of surgical site infection.

Critical Findings

- Despite improvements in patient related outcome measures, all obese patients (BMI >30) undergoing total joint arthroplasty are at increased risk for perioperative complications and this needs to be discussed with every patients prior to considering total joint arthroplasty.
- For total knee arthroplasty, based on the current literature, it appears that the morbidly obese patients, defined as a BMI $\geq$40, are the threshold for which the majority of perioperative complications, including infection and revision rates appear to increase considerably. This needs to be discussed with every patient prior to surgery and strong consideration should be given to reducing weight (BMI <40) and minimizing associated comorbidities.
- The data for total hip arthroplasty appear to be less clear. There are fewer studies that report on obesity and total hip arthroplasty, and there is much less consensus on a threshold above which complications increase. It would seem reasonable to extrapolate data from the total knee arthroplasty group, and recommend that patients with a BMI >40 be counseled regarding weight loss prior to surgery, but a strong recommendation cannot be made.

Further studies are needed to subclassify obese patients to truly determine if a threshold exists. These studies must also take into consideration associated co-morbidities, with a critical question of: Does alteration of these associated comorbidities (diabetes, hypertension, hypercholesterolemia), in spite of obesity, improve outcomes and lower perioperative morbidity?

Conclusions of the Work Group

- Obesity as classified by World Health Organization, defined as BMI >30, has limitations regarding adipose tissue distribution, but remains the most useful and widely used classification system.
- There is clear evidence to suggest that obesity is associated with the development osteoarthritis in the knee, but evidence in the hip is less clear.
- Due to the association of obesity with the development of osteoarthritis, the obese population will be at greater risk for total joint arthroplasty and comprise an ever increasing segment of total joint arthroplasty population.
- Obesity has a strong association with other comorbid conditions that place these patients at increasing risk for perioperative complications following total joint arthroplasty. In addition to obesity alone, it is important that these modifiable comorbid conditions be managed appropriately prior to surgical intervention.
- The degree of functional improvement following total joint arthroplasty in the obese population remains controversial. It appears that obese patients have similar satisfaction rates as the nonobese population following total joint arthroplasty. As BMI increases (>40), however, the functional improvement becomes less and/or occurs more gradually and must be tempered with the associated increased complication profile.
- All obese patients (BMI >30) appear to be at risk for increasing perioperative complications following total joint arthroplasty. This becomes especially relevant as the number of associated comorbidities increases and their control less well regulated.

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- The morbidly obese (BMI >40) and the super obese (BMI >50) have complication profiles that may outweigh the functional benefits of total joint arthroplasty. These patients should be counseled regarding these risks prior to any surgical intervention. It is our consensus opinion that consideration should be given to delaying total joint arthroplasty in a patient with a BMI >40, especially when associated with other comorbid conditions, such as poorly controlled diabetes or malnutrition.

This recommendation is tempered by the realization that there will be patients for whom all available means of weight loss have failed; there will also be patients for whom surgery is unavoidable due to truly crippling arthritis, fracture, and/or certain tumors. There should be full disclosure to such patients of the added risk and possibly diminished long term outcomes if surgery is considered.

Further Level I and Level II research is needed to adequately evaluate the impact that obesity has on total joint arthroplasty. In addition, it is important to determine if safe weight loss prior to total joint arthroplasty alters the outcomes of obese patients. It is the intention of this committee to continue to monitor the literature and periodically revisit and update the information provided.

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Appendix B. Appendix of Referenced Studies for Question #4: Obesity and Total Joint Arthroplasty:

In 1993, Jiganti et al compared perioperative outcomes between obese and non-obese patients undergoing total joint arthroplasty [77]. Obesity was defined as >20% above ideal weight for height based on life insurance tables from 1983. Body Mass Index was not calculated and the non-obese group had more preoperative co-morbidities. The authors found no associated increase in perioperative complications for the obese patients.

Malinzak et al, demonstrated that obesity, diabetes and younger age were all risk factors for the development of deep periprosthetic infection following total joint arthroplasty [24]. Patients with BMI greater than 40 had a 3.2 times odds of infection and patients with BMI >50, a 18.3 times odds of infection compared to patients with BMI <40.

Namba et al demonstrated a 6.7× higher risk of infection for obese patients (BMI >30) undergoing primary TKA and 4.2× higher infection risk for obese patients undergoing primary THA compared to a nonobese cohort [29]. In addition, the obese patient population was found to have a higher rate of diabetes and hypertension.

Obesity and Total Knee Arthroplasty

A literature review by Samson et al, evaluated total knee arthroplasty in patients with morbid obesity (BMI >40) [78]. Eight comparative studies were reviewed and while there were overall improvements in outcome measures following total knee arthroplasty, the morbidly obese groups, all studies reported a greater prevalence of complication (10–30%), including a significantly higher prevalence of deep periprosthetic infection(3–9×) and wound complications.

Spicer et al, evaluated the clinical and radiographic outcome of total knee arthroplasty in 326 TKAs with BMI >30 and compared them to a matched group of 425 TKAs with BMI <30 [40]. There was no appreciable difference in the ten year survivorship and functional improvement appeared to be independent of BMI, a subgroup of patients with BMI >40 had 5× the rate of focal osteolysis on radiographs however.

Nunez evaluated quality of life outcomes in a stratified group of severely obese (BMI >35) and morbidly obese (>40) compared to a group of patients with BMI <35 undergoing total knee arthroplasty [26]. There were no differences in the health related quality of life outcomes between all groups. The study group (obese) however had more severe post-operative complications compared to the control group. These results were not stratified by BMI however.

Dewan et al evaluated 169 TKA stratified by BMI into 3 groups (<30 (85 patients), 30–39 (94 patients), >40 (41 patients) [60]. Success, complications and revisions were similar across all groups. The patients with BMI >40 however were 5.4× more likely to have patellofemoral radiolucencies, have quadriceps and hamstring weakness and have patellofemoral problems.

Bordini et al, studied a population of subjects treated with cemented total knee arthroplasty between 2000 and 2005 [41]. A total of 9735 knee prostheses were implanted in 8892 patients; 18.9% of the patients were normal weight (BMI <25), 48.2% were overweight (25>Body Mass Index≤30), 31.1% were obese (30>BMI≤40), and 1.8% were morbidly obese (BMI >40). Mean and range of follow-up were respectively 3.1 and 1.5–6 years. Implant failure was defined as the exchange of at least one component for whatever reason. While revision rates and complications were not statistically different among the groups, all showed higher trends in the morbidly obese groups. In addition, the small number of patient in the morbidly obese group (172) compared to the rest, should caution one's interpretation of these data.

Jarvenpaa et al stratified patients as obese (BMI >30) and nonobese (BMI <30) for 100 patients undergoing total knee arthroplasty [44]. They found a statistically significant difference in post operative complications in the obese group compared to nonobese group. In addition, technical errors were noted in 17 of the obese patients compared to 5 in the non-obese group ($P<0.007$).

Patel et al, evaluated 527 patients that underwent primary total knee arthroplasty [79]. Patients were stratified by BMI (<25, 25–29, 30–34, >35). BMI ranged from 16 to 50, with an average of 29. The authors concluded that BMI did not show any correlation with post op complications, however the data clearly shows a trend towards an increase in complication as the patients BMI increased.

Foran et al demonstrated a statistically significant difference in survival, revision rates and complications in 78 TKA done in obese and morbidly obese patients when they were age matched to a group of nonobese patients [42]. In addition, they were able to demonstrate that these rates increased in the morbidly obese group (BMI >40) compared to nonobese.

Amin et al, compared a group of 41 morbidly obese patients (BMI >40) to a matched cohort of 41 nonobese patients (BMI <30) undergoing total knee arthroplasty [48]. At less than four years after operation, the results were worse in the morbidly obese group compared with the non-obese, as demonstrated by inferior Knee

Society Scores (mean knee score 85.7 and 90.5 respectively, $P=0.08$; mean function score 75.6 and 83.4, $P=0.01$), a higher incidence of radiolucent lines on post-operative radiographs (29% and 7%, respectively, $P=0.02$), a higher rate of complications (32% and 0%, respectively, $P=0.001$) including superficial and deep infections and inferior survivorship using revision and pain as end-points (72.3% and 97.6%, respectively, $P=0.02$).

Although Krushell et al state, that based on their results of 39 TKA in morbidly obese group (BMI >40), that total knee arthroplasty should continue to be offered as a treatment option, their study demonstrates a significantly higher rate of wound complications in the morbidly obese cohort [80]. In addition, overall patient's satisfaction scores were lower and radiographic review showed a trend toward higher incidence of radiolucent lines in the morbidly obese group.

Obesity and Total Hip Arthroplasty

Grant et al evaluated 255 males in a VA population undergoing primary THA and demonstrated an increased risk of dislocation and infection in the morbidly obese group (BMI >40) compared to the obese and nonobese group (BMI >30) [50].

Michalka et al stratified patients undergoing primary THA by BMI into nonobese (BMI <30), Obese (BMI 30–34) and morbidly obese (BMI >35) [81]. In 191 THAs, the authors were unable to identify any significant increase in complications in the obese or morbidly obese group. In addition all outcome measures and quality of life measure were equivalent. It should be noted however that there were only 21 patients in the morbidly obese group, question whether there was enough power in the study to determine a true difference.

Lubbeke et al studied the gender differences in outcomes of obesity following total hip arthroplasty [27]. Of the 2,186 patients that underwent primary THA, 23.6% were in obese patients. Obese was defined as BMI >30 and was not stratified beyond this. The obese group was younger and had a higher ASA scores. The incidence rate for infection was 4.7× higher in the obese group compared to non-obese, and was 16.1× higher in obese women. The incidence rate of dislocation was 2.3× higher in the obese than non-obese and obese women were at the highest risk (rate ratio 3.0).

Ibrahim et al found no statistically significant difference in complications, outcomes, or revision surgery in primary total hip arthroplasty when comparing 179 THAs in patients with BMI average of 22.5 to an obese group of 164 THAs with an average BMI of 33.3 [82]. It should be noted that there were no patients with a BMI >40 in the study.

McLaughlin et al stated that based on their analysis of THA in both obese and nonobese patients, THA should not be with held in the obese patient based solely on BMI [83]. They found no statistical difference in outcomes or revision rates comparing 109 nonobese patients to 100 obese patients. An interesting finding in this study was the high failure rate of the acetabular component at an average of 14 year follow up in both the obese (57%) on nonobese group (66%). Also of note, only 6 patients had BMI >35.

A recent meta-analysis evaluated outcomes and complications in 15 studies of primary THA in obese patients [47]. A pooled analysis demonstrated that dislocation, infection, aseptic loosening and venous thromboembolism were all increased in obese patients undergoing primary THA. Obese patients (BMI >30) were not further stratified.

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Projections of Primary and Revision Hip and Knee Arthroplasty in the United States from 2005 to 2030

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Abstract

Background: Over the past decade, there has been an increase in the number of revision total hip and knee arthroplasties performed in the United States. The purpose of this study was to formulate projections for the number of primary and revision total hip and knee arthroplasties that will be performed in the United States through 2030.

Methods: The Nationwide Inpatient Sample (1990 to 2003) was used in conjunction with United States Census Bureau data to quantify primary and revision arthroplasty rates as a function of age, gender, race and/or ethnicity, and census region. Projections were performed with use of Poisson regression on historical procedure rates in combination with population projections from 2005 to 2030.

Results: By 2030, the demand for primary total hip arthroplasties is estimated to grow by 174% to 572,000. The demand for primary total knee arthroplasties is projected to grow by 673% to 3.48 million procedures. The demand for hip revision procedures is projected to double by the year 2026, while the demand for knee revisions is expected to double by 2015. Although hip revisions are currently more frequently performed than knee revisions, the demand for knee revisions is expected to surpass the demand for hip revisions after 2007. Overall, total hip and total knee revisions are projected to grow by 137% and 601%, respectively, between 2005 and 2030.

Conclusions: These large projected increases in demand for total hip and knee arthroplasties provide a quantitative basis for future policy decisions related to the numbers of orthopaedic surgeons needed to perform these procedures and the deployment of appropriate resources to serve this need.

Over the past thirteen years, there has been an increase in the number of revision total hip arthroplasties and total knee arthroplasties performed in the United States[1], while the revision burden—defined as the ratio of revision arthroplasties to the total number of arthroplasties—has remained relatively constant. Previous analyses of nationwide data on the procedures have indicated that the revision burden for total hip arthroplasty was approximately 17.5% between 1990 and 2002, whereas the revision burden for total knee arthroplasty was approximately 8.2%[1]. In economic terms, revision total hip arthroplasty is estimated to have consumed 19% of the Medicare hip replacement expenditures between 1997 to 2003, whereas total knee arthroplasty revisions consumed only 8% of the total annual Medicare expenditures for knee replacement[2].

In Scandinavia, England, Australia, and Canada, the numbers of these procedures that have been performed are readily obtainable from national arthroplasty registries[3-6]. However, in the United States, the American Academy of Orthopaedic

Surgeons (AAOS)[7] and other investigators have had to rely on representative surveys of hospital discharge records to provide estimates of the prevalence of primary and revision arthroplasties[1,8].

Given the many years required for the training of surgeons and the equally complex task of planning for hospital capacity, reliable projections regarding the demand for arthroplasties are crucial for policy makers in government, education, and industry. Importantly, reliable projections of revision arthroplasties would be particularly useful, as they consume greater economic resources than do primary procedures[9].

For this study, we hypothesized that the demand for total hip and total knee arthroplasties in the United States will increase substantially over the next twenty-five years. To test this hypothesis, we performed statistical projections of the number of primary and revision total hip and total knee arthroplasties between 2005 and 2030 on the basis of the available historical Nationwide Inpatient Sample (NIS) data from 1990 to 2003[10], compared with projections assuming a constant prevalence.

Materials and Methods

Data Sources

The National Hospital Discharge Survey (NHDS) and the NIS are national (United States) sample surveys of hospital discharge records. Comparisons of the two surveys conducted by the Agency for Healthcare Research and Quality have found that, on a year-by-year basis, the numbers of surgical procedures estimated to have been performed from the NIS and the NHDS are similar, differing by approximately 10%[11]. However, the NIS collects a substantially larger number of discharge records than does the NHDS and is therefore better suited to accurately quantify the prevalence of inpatient arthroplasty procedures in the United States. Consequently, we relied on the NIS data from 1990 to 2003 for our projections for the current study. The NIS is a federal-state cooperative database designed to compile annually a representative sample of hospital discharge records in the United States. In 2003, the NIS had a sample size of about eight million discharge records from approximately 1000 hospitals, which represent approximately 20% of all United States community hospitals. All of the discharge records from 1990 to 2003 were examined for this study.

We obtained demographic data on the patients (e.g., age, gender, and race and/or ethnicity) from the NIS. Disease diagnoses and surgical procedures performed (if any) were recorded for the NIS with use of the Ninth Revision of the International Classification of Diseases (ICD-9-CM). Specifically, primary hip and knee arthroplasty are identified by the ICD-9-CM codes 81.51 and 81.54, respectively. For revisions, the corresponding codes are 81.53 and 81.55. From 1990 to 2003, the ICD-9-CM codes for these procedures were consistent, thereby allowing the determination of longitudinal trends in the prevalence of both primary and revision joint arthroplasty. We also used projected population statistics for the nation and for individual states by age, gender, and race and/or ethnicity through 2025 that were published by the Census Bureau in 1997[12].

Projection Methodology and Statistical Analyses

The annual prevalence of arthroplasty surgery was modeled with use of a Poisson regression with age, gender, race and/or ethnicity, census region, and calendar year as covariates to account for differences in prevalence among population subgroups as well as changes over time. Age was categorized into eight subgroups (less than forty-five, forty-five to fifty-four, fifty-five to sixty-four, sixty-five to sixty-nine, seventy to seventy-four, seventy-five to seventy-nine, eighty to eighty-four, and eighty-five or more years old), while race and/or ethnicity was grouped into five categories (white, black, Asian, Hispanic, and Native American). "Hispanic" included all patients of Hispanic origin, regardless of race. Four census regions (Northeast, South, Midwest, and West) and the two genders were also categorical covariates in the analysis. Two-way interactions between age, gender, race, census region, and calendar year were included in the regression model. Surgery prevalence was calculated by dividing the number of procedures estimated from the NIS for each population subgroup by the corresponding population from the Census Bureau. The projected number of procedures was estimated by applying the surgery prevalence estimated from the regression model to the projected population data for each subgroup. The projected national total is the sum of the projected number of procedures from each subpopulation. Independent models were used for

each type of primary and revision hip and knee arthroplasty.

To evaluate the methodological sensitivity of our results, we compared our primary projections obtained from the NIS (in which the prevalence of surgery is allowed to vary over time on the basis of the actual data) with projections in which the prevalence of each population subgroup was held constant on the basis of the 1990 to 2003 averages. Deviance and Pearson chi-square values were determined to describe the goodness of fit for the Poisson regression model for the various arthroplasty data. Additional detailed descriptions of the statistical analyses are presented in the Appendix.

Results

In 2003, the most recent year for which national inpatient procedure data are currently available from NIS, a total of 202,500 primary total hip arthroplasties and 402,100 primary total knee arthroplasties were performed nationally in the United States. During the same year, a total of 36,000 revision total hip arthroplasties and 32,700 revision total knee arthroplasties were performed.

Sensitivity of Projection Methodology

Between 1990 and 2003, the prevalence of primary and revision total hip and knee arthroplasties all increased substantially over time. The overall goodness of fit of the regression models, represented by the value of the scaled Pearson chi square (a measure of the lack of fit between model and data), averaged 1.11 (range, 1.03 for primary total knee replacement to 1.26 for revision total knee replacement procedures) (see Appendix). When the year of surgery was excluded from the Poisson regression model to simulate a constant prevalence over time, the models fitted with the remaining covariates all showed a substantial increase in the deviance value (i.e., poorer fit), especially for knee arthroplasty.

The projections of primary and revision total joint replacement were found to be highly sensitive to assumptions regarding trends in the prevalence of surgery. If the trends (i.e., increases in the prevalence of surgery) observed from 1990 to 2003 were to continue, by 2030 the projections with use of the NIS data could range from two to five times greater than the projections assuming a constant surgery prevalence over time (Table I). The projections for primary and revision total knee surgery were more sensitive to modeling assumptions than those for primary or revision total hip arthroplasty because of the steep increase in the number of knee procedures from 1990 to 2003.

TABLE I Summary of Sensitivity Analysis of the Projected Number of Hip and Knee Arthroplasties with Use of Models Comparing Variable Prevalence (Baseline) with Constant Prevalence

	Annual Number of Procedur es (in Thousands)†			
Type of Procedure*	2005	2010	2020	2030
Primary total hip arthroplasty				
Variable	209 (193-225)	253 (232-276)	384 (339-435)	572 (481-681)
Constant	179 (156-202)	194 (169-219)	236 (205-268)	277 (240-315)
Primary total knee arthroplasty				
Variable	450 (425-477)	663 (618-711)	1520 (1362-1700)	3481 (2948-4136)
Constant	301 (265-337)	329 (289-370)	415 (364-467)	488 (425-550)
Revision total hip arthroplasty				
Variable	40.8 (34.9-47.0)	47.8 (40.3-56.1)	67.6 (54.0-83.9)	96.7 (72.1-130.0)
Constant	36.0 (29.5-42.6)	38.9 (31.8-46.0)	47.2 (38.3-56.0)	56.6 (45.8-67.5)
Revision total knee arthroplasty				
Variable	38.3 (32.6-44.3)	55.3 (46.5-65.1)	121 (95.9-153)	268 (193-381)
Constant	25.9 (21.3-30.5)	28.1 (23.0-33.3)	35.1 (28.6-41.7)	41.7 (33.6-49.9)

The variable prevalence (baseline) and the constant prevalence are based on 1990 to 2003 data from the Nationwide Inpatient Sample.The values are given as the projected value with the 95% prediction interval in parentheses.

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Projected Primary and Revision Arthroplasty Procedures with Use of the Nationwide Inpatient Sample Baseline Model

Our projection model predicted substantial increases in the numbers of hip and knee replacement procedures (Figs. 1 and 2). On the basis of the NIS model, the demand for primary total hip arthroplasty was estimated to grow by 174%, from 208,600 (95% prediction interval, 193,300 to 224,600) in 2005 to 572,000 (95% prediction interval, 481,000 to 681,000) by 2030 (Fig. 1). If the number of total knee arthroplasties performed continues at the current rate, the demand for primary total knee arthroplasty is projected to grow by 673%, from 450,000 (95% prediction interval, 425,000 to 477,000) in 2005 to 3.48 million procedures (95% prediction interval, 2.95 to 4.14 million) by 2030.

Overall, the total number of revision arthroplasty procedures performed in 2005 is expected to double by the year 2026 for revision total hip arthroplasty and by 2015 for revision total knee arthroplasty. Although more revision total hip arthroplasties than revision total knee arthroplasties are currently performed, the number of revision total knee arthroplasties performed were predicted to outnumber total hip arthroplasty revisions after 2007 (Fig. 2). Total hip arthroplasty revisions were projected to grow from 40,800 (95% prediction interval, 34,900 to 47,000) in 2005 to 96,700 (95% prediction interval, 72,100 to 130,000) in 2030 (an increase of 137%). If the trend observed from 1990 to 2003 were to continue, total knee arthroplasty revisions were projected to grow from 38,300 (95% prediction interval, 32,600 to 44,300) in 2005 to 268,200 (95% prediction interval, 192,700 to 381,400) in 2030 (an increase of 601%).

On the basis of these estimates, the revision burden for total hip replacements was projected to be 16.3% in 2005 and 14.5% in 2030. The corresponding revision burden for total knee replacements was projected to be 7.8% in 2005 and 7.2% in 2030.

Discussion

In this study, arthroplasty projections were derived by considering temporal changes in arthroplasty rates, as well as in population subgroups. As the official demographer of the United States, the Census Bureau has devoted considerable effort to developing reliable projections of the future United States population. In contrast, little information is available to quantify the expected number of hip and knee revision arthroplasties in the future. For example, the projection recently developed by the AAOS[7] was limited to primary hip and knee replacements. The AAOS projections were found to have underpredicted the expected utilization of primary joint replacement surgery[1] because they were based on the NHDS survey, which has a much lower sample size than the NIS. Additionally, the AAOS estimates assumed a constant prevalence of surgery over time. In contrast, our results underscore the importance of accounting for changes in the rate of surgery for future projections because the prevalence of surgery is changing rapidly over time.

The present study provides, for the first time to our knowledge, quantification of the demand for primary and revision hip and knee arthroplasties in the United States through 2030. We project a massive increase in demand for primary and revision total joint procedures over the next two decades—a demand that, to be met, will need to be addressed with a combination of increased economic resources, operative efficiency, technical capacity (i.e., additional surgeons), and implant longevity.

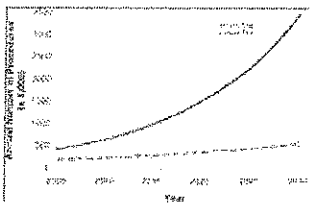

Fig. 1: The projected number of primary total hip arthroplasty (THA) and total knee arthroplasty (TKA) procedures in the United States from 2005 to 2030.

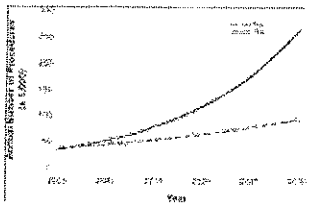

Fig. 2: The projected number of revision total hip arthroplasty (THA) and total knee arthroplasty (TKA) procedures in the United States from 2005 to 2030.

The projections in this study are limited on the basis of an extrapolation of historical procedural data. As demonstrated in this study, the uncertainties inherent in such an extrapolation can be minimized by choosing a suitably large set of historical data (e.g., NIS instead of NHDS), and by incorporating as many covariates as possible into the model. Nevertheless, these projections are limited by the quantity and quality of available data. The trends established by historical data, even if accurate, may not persist in the future because of improvements in implant technology, such as advanced bearing materials or designs. Furthermore, it is impossible to anticipate, at present, whether future orthopaedic treatment technologies or newer pharmaceutical nonoperative interventions will lead to a reduced demand for primary total joint replacements by 2030. Our model also does not incorporate unforeseen changes in economic factors associated with these arthroplasties. It is uncertain, for example, to what extent the United States health-care system will be able to finance the future demand for arthroplasties anticipated by the present study.

We selected a twenty-five-year time frame for the study, extending to 2030, purely to facilitate comparisons with previous AAOS projections, which employed an identical time frame. Intuitively, we appreciate that long-term projections will be more prone to unexpected disruptions than those spanning a near-term horizon. Nevertheless, such uncertainties in no way diminish the value and necessity of conducting projections for the purpose of long-range planning and policy-making.

Consequently, it is inevitable that the projections performed in the present study will be superseded in the future as new years of procedure data become available. Other methodological approaches to the prediction problem, such as age-period-cohort models or generalized additive models, should also be attempted to further validate the reliability of the projections established by the present approach. It is relatively straightforward to update the projections reported in this study with use of the present methodology, but continued monitoring and updating will need to occur.

In addition, it is clear from the different trends observed that the sensitivity of the projections appears to be procedure-dependent. For example, because of the substantially higher rate of increase in knee arthroplasty between 1990 and 2003, the models simulating a constant prevalence over time produced a considerably poorer fit. Consequently, the specific findings for total hip and knee replacement should not be generalized to other orthopaedic procedures, which may exhibit entirely different historical growth histories. However, this study establishes a methodology whereby an investigator can systematically evaluate orthopaedic surgery projections in a generalized statistically based framework. Although the data and projected number of procedures can be updated regularly, the methodology we have developed is expected to remain relevant for years to come.

The projections for revision procedures in this study were limited by the generality of the ICD-9-CM codes in the existing data, which currently do not yet discriminate between partial or total revision of an artificial joint. As of October 2005, new ICD-9-CM codes had been introduced by the Center for Medicare and Medicaid Services (CMS) for revision hip and knee arthroplasties. New ICD-9-CM codes also had been introduced to track the type of bearing (ceramic, metal, or polyethylene) used for total hip replacements. However, 2006 will provide the first full year of data incorporating this new coding scheme, and there is a two and a half-year lag between the end of the calendar year and the production of the corresponding NIS dataset. Furthermore, at least four years of data would be necessary to perform even the most rudimentary projection. Consequently, it will be well into the second decade of this century that sufficient years of information will be available for mathematically sound projections with use of the recently introduced ICD-9-CM procedure codes.

We modeled revision hip and knee replacement as independent orthopaedic procedures for this study, although it is feasible

to construct a predictive model for future revisions on the basis of the number of primary procedures performed and an assumed Kaplan-Meier-type survivorship model for the different population subgroups. However, the necessary survival data for such a model can only be derived from a longitudinal database, such as a national implant registry, which does not yet exist in the United States. The only rationale for developing such a complex model would be historical evidence that the revision burden was changing over time, as has been documented in Sweden. However, available data in the United States between 1990 and 2003 do not support such a hypothesis; indeed, the revision burden has remained essentially unchanged in this country for over a decade[1]. Between 1990 and 2002, the national revision burden for total hip arthroplasty ranged between 15.2% and 20.5% (average, 17.5%); for total knee arthroplasty, the revision burden varied between 7.3% and 9.7% (average, 8.2%)[1]. Without compelling evidence that either implant technology or surgical technique have improved the survival of primary replacements at a national level, it is difficult to say whether a more sophisticated projection method for revisions than the one we employed in the present study would be of use. The revision projections in the current study may be interpreted as a conservative upper bound for what awaits the orthopaedic community if improvements in primary implant survival cannot be achieved at a national level.

The recent ICD-9-CM coding changes for hip and knee revisions in the United States were accompanied by 26.5% increases in reimbursement by the CMS and the formation of separate diagnosis-related group codes for primary and revision procedures (544 and 545, respectively)[13]. The changes in coding and reimbursement reflect heightened awareness and acceptance by CMS of the greater burden that revisions place on patients, surgeons, and hospitals. The revision projections in the current study provide the necessary foundation for future cost-benefit analyses at a national level, to quantify the increasing societal impact of revision arthroplasty in the United States.

Appendix

A table showing the summary of multivariate Poisson regression analysis results and a detailed description of the projection methodology and statistical analysis are available with the electronic versions of this article, on our web site atjbjs.org (go to the article citation and click on "Supplementary Material") and on our quarterly CD-ROM (call our subscription department, at 781-449-9780, to order the CD-ROM). ?

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STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Office of Health Care Access

November 8, 2013

Via Fax Transmission

Barbara A. Durdy
Director, Strategic Planning
Hartford HealthCare Corporation
181 Patricia Genova Drive
Newington, CT 06111

RE: Certificate of Need; Docket Number 13-31852-CON
Establishment of an Outpatient Surgical Center at 81 Meriden Avenue in Southington
HHC Southington Surgical Center, LLC

Dear Ms. Durdy:

On October 11, 2013, the Office of Health Care Access ("OHCA") received completeness responses to the Certificate of Need ("CON") application for the establishment of an outpatient surgery center dedicated to orthopedic outpatient surgical services at the Bradley Memorial campus of The Hospital of Central Connecticut, 81 Meriden Avenue in Southington.

OHCA has reviewed the responses and requests the following additional information pursuant to General Statutes §19a-639a(c).

Clear Public Need

1. CON completeness response on page 408 to question 1.b. indicates that "certain other orthopedic surgeons" other than from Orthopedic Associates of Hartford ("OAH") and Comprehensive Orthopaedics and Muscular Center ("COMC") will be performing surgeries at the proposed ambulatory surgery center ("ASC"). Please address the following questions:

    a. With regard to this category of practitioner cited above please provide the number of anticipated surgeons and the associated number of annual surgeries they will bring to the proposed ASC. Please explain how the number of physicians and anticipated service volumes were derived.

    b. With regard to the orthopedic surgeons from OAH and COMC that will be performing their surgeries at the proposed ASC, please provide the number of OAH and COMC affiliated surgeons and the associated number of annual surgeries they will bring to the proposed ASC. Please explain how the number of physicians and anticipated service volumes were derived.

2. CON completeness response on page 411 to question 2. indicates that the proposed ASC will have an open medical staff with additional non-investor physicians who may provide services at the ASC. With regard to this category of practitioner please provide the number of anticipated surgeons and the associated number of annual surgeries they will bring to the proposed ASC. Please explain how the number of physicians and anticipated service volumes were derived.

3. For fiscal years 2011, 2012 and 2013 provide a table that shows the actual number of surgical cases (i.e. orthopedic & general surgery cases) by each campus site (i.e. MidState, HOCC at New Britain and HOCC at Bradley) that could have been completed in the three outpatient operating room setup proposed in this project. Please explain how the anticipated service volumes were derived for each location.

In responding to the questions contained in this letter, please repeat each question before providing your response. Paginate and date your response (i.e., each page in its entirety). Information filed after the initial CON application submission (i.e., response letter to completeness questions, late file submissions, and the like) must be numbered sequentially from the Applicants' document preceding it. As the current submission for the application concludes with page 549, please begin your completeness response with page 550. Please reference Docket Number: 13-31852-CON and submit one (1) original and six (6) hard copies of your response in its entirety, including any supporting documentation. Submit a scanned copy of your response in Adobe format, an electronic copy in MS Word format and any worksheets in MS Excel, including all attachments, on CD.

OHCA must receive your response letter no later than Tuesday, January 7, 2014. Should your response letter be received by OHCA after Tuesday, January 7, 2014, the record regarding your request will be closed and considered withdrawn. Please feel free to contact me directly at (860) 418-7069 should you have any questions regarding this letter.

Sincerely,

Jack A. Huber

Jack A. Huber
Health Care Analyst

****
*** TX REPORT ***
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STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH
OFFICE OF HEALTH CARE ACCESS

FAX SHEET

TO: BARBARA A. DURDY

FAX: (860) 972-4650

AGENCY: HARTFORD HEALTHCARE CORPORATION
HHC SOUTHINGTON SURGERY CENTER

FROM: JACK A. HUBER

DATE: 11/8/2013 **Time:** ~4:30 pm

NUMBER OF PAGES: 3
(including transmittal sheet)

Transmitted: Second Completeness Letter for Docket Number: 13-31852-CON
The Establishment of the HHC Southington Surgery Center, LLC.
A Licensed Outpatient Surgery Facility
Located at 81 Meriden Avenue in Southington, CT

PLEASE PHONE Jack A. Huber at (860) 418-7069
IF THERE ARE ANY TRANSMISSION PROBLEMS.

SHIPMAN & GOODWIN LLP®

COUNSELORS AT LAW

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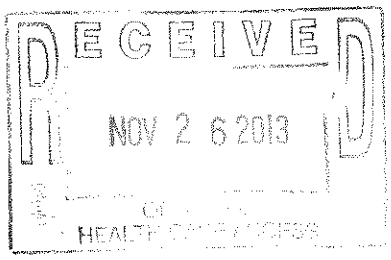

November 26, 2013

Jack A. Huber
Health Care Analyst
Department of Public Health
Office of Health Care Access
410 Capitol Avenue, MS#13HCA
P.O. Box 340308
Hartford, CT 06134-0308

RE: HHC Southington Surgery Center, LLC
Completeness Letter Responses; Docket Number 13-31852-CON

Dear Mr. Huber:

On behalf of HHC Southington Surgery Center, LLC (the "Applicant"), enclosed please find the original and 6 hard copies of the Applicant's responses to your Certificate of Need Completeness Letter dated November 8, 2013. As requested, I have also included a CD with a scanned copy of the Applicant's entire response (including attachments or exhibits), and electronic versions of any Microsoft Word or Excel documents, as applicable.

Please do not hesitate to contact me at 860-251-5104 if you have any questions.

Sincerely,

Joan Feldman

Joan W. Feldman

Enclosures

000550 (11/26/13)

1. CON completeness response on page 408 to question 1.b. indicates that "certain other orthopedic surgeons" other than from Orthopedic Associates of Hartford ("OAH") and Comprehensive Orthopaedics and Muscular Center ("COMC") will be performing surgeries at the proposed ambulatory surgery center ("ASC"). Please address the following questions:

   a. With regard to this category of practitioner cited above please provide the number of anticipated surgeons and the associated number of annual surgeries they will bring to the proposed ASC. Please explain how the number of physicians and anticipated service volumes were derived.

      At this time, there are at least two (2) orthopedic surgeons who are not affiliated with either OAH or COMC who are also interested in performing surgery at the proposed ASC. One of the orthopedic surgeons is Michael LeGeyt, M.D., who has a private practice located in Bristol, CT. The other orthopedic surgeon is Robert Belniak, who is a member of Grove Hill Medical Center, with office locations in Southington and New Britain, CT.

      The Applicant expects that once the proposed ASC is operational, other orthopedic surgeons will also become interested in performing their surgical cases at the ASC.

      Please see Table 1 below for Drs. LeGeyt's and Belniak's FY2014, FY2015, and FY2016 projected volumes.

      The projected volumes reflected in Table 1 below were based on FY2012 actual case numbers. For modeling purposes, individual surgeon volume for FY2013 was held flat at FY2012 volumes. Beginning in FY2014, a modest growth rate (between 2% and 4%) was applied to each subsequent year's volume based on individual surgeon practice patterns and growth potential in orthopedics.

   b. With regard to the orthopedic surgeons from OAH and COMC that will be performing their surgeries at the proposed ASC, please provide the number of OAH and COMC affiliated surgeons and the associated number of annual surgeries they will bring to the proposed ASC. Please explain how the number of physicians and anticipated service volumes were derived.

      Projected ASC surgical case volumes by OAH and COMC physicians for FY2014, FY2015, and FY2016 are set forth in Table 1 below. The projected volumes reflected in Table 1 below were based on FY2012 actual case numbers. For modeling purposes, individual surgeon volume for FY2013 was held flat at FY2012 volumes. Beginning in FY2014, a modest growth rate (between 2% and 4%) was applied to each subsequent year's volume based on individual surgeon practice patterns and growth potential in orthopedics.

TABLE 1

FY 2014 Projected Volume by Orthopedic Surgeon

Affiliation	Physicians	Hand/Wrist/ Elbow	Foot/Ankle	Knee/ Shoulder	General	Total
Independent	BELNIAK,ROBERT M	40	5	111	2	158
OAH	CARANGELO,ROBERT J	23	1	202	1	227
OAH	FROEB,RICHARD L	30	4	151	9	194
Independent	LEGEYT,MICHAEL	232	1	0	52	285
OAH	WASKOWITZ,ROBERT	26	11	355	6	398
COMC	COVEY AARON	76	12	143	13	244
COMC	DRISCOLL JON	54	14	179	2	249
COMC	KOLSTAD LEONARD	52	3	38	8	101
COMC	PARET RONALD	94	11	134	6	245
COMC	PRAVDA JEFFREY	57	11	80	12	160
COMC	ZIMMERING PAUL	68	11	68	6	153
		752	84	1461	117	2414

FY 2015 Projected Volume by Orthopedic Surgeon

Affiliation	Physicians	Hand/Wrist/ Elbow	Foot/Ankle	Knee/ Shoulder	General	Total
Independent	BELNIAK,ROBERT M	40	5	113	2	160
OAH	CARANGELO,ROBERT J	23	1	206	2	232
OAH	FROEB,RICHARD L	30	4	154	10	198
Independent	LEGEYT,MICHAEL	240	1	0	53	294
OAH	WASKOWITZ,ROBERT	27	11	358	6	402
COMC	COVEY AARON	79	13	149	13	254
COMC	DRISCOLL JON	56	14	187	2	259
COMC	KOLSTAD LEONARD	53	3	39	8	103
COMC	PARET RONALD	98	12	140	5	255
COMC	PRAVDA JEFFREY	58	11	82	12	163
COMC	ZIMMERING PAUL	71	11	71	5	158
		775	86	1499	118	2478

FY 2016 Projected Volume by Orthopedic Surgeon

Affiliation	Physicians	Hand/Wrist/ Elbow	Foot/Ankle	Knee/ Shoulder	General	Total
Independent	BELNIAK,ROBERT M	41	5	115	2	163
OAH	CARANGELO,ROBERT J	24	1	211	1	237
OAH	FROEB,RICHARD L	31	4	157	10	202
Independent	LEGEYT,MICHAEL	247	1	0	55	303
OAH	WASKOWITZ,ROBERT	27	11	362	6	406
COMC	COVEY AARON	83	14	155	12	264
COMC	DRISCOLL JON	59	15	194	1	269
COMC	KOLSTAD LEONARD	54	3	40	8	105
COMC	PARET RONALD	102	12	145	6	265
COMC	PRAVDA JEFFREY	59	11	83	13	166
COMC	ZIMMERING PAUL	73	12	73	6	164
		800	89	1535	120	2544

2. CON completeness response on page 411 to question 2. indicates that the proposed ASC will have an open medical staff with additional non-investor physicians who may provide services at the ASC. With regard to this category of practitioner please provide the number of anticipated surgeons and the associated number of annual surgeries they will bring to the proposed ASC. Please explain how the number of physicians and anticipated service volumes were derived.

   The proposed ASC will have an open medical staff and thus, non investor orthopedic surgeons may apply for medical staff privileges at the proposed ASC. Given the recruitment plans for both OAH and COMC, there is unlikely to be significant additional capacity.

3. For fiscal years 2011, 2012 and 2013 provide a table that shows the actual number of surgical cases (i.e. orthopedic & general surgery cases) by each campus site (i.e. MidState, HOCC at New Britain and HOCC at Bradley) that could have been completed in the three outpatient operating room setup proposed in this project. Please explain how the anticipated service volumes were derived for each location.

   The actual number of surgical cases that could have been completed in the proposed ASC are presented in <u>Table 2</u> below by physician and by primary campus site.

TABLE 2

FY 2011 Actual Volume by Orthopedic Surgeon						
Campus Site	**Physicians**	Hand/Wrist/ Elbow	Foot/Ankle	Knee/ Shoulder	General	Total
HOCC New Britain	BELNIAK,ROBERT M	43	1	147	4	195
HOCC New Britain	CARANGELO,ROBERT J	31	0	192	3	226
HOCC New Britain	FROEB,RICHARD L	37	8	136	4	185
HOCC Bradley	LEGEYT,MICHAEL	198	4	2	23	227
HOCC New Britain	WASKOWITZ,ROBERT	40	16	328	3	387
MidState	COVEY AARON	65	15	120	17	217
MidState	DRISCOLL JON	54	9	156	6	225
MidState	KOLSTAD LEONARD	70	1	52	9	132
MidState	PARET RONALD	71	14	108	15	208
MidState	PRAVDA JEFFREY	88	11	84	8	191
MidState	ZIMMERING PAUL	74	12	48	8	142
		771	91	1373	100	2335

TABLE 2 (continued)

FY 2012 Annualized Volume by Orthopedic Surgeon

Campus Site	Physicians	Hand/Wrist/ Elbow	Foot/Ankle	Knee/ Shoulder	General	Total
HOCC New Britain	BELNIAK,ROBERT M	39	5	109	1	154
HOCC New Britain	CARANGELO,ROBERT J	22	1	198	2	223
HOCC New Britain	FROEB,RICHARD L	29	3	148	10	190
HOCC Bradley	LEGEYT,MICHAEL	226	1	0	50	277
HOCC New Britain	WASKOWITZ,ROBERT	26	11	351	6	394
MidState	COVEY AARON	73	12	138	12	235
MidState	DRISCOLL JON	52	13	172	2	239
MidState	KOLSTAD LEONARD	51	3	37	8	99
MidState	PARET RONALD	91	11	129	5	236
MidState	PRAVDA JEFFREY	56	11	79	11	157
MidState	ZIMMERING PAUL	67	11	67	4	149
		732	82	1428	111	2353

FY 2013 Projected Volume by Orthopedic Surgeon

Campus Site	Physicians	Hand/Wrist/ Elbow	Foot/Ankle	Knee/ Shoulder	General	Total
HOCC New Britain	BELNIAK,ROBERT M	39	5	109	1	154
HOCC New Britain	CARANGELO,ROBERT J	22	1	198	2	223
HOCC New Britain	FROEB,RICHARD L	29	3	148	10	190
HOCC Bradley	LEGEYT,MICHAEL	226	1	0	50	277
HOCC New Britain	WASKOWITZ,ROBERT	26	11	351	6	394
MidState	COVEY AARON	73	12	138	12	235
MidState	DRISCOLL JON	52	13	172	2	239
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MidState	PARET RONALD	91	11	129	5	236
MidState	PRAVDA JEFFREY	56	11	79	11	157
MidState	ZIMMERING PAUL	67	11	67	4	149
		732	82	1428	111	2353

The surgical case volume for each participating surgeon that could have been performed at the proposed location is based on the FY2011 actual volume; FY2012 annualized volume; and FY2013 projected volume held flat at FY2012 levels.

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Office of Health Care Access

December 12, 2013 VIA FACISIMILE ONLY

Barbara A. Durdy
Strategic Planning Director
Hartford HealthCare
181 Patricia Genova Drive
Newington, CT 06111

RE: Certificate of Need Application, Docket Number: 13-31852-CON
The Hospital of Central Connecticut; MidState Medical Center; Orthopedic Associates Of Hartford, P.C.; Comprehensive Orthopaedic and Musculoskeletal Center, LLC, and Constitution Surgery Centers, LLC
Proposal to Establish an Orthopedic Ambulatory Surgery Center at The Hospital of Central Connecticut's Bradley Memorial Campus in Southington

Dear Ms. Durdy:

This letter is to inform you that, pursuant to Section 19a-639a (d) of the Connecticut General Statutes, the Office of Health Care Access has deemed the above-referenced application complete as of December 12, 2013.

If you have any questions regarding this matter, please feel free to contact me at (860) 418-7069.

Sincerely,

Jack A. Huber

Jack A. Huber
Health Care Analyst

****
*** TX REPORT ***
****

TRANSMISSION OK

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STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH
OFFICE OF HEALTH CARE ACCESS

FAX SHEET

TO: BARBARA A. DURDY

FAX: (860) 972-9025

AGENCY: HARTFORD HEALTHCARE CORPORATION
HHC SOUTHINGTON SURGERY CENTER

FROM: JACK A. HUBER

DATE: 12/12/2013 Time: ~2:40 pm

NUMBER OF PAGES: 2
(including transmittal sheet)

Transmitted: Letter Deeming the following CON Application Complete
Docket Number: 13-31852-CON
The Establishment of the HHC Southington Surgery Center, LLC.
in Southington CT

PLEASE PHONE Jack A. Huber at (860) 418-7069
IF THERE ARE ANY TRANSMISSION PROBLEMS.

Olejarz, Barbara

From: Olejarz, Barbara
Sent: Thursday, April 17, 2014 2:56 PM
To: 'barbara.durdy@hhchealth.org'
Cc: Martone, Kim; Riggott, Kaila; Lazarus, Steven; Foreman, Rebecca
Subject: Agreed Settlement
Attachments: 31852-3.pdf

Tracking:

Recipient	Delivery
'barbara.durdy@hhchealth.org'	
Martone, Kim	Delivered: 4/17/2014 2:56 PM
Riggott, Kaila	Delivered: 4/17/2014 2:56 PM
Lazarus, Steven	Delivered: 4/17/2014 2:56 PM
Foreman, Rebecca	Delivered: 4/17/2014 2:56 PM

4/17/14

Hi Barbara,

Attached is the agreed settlement that you requested be emailed to you for DN: 13-31852 (HHC Southington Surgery Center, LLC) Please send me a response that you have received it.

Thanks

Barbara K. Olejarz
Administrative Assistant to Kimberly Martone
Office of Health Care Access
Department of Public Health
410 Capitol Ave., MS#13HCA
Hartford, CT 06134
Phone: 860 418-7005
Email: Barbara.olejarz@ct.gov

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Office of Health Care Access

April 17, 2014

IN THE MATTER OF:

An Application for a Certificate of Need filed Pursuant to Section 19a-638, C.G.S. by:	Notice of Agreed Settlement Office of Health Care Access Docket Number: 13-31852-CON
HHC Southington Surgery Center, LLC	**Establishment of an Orthopedic Ambulatory Surgery Center at The Hospital of Central Connecticut's Bradley Memorial Campus in Southington, Connecticut**

To:

Barbara A. Durdy
Strategic Planning Director
Hartford HealthCare Corporation
181 Patricia Genova Drive
Newington, CT 06011

Dear Ms. Durdy:

This letter will serve as notice of the approved Certificate of Need Application in the above-referenced matter. On April 17, 2014, the Agreed Settlement, attached hereto, was adopted and issued as an Order by the Department of Public Health, Office of Health Care Access.

Kimberly R. Martone
Director of Operations

Enclosure
KRM:jah

Department of Public Health
Office of Health Care Access
Certificate of Need Application

Agreed Settlement

Applicant: **HHC Southington Surgery Center, LLC**
81 Meriden Avenue, Southington, CT 06489

Docket Number: **13-31852-CON**

Project Title: **Proposal to Establish HHC Southington Surgery Center, LLC, an Ambulatory Surgical Center Dedicated to Orthopedic Outpatient Surgical Services in Southington**

Project Description: HHC Southington Surgery Center, LLC ("Applicant" or "HHC") is seeking Certificate of Need authorization to establish an ambulatory surgical center dedicated to orthopedic outpatient surgical services to be located at the Bradley Memorial campus of The Hospital of Central Connecticut, 81 Meriden Avenue, Southington.

Procedural History: The Applicant published notice of its intent to file the Certificate of Need application in the *Hartford Courant* on April 15, 16, and 17, 2013. On July 15, 2013, the Office of Health Care Access ("OHCA") received the Certificate of Need application from the Applicant for the above-referenced project. On December 12, 2013, OHCA deemed the Certificate of Need application complete.

OHCA received no responses from the public concerning the Applicant's proposal and no hearing requests were received from the public pursuant to Connecticut General Statutes ("Conn. Gen. Stat.") § 19a-639a(e). In rendering this decision, Deputy Commissioner Davis considered the entire record in this matter.

To the extent the findings of fact actually represent conclusions of law, they should be so considered, and vice versa. *SAS Inst., Inc., v. S & H Computer Systems, Inc.*, 605 F.Supp. 816 (Md. Tenn. 1985).

Findings of Fact and Conclusions of Law

1. The Hospital of Central Connecticut ("HOCC") and MidState Medical Center ("MidState") are affiliates of Hartford HealthCare. Exhibit A, pp. 6, 25.

2. HOCC has two campuses, one at 100 Grand Street, New Britain ("HOCC New Britain") and one at 81 Meriden Avenue, Southington ("HOCC Bradley"). MidState is located at 435 Lewis Avenue, Meriden. Exhibit A, p. 96.

3. HOCC Bradley currently has four inpatient/outpatient operating rooms that are underutilized. One of the operating rooms is shelled and another is not utilized at all. Exhibit A, pp. 6, 7, 12.

4. In 2012, HOCC engaged an independent consultant to assist in the development of a strategy for the future use of HOCC Bradley. One of the primary objectives of this engagement was to determine how to most effectively leverage the strengths of HOCC Bradley to better meet the needs of the community. As a result, the consultant recommended that HOCC Bradley be the focus of ambulatory services. More specifically, the consultant recommended that the Bradley campus develop an ambulatory services component and not duplicate the more complex and costly services provided on the New Britain campus of HOCC. Exhibit A, p. 10.

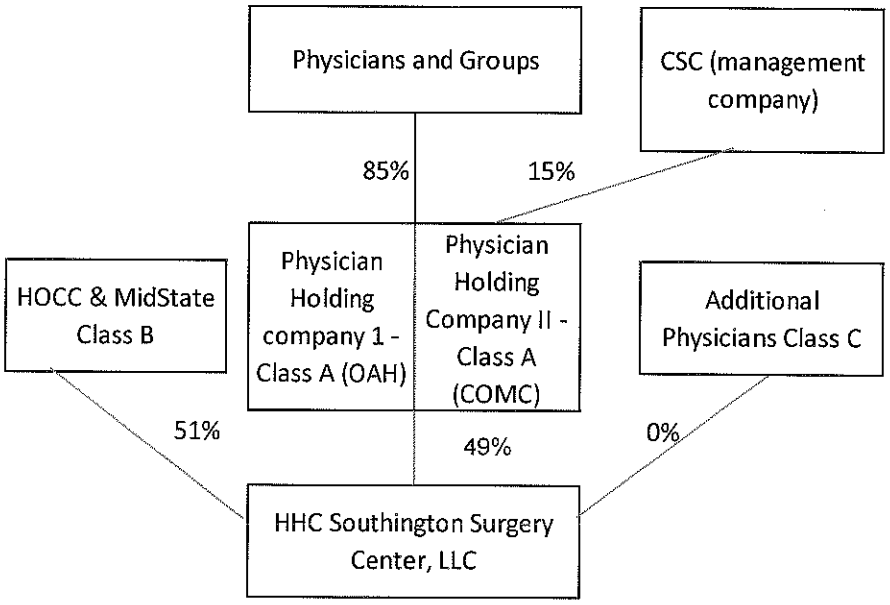
5. This proposal is for the establishment of an ambulatory surgery center, HHC, at HOCC Bradley to be dedicated to orthopedic surgical services. Three of the existing operating rooms at HOCC Bradley will be completely renovated and set aside for the exclusive use of HHC. Exhibit A, pp. 2, 7.

6. HOCC and MidState will jointly operate HHC with two groups of regional orthopedic physicians, Orthopedic Associates of Hartford, P.C. and Comprehensive Orthopaedic and Musculoskeletal Care, LLC. The two physician groups ("Physicians and Groups") have committed to becoming members of and utilizing HHC. All of the surgeons will be on the medical staff of either HOCC or MidState. Exhibit A, p. 6 and Exhibit C, pp. 427, 428.

7. The Surgeons and Constitution Surgery Centers, LLC, ("CSC"), a management company with expertise in the management of ASCs, will establish a holding company for the sole purpose of holding a 49% interest in HHC. The Physicians and Groups will have an 85% interest in the holding company and CSC will have a 15% interest. Exhibit C, p. 408.

8. HOCC and MidState will collectively own a 51% controlling membership interest in HHC. There are three classes of membership. As the Class B member and the majority interest holder, HOCC and MidState are the only members with the right to act for or bind HHC. The following diagram illustrates the proposed organization of HHC. Exhibit A, pp. 6, 28, 46 and Exhibit C, p. 430.

Proposed Organizational Structure of HHC



9. HHC will operate pursuant to the same Financial Assistance Policy as HOCC and MidState, which provides financial assistance for eligible persons that are uninsured, underinsured or medically indigent. Exhibit A, pp. 17, 388-393. Exhibit C, p.410.

10. The proposal to establish a freestanding ASC dedicated to orthopedic surgery is based upon the following factors:
    a. Patients would benefit from access to a facility that offers higher quality, lower cost and more efficient outpatient orthopedic surgical services; and
    b. Payers for health care are expecting providers to offer enhanced value at a lower cost.

    Exhibit A, pp. 6, 8.

11. Through its dedication to a single service line, orthopedic surgery, HHC can more easily facilitate the implementation of evidence-based surgical practices. Exhibit A, p. 8.

12. HHC will utilize specialized care protocols specific to orthopedics and consistent with best clinical practices to ensure high quality standards are met and sustained. Exhibit A, p. 15.

13. HHC will meet and maintain all national standards required to achieve accreditation by the Accreditation Association for Ambulatory Health Care Centers. Exhibit A, p.

14. HHC will have three fully equipped operating rooms. No ASC operating rooms will be built and shelled for future use. Exhibit A, p. 8.

15. HHC will be considered a freestanding ASC for reimbursement purposes, thereby resulting in lower payment rates for commercial payers and patients. Exhibit A, p. 8

16. According to the Ambulatory Surgery Center Association, the reduction in Medicare spending has been approximately $2.6 billion a year as a result of shifting surgical cases from a hospital-based setting to an ambulatory setting. Exhibit A, p. 9.

17. Health care reform has made it more important for hospitals and physicians to collaborate in developing new health-care delivery models that offer higher quality care at a lower cost. Exhibit A, p. 7.

18. Medicare pays ASCs less than what is paid to hospitals for the same procedures and patients typically pay less co-insurance for procedures performed in an ASC than in a hospital-based outpatient surgery department. Exhibit A, pp. 106, 114.

19. This proposal will result in the shifting of outpatient orthopedic surgery volume from HOCC New Britain and MidState to HHC thereby allowing patients to receive high quality orthopedic surgery at a reduced charge when compared to a hospital-based facility. Exhibit A, p. 7.

20. The service area of the proposed ASC includes the following towns: Berlin, Newington, New Britain, Plainville, Southington, Meriden, Wallingford and Cheshire. Exhibit A, p. 9.

21. Patients within the proposed service area are currently receiving inpatient and outpatient orthopedic surgery at the following three hospital-based ASCs: HOCC New Britain; HOCC Bradley; and MidState in Meriden. There are also two additional single-specialty ASCs serving the proposed population: Hartford Hospital operates an eye surgery ASC in Newington; and Masonicare has a gastroenterology ASC in Wallingford. Statewide Health Care Facilities and Services Plan, October 2012, Connecticut Department of Public Health, Office of Health Care Access.

22. The total utilization of surgical facilities within the service area for this proposal is 95% of maximum capacity. Exhibit A, p. 12.

23. HOCC and MidState reported that their orthopedic Physicians performed the following number of outpatient surgical cases by physician, by service or procedural type in Fiscal Year ("FY") 2012:

Table 1: FY 2012 Outpatient Orthopedic Volumes by Physician

FY 2012 Actual Outpatient Volumes by Physician

	Hand/Wrist /Elbow	Foot / Ankle	Knee/ Shoulder	General	Total
Physician 1	39	5	109	1	**154**
Physician 2	22	1	198	2	**223**
Physician 3	29	3	148	10	**190**
Physician 4	226	1	0	50	**277**
Physician 5	26	11	351	6	**394**
Physician 6	73	12	138	12	**235**
Physician 7	52	13	172	2	**239**
Physician 8	51	3	37	8	**99**
Physician 9	91	11	129	5	**236**
Physician 10	56	11	79	11	**157**
Physician 11	67	11	67	4	**149**
Total	**732**	**82**	**1428**	**111**	**2353**

Exhibit A, p. 15.

24. The following table summarizes the number of operating rooms at the three hospital locations and the utilization of each in FY 2012. HOCC New Britain and MidState are both operating at capacity while HOCC Bradley is operating at 60%.

Table 2: Operating Rooms Utilization and Capacity in FY 2012

Location	Number of Operating Rooms		Total Cases	Estimated	
	Available	Utilized	FY 2012	Maximum*	Utilization
HOCC New Britain	23	23	9,962	10,441	95%
HOCC Bradley	4	2	1,647	2,729	60%
MidState	9	9	8,162	7,744	105%

*Estimated maximum capacity is the number of surgical cases that may be performed in a single year at the location based on number of operating rooms utilized. A single year is based on cases being performed Monday through Friday, eight hours per day and 250 days per year.
Exhibit A, p. 12.

25. The number of surgical procedures performed at HOCC Bradley decreased by 31% from FY 2010 to FY 2013.

TABLE 3: Number of Surgical Procedures Performed at HOCC Bradley

Type of Procedure	Number of Procedures Performed by FY			
	2010	**2011**	**2012**	**2013***
Inpatient	401	366	281	230
Outpatient	1,489	1,278	1,358	1,074
Total	**1,890**	**1,644**	**1,639**	**1,304**
Annual Decrease, %	-	13.0%	0.3%	**-20.4%**
Cumulative Decrease since 2010, %	-	-	-13%	**-31%**

* Volume annualized based on the number of procedures performed from October 1, 2012 to July 31, 2013.
Exhibit E, p. 413.

26. This proposal is expected to increase utilization of HOCC Bradley by HHC patients as follows:

Table 4: Projected Orthopedic Outpatient Surgical Volume

	Projected Volume (First 3 Full Operational FYs)*		
Service or Procedure Type	**FY 2014**	**FY 2015**	**FY 2016**
Hand, Wrist, Elbow	752	775	800
Foot, Ankle	84	86	89
Knee, Shoulder	1,461	1,499	1,535
Other Orthopedic	117	118	120
Total	**2,414**	**2,478**	**2,544**

* The fiscal year for the proposed ASC is Oct 1 – Sep 30.
Exhibit A, p. 14.

27. The projected volumes are based on the actual case volumes of the physicians who will be shifting their outpatient orthopedic cases to HHC. Exhibit A, p. 14.

28. HHC will have little or no impact on existing providers since the orthopedic physicians that are performing their orthopedic surgical cases in the service area will be the same physicians who will be performing orthopedic outpatient surgery at HHC. Exhibit A, p. 13.

29. The use of the proposed ASC will not be limited to the physician owners. The proposed ASC will have an open medical staff, and additional non-investor physicians satisfying the credentialing requirements of the proposed ASC and of the Hospitals may provide services at the proposed ASC. This will provide for enhanced utilization of the proposed ASC, help to strengthen the ASC's financial performance and allow an opportunity for those physicians who either elect not to invest or who are not in a position to do so to utilize the proposed ASC. Exhibit C, p. 411.

30. The proposed capital expenditure for the establishment of HHC is as follows:

Table 5: Proposed Capital Expenditure

Description:	Cost
Medical Equipment Purchase	$1,800,000
Construction/Renovation	$2,200,000
Working Capital	$1,300,000
Total Capital Expenditure	**$5,300,000**

Exhibit A, p. 17.

31. The Applicant will lease at a fair market value from HOCC approximately 10,000 square feet of space, consisting of three operating rooms, preoperative/recovery space and sterile processing/supplies support space at HOCC Bradley for the operation of the proposed ASC. Exhibit A, p. 7.

32. The operations of HHC will be funded though capital contributions by the members, income from operations and lender financing at market rates. Exhibit A, p. 17.

33. The Applicant projects incremental gains from operations in each of the proposal's first three fiscal years.

Table 6: Projected SSC's Incremental Gain from Operations by Fiscal Year

Net Patient Revenue	FY 2014	FY 2015	FY 2016
Non-Government	$8,982,769	$9,368,810	$9,772,661
Medicare	$827,491	$863,053	$900,256
Medicaid & Other Medical Assistance	$159,516	$166,372	$173,543
Other Government	$0	$0	$0
Revenues from Operations	**$9,969,776**	**$10,398,235**	**$10,846,460**
Total Operating Expense	**$5,164,891**	**$5,381,592**	**$5,618,221**
Incremental Gains from Operations	**$4,804,885**	**$5,016,643**	**$5,228,249**

Exhibit A, pp. 14, 19, 402.
Net patient revenue is based on Medicare and Medicaid fee schedules for ASCs and the projected volumes. Total operating expenses are based on CSC's experience in Connecticut.

34. The projected patient population mix is based on the current patient population mix for both HOCC and MidState, and is projected to remain unchanged.

Table 7: Current and Projected Patient Population Mix

	Current	Projected		
	FY 2012	FY 2014	FY 2015	FY 2016
Medicare*	18.3%	18.3%	18.3%	18.3%
Medicaid*	3.8%	3.8%	3.8%	3.8%
CHAMPUS &TriCare				
Total Government	**22.6%**	**22.6%**	**22.6%**	**22.6%**
Commercial Insurers*	66.0%	66.0%	66.0%	66.0%
Uninsured	0.3%	0.3%	0.3%	0.3%
Workers Compensation	11.1%	11.1%	11.1%	11.1%
Total Non-Government	**77.4%**	**77.4%**	**77.4%**	**77.4%**
Total Payer Mix	**100%**	**100%**	**100%**	**100%**

Note: * Includes managed care activity.
Exhibit A, p. 18.

35. OHCA is currently in the process of establishing its policies and standards as regulations. Therefore, OHCA has not made any findings as to this proposal's relationship to any regulations adopted by OHCA. (Conn. Gen. Stat. § 19a-639(a)(1)).

36. The Applicant's proposal is consistent with the overall goals of the Statewide Health Care Facilities and Services Plan. (Conn. Gen. Stat.§ 19a-639(a)(2)).

37. The Applicant has satisfactorily demonstrated that there is a clear public need for this proposal. (Conn. Gen. Stat. § 19a-639(a)(3)).

38. The Applicant has satisfactorily demonstrated that this proposal is financially feasible. (Conn. Gen. Stat. § 19a-639(a)(4)).

39. The Applicant has satisfactorily demonstrated that the proposal will improve access and improve the quality of health care delivery in the region and it has satisfactorily demonstrated an improvement in cost effectiveness. (Conn. Gen. Stat. § 19a-639(a)(5)).

40. The Applicant has shown that there would be no change to the provision of health care services to the relevant patient populations and payer mix. (Conn. Gen. Stat. § 19a-639(a)(6)).

41. The Applicant has satisfactorily identified the population to be served by the proposal, and has satisfactorily demonstrated that this population has a need as proposed. (Conn. Gen. Stat. § 19a-639(a)(7)).

42. The Applicant's historical provision of surgical procedures in the service area supports this proposal. (Conn. Gen. Stat. § 19a-639(a)(8)).

43. The Applicant has satisfactorily demonstrated that the proposal will not result in an unnecessary duplication of existing services in the area. (Conn. Gen. Stat. § 19a-639(a)(9)).

Discussion

CON applications are decided on a case by case basis and do not lend themselves to general applicability due to the uniqueness of the facts in each case. In rendering its decision, OHCA considers the factors set forth in Connecticut General Statutes § 19a-639(a). The Applicants bear the burden of proof in this matter by a preponderance of the evidence. *Jones v. Connecticut Medical Examining Board,* 309 Conn. 727 (2013).

HOCC and MidState are affiliates of Hartford HealthCare. *FF 1* HOCC has two campuses, one at 100 Grand Street, New Britain ("HOCC New Britain") and one at 81 Meriden Avenue, Southington ("HOCC Bradley"). MidState is located at 435 Lewis Avenue, Meriden. *FF2* HOCC Bradley currently has four inpatient/outpatient operating rooms that are underutilized. One of the operating rooms is shelled and another is not utilized at all. *FF3* In 2012, HOCC engaged an independent consultant to assist in the development of a strategy for the future use of HOCC Bradley. One of the primary objectives of this engagement was to determine how to most effectively leverage the strengths of HOCC Bradley to better meet the needs of the community. As a result, the consultant recommended that HOCC Bradley be the focus of ambulatory services. More specifically, the consultant recommended that the Bradley campus develop an ambulatory services component and not duplicate the more complex and costly services provided on the New Britain campus of HOCC. *FF4* The resulting proposal before OHCA is for the establishment of an ambulatory surgery center, HHC, at HOCC Bradley to be dedicated to orthopedic surgical services, with three of the existing operating rooms at HOCC Bradley to be set aside for the exclusive use of HHC. *FF5*

The service area of HHC includes Berlin, Newington, New Britain, Plainville, Southington, Meriden, Wallingford and Cheshire. Patients within the proposed service area are currently receiving inpatient and outpatient orthopedic surgery at the following three hospital-based ASCs: HOCC New Britain; HOCC Bradley; and MidState in Meriden. There are also two additional single-specialty ASCs serving the proposed population: Hartford Hospital operates an eye surgery ASC in Newington; and Masonicare has a gastroenterology ASC in Wallingford. *FF20&21* Since the proposed outpatient orthopedic population is already being served solely by HOCC New Britain; HOCC Bradley; and MidState, there are no other providers that could potentially be impacted by this proposal. *FF28*

HOCC and MidState will jointly operate HHC with two groups of regional orthopedic physicians, Orthopedic Associates of Hartford, P.C. and Comprehensive Orthopaedic and Musculoskeletal Care, LLC. The Physicians and Groups have committed to becoming members of and utilizing HHC. All of the surgeons will be on the medical staff of either HOCC or MidState. HOCC and MidState will collectively own a 51% controlling membership interest in HHC. *FF6-8* This will provide a valuable benefit to the proposed population since HHC will operate pursuant to the same Financial Assistance Policy as HOCC and MidState, which provides financial assistance for eligible persons that are uninsured, underinsured or medically indigent. *FF9* The ability to provide financial assistance to those self-pay patients who may not have otherwise had the financial means

to receive orthopedic surgery services demonstrates that the Applicant will improve access to services for the proposed population.

HHC's focus on orthopedic surgery will allow it to more easily facilitate the implementation of evidence-based surgical practices to accommodate the projected growth in orthopedic surgery. HHC will utilize specialized care protocols specific to orthopedics and consistent with best clinical practices to ensure high quality standards are met and sustained. HHC will meet and maintain all national standards required to achieve accreditation by the Accreditation Association for Ambulatory Health Care Centers. *FF11-13* It is clear that the Applicant has demonstrated clear public need and an improvement in the quality of care for its proposed population given the high standards that will be met and maintained at HHC.

As an added benefit, HHC will be considered a freestanding ASC for reimbursement purposes, thereby resulting in lower payment rates for government payers, commercial payers and patients. According to the Ambulatory Surgery Center Association, the reduction in Medicare spending has been approximately $2.6 billion a year as a result of shifting surgical cases from a hospital-based setting to an ambulatory setting. Health care reform has made it more important for hospitals and physicians to collaborate in developing new health-care delivery models that offer higher quality care at a lower cost. By offering a lower cost health-care delivery model for the provision of outpatient orthopedic surgical services, HHC will be more responsive to the demands of payers and patients. Medicare pays ASCs less than what is paid to hospitals for the same procedures and patients typically pay less co-insurance for procedures performed in an ASC than in a hospital-based outpatient surgery department. Since this proposal will result in the shifting of outpatient orthopedic surgery volume from HOCC New Britain and MidState to HHC, the result will be patients receiving high quality orthopedic surgery at a reduced charge when compared to a hospital-based facility. *FF15-19* Therefore, the Applicant has demonstrated that its proposal will not have an impact on the Medicaid population and, in fact, will provide a lower-cost option for all of its proposed population and payer mix. Cost effectiveness further supports clear public need for the proposal.

The Applicant's proposal has a capital expenditure of $5.3 million with projected incremental gains from operations of $4.8 million, $5.0 million and $5.2 million in FY 2014 through FY 2016, respectively. *FF30-33* As a result, the Applicant has demonstrated that the proposal is financially feasible.

The Applicant has sufficiently demonstrated that this proposal meets a clear public need for high quality care at a reduced cost, which is in keeping with the overall goals of the Statewide Health Care Facilities and Services Plan. As an added benefit, the Applicant has demonstrated that it can accomplish these goals in a financially feasible manner without impacting other providers.

In the interest of full disclosure by HHC to its patients, OHCA requires that HHC meet certain conditions as described in the Order attached hereto and incorporated into this decision.

ORDER

NOW, THEREFORE, the Department of Public Health, Office of Health Care Access ("OHCA"), and HHC Southington Surgery Center, LLC ("HHC") hereby stipulate and agree to the terms of settlement with respect to the establishment of an ambulatory surgical center dedicated to orthopedic outpatient surgical services to be located at the Bradley Memorial campus of The Hospital of Central Connecticut, 81 Meriden Avenue, Southington, as follows:

1. In accordance with 42 CFR 416.50(b), HHC must disclose in accordance with Part 420 of this subchapter, and provide a list of physicians who have a financial or ownership interest in the HHC facility to the patient. Disclosure of such information must be in writing.

2. HHC shall provide OHCA with a copy of the disclosure referenced in Paragraph 1 within ten (10) business days of execution of this Agreed Settlement by HHC. The disclosure shall be reviewed and approved by OHCA prior to the start of operations at HHC.

3. This Agreed Settlement is an order of OHCA with all the rights and obligations attendant thereto, and OHCA may enforce this Agreed Settlement under the provisions of Conn. Gen. Stat. §§ 19a-642 and 19a-653 with all fees and costs of such enforcement being the responsibility of HHC.

3. OHCA and HHC agree that this Agreed Settlement represents a final agreement between OHCA and HHC with respect to this Application. The signing of this Agreed Settlement resolves all objections, claims, and disputes that may have been raised by HHC with regard to Docket Number: 13-31852-CON.

4. This Agreed Settlement shall be binding upon HHC and its successors and assigns.

Signed by Lucille Janatka, HHC Sr. Vice President & Central Region President
(Print name) (Title)

4/16/14
Date

Duly Authorized Agent for
HHC Southington Surgery Center, LLC

The above Agreed Settlement is hereby accepted and so ordered by the Department of Public Health Office of Health Care Access on April 17, 2014.

4/17/14
Date:

Lisa A. Davis, MBA, BSN, RN
Deputy Commissioner

Huber, Jack

From: Huber, Jack
Sent: Tuesday, September 02, 2014 1:49 PM
To: Durdy, Barbara (Barbara.Durdy@hhchealth.org)
Cc: Roberts, Karen
Subject: RE: Notice of CON Expiration Date for the Decision Rendered under Docket Number: 13-31852-CON
Attachments: A.S. Order 13-31852-CON.pdf

Dear Ms. Durdy:

On April 17, 2014, in an agreed settlement under Docket Number: 13-31852-CON, the Office of Health Care Access authorized a Certificate of Need ("CON") to HHC Southington Surgery Center for the establishment of an orthopedic ambulatory surgery center at the Hospital of Central Connecticut's Bradley Memorial campus in Southington. Pursuant to Section 19a-639b of the Connecticut General Statutes ("C.G.S."), *"a certificate of need shall be valid for two years from the date of issuance by this office."*

With this letter, please be advised that pursuant to Section 19a-639b, C.G.S., the current CON authorization issued under Docket Number: 13-31852-CON will expire on April 17, 2016. Please contact me at (860) 418-7069 or Karen Roberts, Principal Health Analyst at (860) 418-7041, if you have any questions regarding this notification.

Additionally, please provide OHCA with a progress update as to how the HHC Southington Surgery Center project is satisfying the agreed-upon stipulations one and two of the agreed settlement under DN: 13-31852-CON. A copy of the order is attached for your convenience. Thank you for your assistance in this matter.

Sincerely,

Jack A. Huber

Jack A. Huber
Health Care Analyst
Department of Public Health
Office of Health Care Access
410 Capitol Avenue
P.O. Box 340308 MS #13HCA,
Hartford, CT 06134
Office: (860) 418-7069
Fax: (860) 418-7053
Email: Jack.Huber@ct.gov

ORDER

NOW, THEREFORE, the Department of Public Health, Office of Health Care Access ("OHCA"), and HHC Southington Surgery Center, LLC ("HHC") hereby stipulate and agree to the terms of settlement with respect to the establishment of an ambulatory surgical center dedicated to orthopedic outpatient surgical services to be located at the Bradley Memorial campus of The Hospital of Central Connecticut, 81 Meriden Avenue, Southington, as follows:

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4. This Agreed Settlement shall be binding upon HHC and its successors and assigns.

Hartford HealthCare

RECEIVED
SEP 17 2014
Office of
HEALTHCARE ACCESS

September 17, 2014

Mr. Jack Huber
Health Care Analyst
Office of Health Care Access
Division of the Department of Public Health
410 Capital Avenue, MS#13HCA
Hartford, CT 06106

Re: Certificate of Need Application: Establishment of an Ambulatory Surgery Center Located on the Hospital of Central Connecticut's Bradley Memorial Campus
Docket Number: 13-31852-CON

Dear Mr. Huber:

Enclosed please find Hartford HealthCare's response to the Office of Health Care Access Compliance letter dated September 2, 2014.

As stated in Stipulation 1 of the Agreed Settlement Order, in accordance with 42 CRF 416.50(b), Hartford HealthCare must disclose in accordance with Part 420 of this subchapter, and provide a list of physicians who have a financial or ownership interest in the HHC Southington Ambulatory Surgery Center to the patient.

Stipulation 2 of the Agreed Settlement Order requires Hartford HealthCare to provide the Office of Health Care Access with a copy of the disclosure statement for their review and approval prior to the start of operations at the HHC Southington Ambulatory Surgical Center.

As requested, I have included a copy of the Patient Information Brochure which includes the disclosure statement related to the financial interests of the physician owners / investors of the Hartford HealthCare Southington Ambulatory Surgery Center.

Please do not hesitate to contact me at 860-972-4231 if you have any questions.

Sincerely,

Barbara A. Durdy
Director, Strategic Planning
Hartford HealthCare

Enclosures

One State Street Suite 19 Hartford, CT 06103 tel 860.263.4100 fax 860.263.4115 www.hartfordhealthcare.org

Surgery Center Patient Information

SOUTHINGTON SURGERY CENTER

81 Meriden Ave. | Suite C301 | Southington, CT 06489
P: 860.378.8228 | F: 860.426.2558

Directions to Southington Surgery Center

Located on the third floor of the Bradley Memorial campus of The Hospital of Central Connecticut

For GPS Use:
5 Oakland Rd, Southington, CT 06489

From Hartford
- Take I-84 West to Exit 32
- Right at the end of the ramp
- Travel south on route 10 approximately 3 miles; left onto route 120 (Meriden Ave.)
- Follow signs to the Emergency Department
- Left on to Oakland Drive
- Left into the Surgery Center Parking Lot

From Meriden/New Haven
- Take Route 691 West to Exit 4
- Right at ramp end
- Right at first light onto route 120 (Meriden Ave.) and drive 2.9 miles
- Follow signs to the Emergency Department
- Right on to Oakland Drive
- Left into the Surgery Center Parking Lot

From Waterbury
- Take I-84 East to Exit 30 (Marion Ave.)
- Right at ramp
- Straight to route 10
- Follow "H" signs
- Right at Meriden Ave. (Route 120)
- Follow signs to the Emergency Department
- Left on to Oakland Drive
- Left into the Surgery Center Parking Lot

Parking is free. Handicapped parking is available.

Enter through the entrance with the Southington Surgery Center/Orthopedic Surgery Center canopy and follow the Southington Surgery Center signs to the elevator. The Surgery Center is located on the third floor.

SOUTHINGTON SURGERY CENTER

81 Meriden Ave. | Suite C301 | Southington, CT 06489
P: 860.378.8228 | F: 860.426.2558

Ownership Disclosure
This facility is owned by Southington Surgery Center Holding Company 49%, The Hospital of Central Connecticut 26%, and MidState Medical Center 25%.

SOUTHINGTON SURGERY CENTER
81 Meriden Ave., Ste C3, Southington, CT 06489
Phone: 860-378-8228 | Fax: 860-426-2558

FACILITY CONSENT AND ACKNOWLEGEMENT

CONSENT TO TREAT:
I, the undersigned, hereby consent to and authorize all diagnostic and therapeutic treatment performed at the surgery center considered necessary or advisable in the judgment of the attending physician. Any tissue or parts removed may be preserved and examined or disposed of by the surgery center in accordance with the accustomed practice of the facility. I understand that my physician may order a blood test drawn from me for (including but not limited to) HIV (aids) and hepatitis antibodies. I consent to my blood draw only if an employee or physician has had an accidental exposure to my body fluids. I understand that I could obtain the results of these tests from my physician who can explain them. I authorize release of data necessary to process the testing and insurance claim, and I understand there will be no cost to me for this test.

I hereby consent to the presence of other person(s) for the sole purpose of observation, equipment support, and/or education. I understand that this individual(s) will not participate in the actual procedure.

I understand that if I am pregnant or if there is possibility that I may be pregnant I must inform the surgery center personnel *immediately* since this could cause harm to my child or myself.

I release the surgery center from any responsibility for loss/damage to money, jewelry, or other valuable brought into the center.

ADVANCED DIRECTIVES:
I have received a copy of the Southington Surgery Center (HHC SSC) policy regarding Advanced Directives. I understand that HHC SSC will always attempt to resuscitate a patient and transfer that patient to a hospital in the event their condition deteriorates. I understand that if I provide the center with a Living Will, Durable Power-of-Attorney, or Advanced Directive, it will be sent with me to a hospital in the event of any emergency transfer. I hereby waive any DNR advanced healthcare directive that I may have given any other person or entity, including, without limitation, any order not to resuscitate me. I fully understand the implications of this decision. I authorize HHC SSC to undertake maximum stabilization efforts and to transfer me to a hospital if such actions are necessary.

I have Advanced Directives: ☐ Yes ☐ No
I have Advanced Directives paperwork with me today to accompany me to another institution in the event of a transfer: ☐ n/a ☐ Yes ☐ No

REVIEW OF PATIENTS RIGHTS AND RESPONSIBILITIES:
I acknowledge that I have reviewed copies of the HHC SSC Advanced Directives Policy and Patient Rights and Responsibilities.

PHOTOGRAPHS/VIDEO TAPES:
I give consent for any photographing or videotaping deemed necessary by my surgeon and release the surgery center from all liability from claims of any kind for the taking and use of these photographs or tapes. I understand these photographs and/or videotapes are the property of my surgeon.

ASSIGNMENT OF BENEFITS:
I hereby assign all medical and/or surgical benefits, to include major medical benefits to which I am entitled, including Medicare, private and group insurance, or other health plan to Southington Surgery Center.

RELEASE OF INFORMATION:
A photocopy of this assignment is to be considered as valid as an original and revocable by me only in writing. I hereby authorize said assignees to release all information to secure payment. I give permission to Southington Surgery Center to: give information and instructions over the telephone or on my answering machine; for disclosure of my protected health information to any individual I allow to accompany me into the treatment area; to release information acquired in the course of my visit to my primary care physician, a consulting physician, as part of the normal process in the delivery of healthcare; I understand this release remains in effect unless revoked by me in writing.

FINANCIAL RESPONSIBILITY:
I accept ultimate financial responsibility for accounts with the surgery center, whether paid by insurance or not.

ACKNOWLEDGEMENT OF HEALTH INFORMATION PRACTICES:
In accordance to the health information portability and accountability act of 1996, I have been offered the notice for health information practice to read. I understand that if I have further questions or complaints I may contact the HHC SSC Privacy Officer at 860-378-8228. I understand that I am entitled to receive updates upon request if the HHC SSC notice of privacy practices is amended or changed in a material way. I also understand that I have the right to revoke this authorization with a written letter at any time.

RIDE INFORMATION:
I acknowledge that I have been advised by the surgery center personnel that I should not drive for twenty-four (24) hours after anesthesia. It is my responsibility to arrange for a responsible adult (age 18 or older) to drive me home and stay with me for twenty-four (24) hours following surgery.

Person driving me home: _____ Phone #: _____ ☐ Waiting at center ☐ Call to pick up patient

OWNERSHIP DISCLOSURE:
I acknowledge that the physicians listed below have financial ownership interests in Southington Surgery Center: DR. ERIK CARLSON; DR. AARON COVEY; DR. MICHAEL CUCKA; DR. JON DRISCOLL; DR. WILLIAM FLYNN; DR. MICHAEL KAPLAN; DR. LEONARD KOLSTAD; DR. MICHAEL LEGEYT; DR. RICHARD MANZO; DR. ANDREW NELSON; DR. SCOTT ORGAN; DR. BHAVESH PATEL; DR. JEFFREY PRAVDA; DR. RICHARD SCARLETT; DR. FREDERICK WATSON; DR. PAUL ZIMMERING; ORTHOPEDIC ASSOCIATES OF HARTFORD.

Patient or Guardian Signature (relation if not patient)	Print Name	Date

Southington Surgery Center Ownership

Physician Ownership Disclosure

This facility is owned by Southington Surgery Center Holding Company 49%, The Hospital of Central Connecticut 26%, and MidState Medical Center 25%.

The physicians listed below have financial or ownership interest in HHC Southington Surgery Center, LLC:

Dr. Erik Carlson

Dr. Aaron Covey

Dr. Michael Cucka

Dr. Jon Driscoll

Dr. William Flynn

Dr. Michael Kaplan

Dr. Leonard Kolstad

Dr. Michael LeGeyt

Dr. Richard Manzo

Dr. Andrew Nelson

Dr. Scott Organ

Dr. Bhavesh Patel

Dr. Jeffrey Pravda

Dr. Richard Scarlett

Dr. Frederick Watson

Dr. Paul Zimmering

Orthopedic Associates of Hartford