

Checklist

Instructions: Review each item below and check box when completed. [**Checklist *must* be submitted as the first page of the CON application.**]

- A completed CON Main Form, including an affidavit signed and notarized by the appropriate individuals. CON forms can be found at [OHCA Forms](#).
- A completed Supplemental Form specific to the proposal type (see next page to determine which Supplemental Form to include in the application).
- Attached is the CON application filing fee in the form of a certified, cashier or business check in the amount of **\$500** paid to “**Treasurer State of Connecticut.**”
- Attached is evidence demonstrating that public notice has been published for 3 consecutive days in a newspaper that covers the location of the proposal. Use the following link to help determine the appropriate publication: [Connecticut newspapers](#). **The application must be submitted no sooner than 20 days, but no later than 90 days from the last day of the newspaper notice.**

The following information **must** be included in the public notice:

- A statement that the applicant is applying for a certificate of need pursuant to section § 19a-638 of the Connecticut General Statutes;
- A description of the scope and nature of the project;
- The street address where the project is to be located; and
- The total capital expenditure for the project.

(Please fax (860-418-7053) or email (OHCA@ct.gov) a courtesy copy of the newspaper order confirmation to OHCA at the time of publication.)

- A completed Financial Worksheet specific to the application type.
- All confidential or personally identifiable information (e.g., Social Security number) has been redacted.
- Submission includes one USB flash drive containing:
 1. A scanned copy of each submission in its entirety*, including all attachments in Adobe (.pdf) format.
 2. An electronic copy of the applicant's responses in MS Word (the application) and MS Excel (the Financial Worksheet).

***All application components (e.g., Main Form, Supplemental Form, Financial Worksheet and Exhibits) should be compiled and paginated sequentially from beginning to end.**

Note: OHCA hereby waives requirement to file any paper copies.

- All submissions should be emailed to OHCA@ct.gov.

For OHCA Use Only:

Docket No.: 17-32181-CON **Check No.:** 5006893053

OHCA Verified by:  Digitally signed by Steven M. Luzzo
DN: cn=Steven M. Luzzo, o=OHCA **Date:** 7/26/17

Version 4/19/17

July 24, 2017

Received by OHCA on
7/25/2017

Ms. Kimberly Martone
Director of Operations
Department of Public Health
Office of Health Care Access
410 Capitol Avenue
MS #13HCA
Hartford, CT 06134

Re: Relocation and Consolidation of Dental Services

Dear Ms. Martone:

Enclosed please find the filing fee for Yale New Haven Hospital's recently filed CON to relocate and consolidate dental services. Please note the filing fee amount is reduced by \$10.00 due to the overpayment by Yale New Haven Hospital of \$10.00 for its 2016 SPECT-CT CON (Docket #16-32124-CON).

Please contact me with questions or concerns at (860) 912-5324 or shraddha.patel@ynhh.org.

Sincerely,



Shraddha Patel

Strategy & Regulatory Planning
2 Howe Street, 3rd Floor
New Haven, CT 06519
Phone: 203-688-2609
Fax: 203-688-5013

ynhh.org

July 24, 2017

Ms. Kimberly Martone
Director of Operations
Department of Public Health
Office of Health Care Access
410 Capitol Avenue
P.O. Box 340308
Hartford, CT 06134

Re: Relocation and Consolidation of Dental Services

Dear Ms. Martone:

Enclosed please find Yale New Haven Hospital's certificate of need application to relocate and consolidate dental services. Attached is the full application in Adobe (.pdf) format and an electronic copy of responses in MS Word (the applications) and MS Excel (the financial workbook).

Thank you for your consideration.

Sincerely,



Shraddha Patel

Enclosures

Strategy & Regulatory Planning
2 Howe Street, 3rd Floor
New Haven, CT 06519
Phone: 203-688-2609
Fax: 203-688-5013

ynhh.org

Checklist

Instructions: Review each item below and check box when completed. [**Checklist *must* be submitted as the first page of the CON application.**]

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- A completed Supplemental Form specific to the proposal type (see next page to determine which Supplemental Form to include in the application).
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The following information **must** be included in the public notice:

- A statement that the applicant is applying for a certificate of need pursuant to section § 19a-638 of the Connecticut General Statutes;
- A description of the scope and nature of the project;
- The street address where the project is to be located; and
- The total capital expenditure for the project.

(Please fax (860-418-7053) or email (OHCA@ct.gov) a courtesy copy of the newspaper order confirmation to OHCA at the time of publication.)

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- All confidential or personally identifiable information (e.g., Social Security number) has been redacted.
- Submission includes one USB flash drive containing:
 1. A scanned copy of each submission in its entirety*, including all attachments in Adobe (.pdf) format.
 2. An electronic copy of the applicant's responses in MS Word (the application) and MS Excel (the Financial Worksheet).

***All application components (e.g., Main Form, Supplemental Form, Financial Worksheet and Exhibits) should be compiled and paginated sequentially from beginning to end.**

Note: OHCA hereby waives requirement to file any paper copies.

- All submissions should be emailed to OHCA@ct.gov.

For OHCA Use Only:

Docket No.: _____ **Check No.:** _____

OHCA Verified by: _____ **Date:** _____

Version 4/19/17

Affidavit

Applicant: Yale New Haven Hospital

Project Title: Relocation and Consolidation of Outpatient Dental Services

I, Vincent Tamaro, CFO
(Name) (Position – CEO or CFO)

of Yale New Haven Health System being duly sworn, depose and state that the said facility complies with the appropriate and applicable criteria as set forth in the Sections 19a-630, 19a-637, 19a-638, 19a-639, 19a-486 and/or 4-181 of the Connecticut General Statutes.

Vincent Tamaro 7.24.17
Signature Date

Subscribed and sworn to before me on 7.24.17

Rose Arminio

Notary Public/Commissioner of Superior Court

ROSE ARMINIO
NOTARY PUBLIC
State of Connecticut
My commission expires: February 28, 2018

ROSE ARMINIO
NOTARY PUBLIC
State of Connecticut
My Commission Expires
February 28, 2018

HOLD DOCUMENT UP TO THE LIGHT TO VIEW TRUE WATERMARK

CASHIER'S CHECK

HOLD DOCUMENT UP TO THE LIGHT TO VIEW TRUE WATERMARK

JP MORGAN CHASE BANK, NA
Phoenix, AZ

NO: 5006893053

91-2/1221

07/14/2017 04:30 PM

OUR REF : TSS CLIENT SERVICE
YOUR REF: YALE-NEW HAVEN

Four hundred ninety dollars and 00/100

\$\$\$490.00

Pay To The Order Of

TREASURER STATE OF CONNECTICUT
55 ELM ST #2
HARTFORD CT 06106 US

Jeanne Rovan



Security
Features
Details on
Back

B6

CLASSIFIED

NEW HAVEN REGISTER

monster

Tuesday, May 23, 2017

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CLASSIFIED - The one-stop shopping place! Convenience, Selection, Values. Classified your complete marketplace.

Pursuant to section 33b of the Connecticut General Statutes, Yale New Haven Hospital will submit the following Certificate of Need application with the Office of Healthcare Access:

Applicant: Yale-New Haven Hospital
Address 1: 789 Howard Avenue, New Haven, CT 06519
Address 2: 330 Orchard Street, New Haven, CT 06511
Address 3: 2560 Dixwell Avenue, Hamden, CT 06514

Proposal: The applicant proposes to relocate dental services located in New Haven and Hamden to One Long Wharf, 1 Long Wharf Drive, New Haven, CT 06511.

Estimated capital expenditure: \$2.6 million.

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NewHavenRegister.com

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OFFICE SPACE FOR RENT
APPROX. 700 SQ. FT. SPACE, handicap accessibility, comes with all utilities & internet.

Tuesday, May 23, 2017

GOREN BRIDGE

WITH BOB JONES

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SAFE STOP?

East-West vulnerable, West deals

NORTH	
♠ Q 9 4	
♥ Q 8	
♦ Q J 10 7 6	
♣ K 4 3	
WEST	
♠ K J 3	
♥ 7 3	
♦ K 5	
♣ A J 8 7 6 2	
EAST	
♠ 10 8 7 2	
♥ 9 5 4 2	
♦ A 8 3 2	
♣ 5	
SOUTH	
♠ A 6 5	
♥ A K J 10 6	
♦ 9 4	
♣ Q 10 9	

The bidding: **WEST** **SOUTH** **EAST** **SOUTH**

in a heart contract, it seemed that North-South had stopped safely at the two level.

West led an inspired ace of clubs and continued with the two of clubs. The two of clubs was a "suit-preference signal" for the lower ranking of the remaining side suits. Should East be able to ruff the second club, West wanted a diamond shift. East did ruff the second club and, respecting his partner's signal, shifted to a low diamond away from his ace. West won with his king and reverted to clubs, this time leading the jack as a preference for spades. East ruffed again and shifted to the eight of spades. Declarer had nothing to do but duck this to West's king. The defense now had five tricks in

MARMADUKE



LEGAL NOTICES
 Cube # E368,
 Elzha Maher
 Cube # C85,
 Ralph Massimino Jr
 Cube # C96,
 Ashley Priscilla Miller
 Cube # F248,
 Wilcox Nicole A
 Cube # E203-E204,
 Dustin Shea

Pursuant to section 19a-638 of the Connecticut General Statutes, Yale New Haven Hospital will submit the following Certificate of Need application with the Office of Healthcare Access:
 Applicant: Yale-New Haven Hospital
 Address 1:
 789 Howard Avenue,
 New Haven, CT 06519
 Address 2:
 339 Orchard Street,
 New Haven, CT 06511
 Address 3:
 2590 Dixwell Avenue,
 Hamden, CT 06514
 Proposal: The applicant proposes to relocate dental services located in New Haven and Hamden to One Long Wharf, 1 Long Wharf Drive, New Haven, CT 06511.
 Estimated capital expenditure: \$2.6 million.

SALE
 Docket Number:
 NNH-CV-15-6060480-S
 Case Name:
 CIT Bank, K.A.
 vs.
 Catherine M. Verab, Et Al
 Property Address:
 10 Sugar Hill Road
 North Haven, CT 06473
 Property Type:
 Residential
 Date of Sale:
 Saturday,
 June 3, 2017
 at 12:00 noon
 on the premises
 Committee Name:
 Alana D'Amico, Esq.
 Committee Phone
 Number:
 203-234-2225
 See Foreclosure Sales at
www.jud.ct.gov for more
 detailed information

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SALE
 Docket No.
 NNH-CV-15-6060480-S
 Case Name:
 Webster Bank N.A.
 vs.
 Pasquale Marcarelli, Et Al
 Property Address:
 264 Litchfield Turnpike
 Bethany, CT
 Property Type:
 Residential
 Single Family Home
 Date of Sale:
 June 3, 2017 at 12:00 Noon
 on the Premises
 Deposit to Bid: \$38,000
 Committee Name:
 Richard A. Jordan, Jr. Esq.
 Committee
 Phone Number:
 (203) 397-2995
 See Foreclosure Sales at
www.jud.ct.gov for more
 detailed information

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 The Job of Your Dream
 A Plan for the Children
 A Second Car for Commuting
 A Top Sale "Barned Treasure"
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 Auctioneer
 New Haven, CT
 SIDE AND OUL, Lecturer in
 SAT Contact
 to building a workforce of
 diverse individuals. Minn-
 mississippi@connecticut.com

LEGAL NOTICES

Public Notice
 Invitations for Quotes - Quotes are invited by the bidding General Contractor, BT Marine Construction Company, LLC, for SH-Contractor work on the Fort Nathan Hale Pier Reconstruction Project in New Haven Ct. Work include site excavation & grading, cast-in-place concrete, water line installation and administrative work. For more information including plans & specifications, contact Cesar Duarte at 617-557-9199 x143 or CesarD@Reinauer.com. An Affirmative Action/Equal Opportunity Employer, Minority/Women's Business Enterprises are encouraged to apply.

Pursuant to section 19a-53B of the Connecticut General Statutes, Yale New Haven Hospital will submit the following Certificate of Need application with the Office of Healthcare Access:

Applicant: Yale New Haven Hospital
 Address 1: 799 Howard Avenue, New Haven, CT 06519
 Address 2: 330 Orchard Street, New Haven, CT 06511
 Address 3: 2290 Bluwell Avenue, Hamden, CT 06514

Proposal: The applicant proposes to relocate dental services located in New Haven and Hamden to One Long Wharf, 1 Long Wharf Drive, New Haven, CT 06611.
 Estimated capital expenditure: \$2.6 million.

LEGAL NOTICES

WEST HAVEN, CT LEGAL NOTICE
 The West Haven Planning and Zoning Commission made the following decisions at a Regular Meeting on Tuesday, May 23, 2011 in the Harriet North Room, 2nd Floor, City Hall, 335 Main Street, West Haven, CT at 7:00 P.M.

L. 166 Richards Street, 179 Richards Street and 70 Hall Street -- Application for approval of a Special Permit, a Site Plan Review and an Erosion and Sediment Control Plan to convert the former Thompson School into a 50-unit residential development with site improvements, as allowed under Section 38.2.7 of the Zoning Regulations, in a PF (Public Facilities) District. Applicant: West Haven Housing Authority. Owner: City of West Haven. File # SP 17-039 and SR 17-040 APPROVED WITH CONDITIONS.

Kathleen Hendricks, Chairman

PROBATE NOTICES

NOTICE TO CREDITORS ESTATE OF:
 Edwin Munson

The Hon. Beverly K. Streif-Ketelas, Judge of the Court of Probate, District of Milford-Orange Probate Court, by decree dated April 4, 2011, ordered that all claims must be presented to the fiduciary at the address below. Failure to promptly present any such claim may result in the loss of rights to recover on such claim.

BARGAINS!

BLACK METAL queen bed frame, head and foot board \$109; 203-288-8983
BRAND NEW UGG High Heel Boots, tan, suede \$79; 203-751-4148
BRASS BAR foot rail 78" long with endcaps, 3 legs \$60; 203-314-5451

CHERRY DINING room table with 4 chairs, extends 62"x96" \$59; 203-284-2053

CRAFTSMAN 1/2" drill Model 316195181 \$99; 203-468-2234

CRAFTSMAN 3/8" drill various speed 31510042 reversible \$45; 203-468-2234

DINING ROOM Hutch, matching table \$28; 203-675-1539

EXERCISE BAR with attached mat, like new, barely used \$99; 203-999-0186

FILE CABINET: steel, 4 drawers, 27Hx15Wx24D, \$25 or best offer, good for storage. 203-468-1181

FINE ALUMINUM nails 1 1/2" \$2.00; 203-468-2234

FRESH SAMBER 120v, 60hz, 115 watts, 10,000 rpm \$30; 203-468-2234

POE THREAD Steel Phillips head, Gal. Hillman Item#40996(1lb) \$3.00; 203-468-2234

FIREPLACE SCREEN new, never used \$10; 203-735-3282

FIREPLACE SCREEN set \$29.00 (203) 407-6433

FLOMASTER, new, 2-stage, 230 volt Spa pump, series FWHP, \$88.00, 203-481-5265

GO-CART ENGINE with gas tank etc. \$40; 203-467-6433

HOMELITE SNOWBLOWER 20 inch, 5 horsepower \$40; 203-675-1539

INSULATION FIBERGLASS R-19 5 batts 6 1/2"x15'x31" Kraft faced \$19; 203-438-7746

BARGAINS!

MR. PEANUT 10" octagon store counter vending jar \$40; 203-314-5451

NEW SEALED Pool Spa replacement filter and mineral sanitizer, \$40.00, 203-481-5265

PIER ONE 5 drawer wicker chest 48x21 metal trim \$109; 203-481-0288

PINE WHITE small decorative desk \$39; 203-751-4148

PORTABLE BASKETBALL system, adjustable, free standing \$95; 203-799-3282

PORTABLE SELF contained chemical toilet, boating or camping \$40; 203-314-5451

RANGE HOOD, good condition \$75; 203-314-5451

RIDER MOWER bumper kit, new, fits various 15" wide frames \$20; 203-265-6681

SANIT CROCK graphite surf casting rod 10'5" excellent condition \$80; 203-915-3274

SEASHELL DECORATED mirror, like new, very pretty \$75; 203-999-0186

SELF DRILL drywall screws 6x1 1/4" phillips head, grip rite (1lb) \$3.00; 203-468-2234

SUNTANA TANNING bed 110 volts, plugs into any outlet \$99; 203-795-5352

SWIVEL ROCKER with footstool, clean, very good condition \$90; 203-674-8515

THOMPSON WATERSEAL clear 5 gallons \$30; 203-430-7746

TINTED T-POPS for 1962 to 1991 Firebird Camaro \$50; 203-467-6433

TORN BIG Rod 7ton hydraulic jack Item#T90403 \$12.98; 203-468-2234

TREK MEN'S bicycle-uber model- needs some work \$40; 283-888-9375

Trundle Bed, good condition, \$10 pickup. \$40 delivery

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FARM FRESH TOP SOIL & FILL
 BEST QUALITY! REASONABLE DELIVERY RATES CALL 203-468-7923

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Snyder Cape Cod Chip Route for sale, Arden, Derby, Shelton, 8 stops, 4 1/2 days per week, gross \$1900/wk, \$40,000 down, company financing, \$225,160 total, truck included. (203) 719-1188

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State of Connecticut Department of Public Health Office of Health Care Access

Certificate of Need Application Main Form *Required for all CON applications*

Contents:

- OHCA Waiver
- Checklist
- List of Supplemental Forms
- Proposal Information
- Affidavit
- Executive Summary
- Project Description
- Public Need and Access to Health Care
- Financial Information
- Utilization

Supplemental Forms

In addition to completing this **Main Form** and **Financial Worksheet (A, B or C)**, the applicant(s) must complete the appropriate **Supplemental Form** listed below. Check the box of the **Supplemental Form** to be submitted with the application, below. If unsure which form to select, please call the OHCA main number (860-418-7001) for assistance. All CON forms can be found on OHCA's website at [OHCA Forms](#).

Check form included	Conn. Gen. Stat. Section 19a-638(a)	Supplemental Form
<input type="checkbox"/>	(1)	Establishment of a new health care facility (mental health and/or substance abuse) - see note below*
<input type="checkbox"/>	(2)	Transfer of ownership of a health care facility (excludes transfer of ownership/sale of hospital – see “Other” below)
<input type="checkbox"/>	(3)	Transfer of ownership of a group practice
<input type="checkbox"/>	(4)	Establishment of a freestanding emergency department
<input checked="" type="checkbox"/>	(5) (7) (8) (15)	Termination of a service: <ul style="list-style-type: none"> - inpatient or outpatient services offered by a hospital - surgical services by an outpatient surgical facility** - emergency department by a short-term acute care general hospital - inpatient or outpatient services offered by a hospital or other facility or institution operated by the state that provides services that are eligible for reimbursement under Title XVIII or XIX of the federal Social Security Act, 42 USC 301, as amended
<input type="checkbox"/>	(6)	Establishment of an outpatient surgical facility
<input type="checkbox"/>	(9)	Establishment of cardiac services
<input type="checkbox"/>	(10) (11)	Acquisition of equipment: <ul style="list-style-type: none"> - acquisition of computed tomography scanners, magnetic resonance imaging scanners, positron emission tomography scanners or positron emission tomography-computed tomography scanners - acquisition of nonhospital based linear accelerators
<input type="checkbox"/>	(12)	Increase in licensed bed capacity of a health care facility
<input type="checkbox"/>	(13)	Acquisition of equipment utilizing [new] technology that has not previously been used in the state
<input type="checkbox"/>	(14)	Increase of two or more operating rooms within any three-year period by an outpatient surgical facility or short-term acute care general hospital
<input type="checkbox"/>	Other	Transfer of Ownership / Sale of Hospital

*This supplemental form should be included with all applications requesting authorization for the establishment of a **mental health and/or substance abuse treatment facility**. For the establishment of other “health care facilities,” as defined by Conn. Gen. Stat § 19a-630(11) - hospitals licensed by DPH under chapter 386v, specialty hospitals, or a central service facility - complete *the Main Form* only.

**If termination is due to insufficient patient volume, or it is a subspecialty being terminated, a CON is not required.

Proposal Information

Select the appropriate proposal type from the dropdown below. If unsure which item to select, please call the OHCA main number (860-418-7001) for assistance.

Proposal Type (select from dropdown)	Relocation and Consolidation of Outpatient Dental Services
Brief Description	Yale New Haven Hospital (YNHH) proposes to relocate outpatient adult dental services available at 789 Howard Avenue, New Haven, and 2560 Dixwell Avenue, Hamden and oral surgery services available at 330 Orchard Street, New Haven to 1 Long Wharf, New Haven which currently houses outpatient pediatric dental services.
Proposal Addresses	789 Howard Avenue, New Haven, CT 06519 330 Orchard Street, New Haven, CT 06511 2560 Dixwell Avenue, Hamden, CT 06514 1 Long Wharf, New Haven, CT 06511
Capital Expenditure	\$2,788,152

Applicant(s) Information

	Applicant One	Applicant Two* (if applicable)
Applicant: Name & Address	Yale New Haven Hospital 789 Howard Avenue New Haven, CT 06519	
Parent Corporation: Name & Address (if applicable)	Yale New Haven Health Services Corporation	
Contact Person: Name, Title, Address	Diane L. Smith Regulatory Planner Strategy & Regulatory 2 Howe Street, 3rd Floor New Haven, CT 06519	
Company	Yale New Haven Hospital	
Email Address	Diane.Smith2@ynhh.org	
Phone	203-688-9987	
Fax Number	203-688-5013	
Tax Status (check one box)	<input type="checkbox"/> For Profit <input checked="" type="checkbox"/> Not-for-Profit	<input type="checkbox"/> For Profit <input type="checkbox"/> Not-for-Profit

**For more than two Applicants, attach a separate sheet with the above information*

FOR OFFICE USE ONLY	
Docket #:	Staff Assigned :
Date Received:	

Executive Summary

The purpose of the Executive Summary is to give the reviewer a conceptual understanding of the proposal. In the space below, provide a succinct overview of your proposal (this may be done in bullet format). Summarize the key elements of the proposed project. Details should be provided in the appropriate sections of the application that follow.

Yale New Haven Hospital (YNHH) currently offers dental treatment and oral surgery for adult and pediatric patients in four dental clinics in New Haven and Hamden. YNHH proposes to relocate its adult and surgical dental locations to one centralized location in New Haven, which currently houses pediatric dental services. The centralized location will be renovated to accommodate all patients. There is no termination of dental services being proposed. This proposal represents a consolidation of dental services for adults and children within New Haven and does not result in any eliminate or reduction of services provided. The current and target patient population is the same.

This proposal will benefit patients in several ways. Access to care will be improved as the proposed location is an ambulatory care building, located on a bus route with free parking and easy access to major highways. Quality of care will be enhanced as the proposal brings together medical and surgical dental disciplines and promotes collaboration among providers and coordination of care. The proposed consolidated site increases convenience for patients as families can coordinate visits on the same day and seek all services at one location versus several locations.

The project is cost-effective as it reduces redundancies and unnecessary ancillary costs. The proposal is also financially feasible.

Pursuant to Section 19a-639 of the Connecticut General Statutes, the Office of Health Care Access is required to consider specific criteria and principles when reviewing a Certificate of Need application. Text marked with a “§” indicates it is actual text from the statute and may be helpful when responding to prompts.

Project Description

1. Provide a detailed narrative describing the proposal. Explain how the Applicant(s) determined the necessity for the proposal and discuss the benefits to the public and for each Applicant, separately. Include all key elements, including the parties involved, what the proposal will entail, the equipment/service location(s), the geographic area the proposal will serve, the implementation timeline and why the proposal is needed in the community.

Yale New Haven Hospital (YNHH) is a 1,541-bed acute care destination hospital that provides a range of health services from primary to complex care to residents of Connecticut and beyond. YNHH is the primary teaching hospital for Yale University’s School of Medicine and Nursing. It has two campuses in New Haven, CT and multiple outpatient locations throughout the region and state. YNHH includes the Yale New Haven Children’s Hospital, the Yale New Haven Psychiatric Hospital, and the Smilow Cancer Hospital. YNHH regularly ranks among the best hospitals in the United States and is accredited by The Joint Commission.

YNHH offers comprehensive dental treatment and oral surgery for adult and pediatric patients. YNHH’s outpatient dental health care services are dental resident-driven and supported by hospital faculty who are highly committed to teaching and preparing tomorrow’s dentists. The dental services treat primarily Medicaid, self-pay, and indigent persons. YNHH currently offers outpatient dental services at the following locations, all within an 8-mile radius:

- **One Long Wharf, 1 Long Wharf Drive, New Haven, CT**
Pediatric dental services, oral health exams, consultations, and diagnostics
- **YNHH Main Campus, Dana Building, 789 Howard Avenue, New Haven, CT**
Adult dental services, oral health exams, consultations, and diagnostics
- **YNHH St. Raphael Campus, 330 Orchard Street, New Haven, CT**
Oral surgery services, restorative and procedural dental care
- **Hamden Professional Building, 2560 Dixwell Avenue, Hamden, CT**
Adult dental services, oral health exams, consultations, and diagnostics

YNHH proposes to consolidate these services to one renovated and expanded space within the One Long Wharf location in New Haven. The same services currently offered at each site will continue to be offered at one central location, which will add exam rooms to accommodate all patients. The table below depicts the current and future states:

CURRENT STATE (and distance from One Long Wharf)	FUTURE STATE
One Long Wharf (0 miles)	One Long Wharf
YNHH Main Campus (1.8 miles)	
YNHH St. Raphael Campus (2.6 miles)	
Hamden Professional Building (8.2 miles)	

YNHH’s ambulatory services guiding principles are to provide patients with easy access to quality health care in the most efficient and cost-effective manner possible. This proposal aligns with these principles by benefiting patients and families in the following ways:

Efficiency of Scheduling Appointments and Patient Convenience

The proposal will enhance the efficiency of scheduling appointments and will increase convenience for patients. In the current state, patients and families must seek care at multiple sites. Families with adults and children cannot coordinate visits at the same location and day, so additional trips are required. In addition, adult or pediatric patients requiring a surgical consult cannot receive this care in the same visit as their regular dental appointment. A new patient surgical visit needs to be scheduled on a separate date creating multiple trips for patients. The proposal would eliminate these onerous steps for patients by offering all dental services in one convenient location. At the proposed One Long Wharf location, all family members can receive their care. Visits can be coordinated and scheduled in such a way that multiple visits to various locations are all but eliminated, and surgical consults can be completed on the same day as a patient’s regular appointment.

Better Care Coordination

The proposal will co-locate dental medical and surgical providers to drive enhanced coordination of care and the best clinical care plan for patients. Coordination of care will be improved as same day surgical consults will be available for both the adult and pediatric patient if required. Medical and surgical providers can interact, real-time, often with the patient’s involvement. Coordinated care has been demonstrated to improve quality of care as patients are given a single, agreed upon care plan, and adherence is more likely when provider feedback is not contradictory or confusing, and when the patient is involved in the planning process.

Enhanced Accessibility

The proposal will increase accessibility for patients to YNHH dental services. The One Long Wharf location is easier to access than any of the other current locations. The location is on a bus route, which provides greater access for patients who use public transportation. It also has free parking. None of the other dental locations have both of these attributes. The One Long Wharf location is also minutes from major highways including I-95 and I-91, making navigation to the site easier from areas more distant from New Haven.

In addition to being easier to navigate to, the One Long Wharf location is also much easier to navigate within, particularly when compared to the other sites in New Haven. It is an ambulatory care building with ample parking, easy wayfinding, and short distances from the entrance to the care delivery suites. The other New Haven

locations are within YNHH hospitals and navigation to and from the dental locations can be confusing and take a considerable amount of time.

Access to State-of-the-Art Facilities

The One Long Wharf facility is relatively new and in excellent condition. The patient experience will be improve dramatically with the proposal, as the other sites, particularly in New Haven, are not updated. Patients prefer modern, attractive, and functional spaces. The One Long Wharf location has each of these attributes.

As this is a relocation and consolidation of services versus a termination, there are no anticipated changes to the patient population or payer mix with this proposal. A detailed review of the service areas for all four existing dental locations shows a significant overlap in service area towns as depicted in Table A below.

Table A: Service Area Towns for each Existing Dental Location

Service Area Town	One Long Wharf	YNHH Main Campus	YNHH St. Raphael Campus	Hamden Professional Building
	Pediatric Svc.	Adult Svc.	Oral Surgery	Adult Svc.
Ansonia			X	
Branford		X	X	X
Bridgeport		X	X	
Cheshire				X
Derby			X	
East Haven	X	X	X	X
Guilford		X		
Hamden	X	X	X	X
Milford		X	X	X
New Haven	X	X	X	X
North Haven		X		X
Shelton		X		
Stratford		X	X	
Trumbull			X	
Wallingford			X	
West Haven	X	X	X	X
Distance from One Long Wharf	0 miles	1.8 miles	2.6 miles	8.2 miles

Note: service area towns represents 75% of volume origin, adjusted to ensure contiguous towns.

Each location serves roughly the same population. After consolidating services to the One Long Wharf location, the patient population will remain unchanged. Patients will have increased access to dental services. All patients will have more convenient, timely, and better coordinated, high quality care.

2. Provide the history and timeline of the proposal (i.e., When did discussions begin internally or between Applicant(s)? What have the Applicant(s) accomplished so far?).

Response:

YNHH began internal discussions regarding consolidation of dental services in 2016. YNHH filed a Determination Request with OHCA on May 5, 2017 to consolidate services within New Haven, CT. On May 9, 2017, OHCA responded, informing YNHH that pursuant to C.G.S § 19a-638(a) (5), a CON is required. A copy of the Determination Report from OHCA is attached as Exhibit A. This Application responds to OHCA's determination and also includes a proposal to relocate the Hamden location to New Haven as well.

3. Provide the following information:

- a. utilizing [OHCA Table 1](#), list all services to be added, terminated or modified, their physical location (street address, town and zip code), the population to be served and the existing/proposed days/hours of operation;

Response:

Please see OHCA Table 1.

- b. identify in [OHCA Table 2](#) the service area towns (i.e., use only [official town names](#)) and explain the reason for their inclusion (e.g., provider availability, increased/decreased patient demand for service, market share);

Response:

Please see OHCA Table 2.

4. List the health care facility license(s) that will be needed to implement the proposal;

Response:

Not applicable. This CON application will not require additional health care facility license(s). However, upon approval and implementation of the project, YNHH will seek to modify its existing hospital license and remove the Hamden dental location.

5. Submit the following information as attachments to the application:

- a. a copy of all State of Connecticut, Department of Public Health license(s) currently held by the Applicant(s);

Response:

Please see Exhibit B for a copy of the YNHH license.

- b. a list of all key professional, administrative, clinical and direct service personnel related to the proposal and attach a copy of their Curriculum Vitae;

Response:

Please see Exhibit C for copies of the Curriculum Vitae for personnel related to the proposal including:

- Cynthia Sparer, Senior Vice President, Operations, YNHH and Executive Director, Yale-New Haven Children's Hospital
 - Carla A. Carusone, RN, Director of Specialty Programs, Surgical Services, YNHH
 - Christel. M. Haberland, DDS, MS, Program Director, Pediatric Dental
 - Michael P. Johnson, DMS, Program Director, Oral and Maxofacial Surgery
 - Frank J. Romano, DMD, Program Director, Adult Dental
 - Derek M. Steinbacher, DMD, MD, Chief of Dental Services, YNHH
- c. copies of any scholarly 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;

Response:

Not applicable.

- d. letters of support for the proposal;

Response:

Please see Exhibit D for a letter of support for this proposal.

- e. the protocols or 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 the protocols or guidelines.

Response:

YNHH's dental services follow the standards and guidelines set by the American Dental Association and has full accreditation from the Commission on Dental Accreditation (CODA). These standards will continue to be followed with this proposal.

- f. copies of agreements (e.g., memorandum of understanding, transfer agreement, operating agreement) related to the proposal. If a final signed version is not available, provide a draft with an estimated date by which the final agreement will be available.

Response:

Not applicable.

Public Need and Access to Care

§ “Whether the proposed project is consistent with any applicable policies and standards adopted in regulations by the Department of Public Health;” (Conn.Gen.Stat. § 19a-639(a)(1))

6. Describe how the proposed project is consistent with any applicable policies and standards in regulations adopted by the Connecticut Department of Public Health.

Response:

This proposal is consistent with the Connecticut Department of Public Health policies and standards as it will enhance access and quality of health care for patients, and is financially feasibility and cost-effective.

§ “The relationship of the proposed project to the statewide health care facilities and services plan;” (Conn.Gen.Stat. § 19a-639(a)(2))

7. Describe how the proposed project aligns with the Connecticut Department of Public Health Statewide Health Care Facilities and Services Plan, available on [OHCA's website](#).

Response:

This project aligns with the CT DPH’s 2012 Statewide Health Care Facilities and Services Plan and 2014 Supplement by ensuring that cost-effective and efficient outpatient dental services are available to patients regardless of their ability to pay. In the 2012 Statewide Health Care Facilities and Services Plan, the DPH Office of Oral Health is highlighted and its goal to promote population-based approaches to improving the oral health of Connecticut’s residents. YNHH’s proposed project aligns with this goal as different dental disciplines will be brought together to treat a wide array of dental issues for patients in the most comprehensive manner possible.

§ “Whether there is a clear public need for the health care facility or services proposed by the applicant;” (Conn.Gen.Stat. § 19a-639(a)(3))

8. With respect to the proposal, provide evidence and documentation to support clear public need:
 - a. identify the target patient population to be served;

Response:

The target population to be served includes those patients requiring adult and pediatric dental care, and patients requiring oral surgery care. Please see OHCA Table 2 for a list of service area towns. The target patient population will be the same as the current patient population outlined in the service area analysis.

- b. discuss if and how the target patient population is currently being served;

Response:

The target population is currently being served by YNHH's existing dental services offered in four locations in New Haven and Hamden. This proposal consolidates four locations to one and does not change the population served.

- c. document the need for the equipment and/or service in the community;

Response:

Not applicable.

- d. explain why the location of the facility or service was chosen;

Response:

The One Long Wharf location was chosen as the centralized location to provide dental services because it offers patients the best access and convenience. As noted previously, the One Long Wharf location is located on a bus route, has free parking, and is minutes away from major highways. In addition, the One Long Wharf location was the only existing dental location with space available to house this project. Both the YNHH Main Campus and YNHH St. Raphael locations are space constrained as they are within hospitals and have very limited room for expansion. Plus both facilities are dated. The Hamden location was not ideal due to its size and volume.

- e. provide incidence, prevalence or other demographic data that demonstrates community need;

Response:

Not applicable.

- f. discuss how low income persons, racial and ethnic minorities, disabled persons and other underserved groups will benefit from this proposal;

Response:

The underserved patient population including low income persons, racial and ethnic minorities and disabled persons will benefit from this proposal by having one central location to access the range of dental services. Families will be able to access all services, and patients will benefit from same-day surgical consults as needed, reducing the need for return visits and additional trips. The renovated site is also located on a bus route for patients who rely on public transportation, and has free parking.

- g. list any changes to the clinical services offered by the Applicant(s) and explain why the change was necessary;

Response:

There are no changes to any of the outpatient dental services presently offered.

- h. explain how access to care will be affected; and

Response:

Access to comprehensive dental services will increase as a result of the relocated and consolidated services. As stated previously, the proposal enables patients and families to access services in one centralized location allowing for coordinated visits between parents and children. In addition, for those requiring surgical consults, these services are also available to patients the same day as their regular appointment reducing the need for multiple trips and visits to other sites. Additionally, by consolidating and relocating services on a bus route; patients who rely on public transportation will have better access. The proposed location also has free parking and is located close to major highways.

- i. discuss any alternative proposals that were considered.

Response:

Not applicable.

§ “Whether the applicant has satisfactorily demonstrated how the proposal will improve quality, accessibility and cost effectiveness of health care delivery in the region, including, but not limited to, (A) provision of or any change in the access to services for Medicaid recipients and indigent persons; (Conn.Gen.Stat. § 19a-639(a)(5))

9. Describe how the proposal will:

- a. improve the quality of health care in the region;

As outlined in CT DPH’s 2012 Statewide Health Care Facilities and Services Plan, there is a strong correlation between oral health and general health. According to the Plan, poor oral health and infections are tied to diabetes, osteoporosis, heart and lung conditions, and select adverse pregnancy outcomes. Also, “oral diseases are progressive and cumulative, and can affect economic productivity. Oral health disparities exist across population groups at all ages, including dental caries (tooth decay), periodontal or gingival diseases, oral and pharyngeal cancer, and conditions resulting from the side effects of over-the-counter drugs.”

YNHH’s dental clinics provide much-needed services to the very vulnerable Medicaid and indigent population. Poor oral health can have a profound impact on a person’s overall wellbeing. Dental services are also an essential resource for oncology and transplant patients. YNHH’s proposal seeks to continue YNNH’s strong efforts in maintaining good oral health for its patients, and in fact improves quality of care by co-locating services and enhancing accessibility for patients and families. Services will be co-located enabling coordination and collaboration among providers to ensure the best clinical care plan for patients. With advanced technology at the proposed site, YNHH combines the latest high tech equipment including specialty x-rays (panorex and cone-beam), with an ergonomic, efficient layout. This unique environment enhances YNHH’s ability to offer the highest quality of comprehensive oral hygiene for patients of all ages.

- b. improve accessibility of health care in the region; and

The proposed One Long Wharf location will improve accessibility to dental services in the region. The One Long Wharf location will be more convenient for patients, as pediatric, adult, and surgical services will be available at one central location. Patients and families will be able to coordinate scheduling and eliminate the need to travel to multiple sites for care. In addition, the One Long Wharf location is located on a bus route, has free parking, and is close to major highways. No other existing YNHH dental location has these attributes. Access to dental care will improve for all current patients that are also the target population under the proposal.

- c. improve the cost effectiveness of health care delivery in the region.

This proposal will improve the cost-effectiveness of health care delivery for two reasons. First, it consolidates dental services at one central location, and reduces inefficiencies related to staffing, redundant supplies and equipment, multiple leases, and patient’s travel time between multiple sites.

Secondarily, the proposal also seeks to close the Hamden location, which is historically under-utilized. When evaluating the dental locations, volume, and utilization, the Hamden site in particular was noted as lower volume with only a 38% chair utilization rate with 16 visits per day or 2.3 per hour. With the majority of patients originating from the town of Hamden, which is adjacent to New Haven, and with the Hamden site also having a high source of volume from New Haven and adjacent coastal towns, it is anticipated that there will be minimal impact to patient access with a Hamden site closure. The project also would eliminate a lease payment at the YNHH Hamden location.

10. How will the Applicant(s) ensure that future health care services provided will adhere to the National Standards on culturally and Linguistically Appropriate Services (CLAS) to advance health equity, improve quality and help eliminate health care disparities in the projected service area? (More details on CLAS standards can be found at <http://minorityhealth.hhs.gov/>).

Response:

YNHH is committed to providing patient care services that adhere to the National CLAS standards. YNHH offers comprehensive language interpretation services to all patients who require it. Yale New Haven Health employs a Chief Diversity Officer who is charged with ensuring care is delivered in a culturally competent manner. YNHH trains and conducts regular diversity and inclusion training for all of its staff (including new employee orientation).

11. How will this proposal help improve the coordination of patient care (explain in detail regardless of whether your answer is in the negative or affirmative)?

Response:

The proposal will bring together adult, pediatric, and oral surgical services. Coordination of care will be improved as same day surgical consults will be available for both the adult and pediatric patient if required. By co-locating providers, collaboration is enhanced and communication regarding a patient's care delivery plan can occur real-time, often with the patient's involvement. Coordinated care has been demonstrated to improve quality of care as patients are given a single, agreed upon care plan, and adherence is more likely when provider feedback is not contradictory or confusing, and when the patient is involved in the planning process.

12. Describe how this proposal will impact access to care for Medicaid recipients and indigent persons.

Response:

The proposal will increase access to care for Medicaid recipients and indigent persons by centralizing services, enabling same-day care for patients and families, and offering a convenient location on a bus route with ample, free parking.

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

Response:

Please see Exhibit E for a copy of the YNH financial assistance policy.

14. If charity care policies will be changed as a result of the proposal, list all changes and describe how the new policies will affect patients.

Response:

Not applicable. The policies will not change as a result of this proposal.

§ "Whether an applicant, who has failed to provide or reduced access to services by Medicaid recipients or indigent persons, has demonstrated good cause for doing so, which shall not be demonstrated solely on the basis of differences in reimbursement rates between Medicaid and other health care payers;" (Conn.Gen.Stat. § 19a-639(a)(10))

15. If the proposal fails to provide or reduces access to services by Medicaid recipients or indigent persons, provide explanation of good cause for doing so.

Response:

Not applicable. The proposal maintains access for Medicaid patients and the indigent population.

§ "Whether the applicant has satisfactorily demonstrated that any consolidation resulting from the proposal will not adversely affect health care costs or accessibility to care." (Conn.Gen.Stat. § 19a-639(a)(12))

16. Will the proposal adversely affect patient health care costs in any way? Quantify and provide the rationale for any changes in price structure that will result from this proposal, including, but not limited to, the addition of any imposed facility fees.

Response:

The proposal will not adversely affect patient health care costs. The proposal will not impact facility fees, nor impact price structure.

Financial Information

§ “Whether the applicant has satisfactorily demonstrated how the proposal will impact the financial strength of the health care system in the state or that the proposal is financially feasible for the applicant;” (Conn.Gen.Stat. § 19a-639(a)(4))

17. Provide the Applicant’s fiscal year: start date (mm/dd) and end date (mm/dd).

Response:

Start date: 10/01

End date: 09/30

18. Describe the impact of this proposal on the financial strength of the state’s health care system or demonstrate that the proposal is financially feasible for the applicant.

Response:

In furtherance of its teaching mission to educate future dentists, YNHH provides dental services that primarily serve Medicaid patients and the indigent population, despite a financial loss for the hospital. Currently, Medicaid/self-pay/free care constitutes 90% of the payer mix for the four dental locations collectively. The current financial loss for the dental program is expected to continue after the consolidation of sites, but will be reduced to a degree due to efficiencies gained through the co-location. YNHH’s financial position enables the hospital to subsidize the losses from the dental program.

Despite the financial losses incurred, as referenced earlier in this CON application, oral health and general health are intertwined. As noted in the Statewide Facilities Plan, poor oral health can lead to health issues such as diabetes, heart disease, and pregnancy complications. This proposal can increase the financial strength of the state’s health care system by improving the accessibility of dental services to the Medicaid and indigent population. Greater access to quality dental care can reduce the incidence of preventable general health issues, thus reducing the burden on the health care system from avoidable health care costs.

19. Provide an estimate of the capital expenditure/costs for the proposal using [OHCA Table 3](#).

Response:

Please see OHCA Table 3.

20. 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.

Response:

YNHH will fund this project in its entirety through cash on hand. No debt will be incurred.

21. Include as an attachment:

- a. audited financial statements for the most recently completed fiscal year. If audited financial statements do not exist, provide other financial documentation (e.g., unaudited balance sheet, statement of operations, statement of cash flow, tax return, or other set of books). Connecticut hospitals required to submit annual audited financial statements may reference that filing, if current;

Response:

A copy of YNHH's most recent audited final statements has been filed with OHCA.

- b. completed **Financial Worksheet A (non-profit entity), B (for-profit entity) or C (§19a-486a sale)**, available at [OHCA Forms](#), providing a summary of revenue, expense, and volume statistics, "without the CON project," "incremental to the CON project," and "with the CON project." **Note: the actual results reported in the Financial Worksheet must match the audited financial statements previously submitted or referenced. In addition, please make sure that the fiscal years reported on the Financial Worksheet are the same fiscal years reported for the financial projections, utilization and payer mix tables (OHCA Tables 4, 6 and 7).**

Response:

Please see Exhibit F.

22. Complete [OHCA Table 4](#) utilizing the information reported in the attached Financial Worksheet.

Response:

Please see OHCA Table 4.

23. Fully identify and explain all assumptions used in the projections reported in the Financial Worksheet. In providing these detailed assumptions, please include the following:

- a. Identify general assumptions for projected amounts that are estimated to be the same, both with or without this proposed project (i.e., project-neutral increases or decreases that occur between years). Explain significant variances (+/- 25% variances) that occur between years for the project neutral changes;

Response:

Please see Exhibit G.

- b. Identify specific assumptions for all projected amounts that are estimated to change as a result of implementation of the proposed project (i.e., project-specific increases or

decreases). Address projected changes in revenue, payer mix, expense categories and FTEs. In addition, connect any service, volume (utilization) or payer mix changes described elsewhere in the CON application narrative or tables with these financial assumptions;

Response:

Please see Exhibit G.

- c. If the Applicant does not project any specific increases or decreases with the project in the Financial Worksheet, please explain why.

Response:

Not applicable.

- 24. Explain any projected incremental losses from operations resulting from the implementation of the CON proposal. Provide an estimate of the timeframe needed to achieve incremental operational gains.

Response:

Not applicable. There are no projected incremental losses from operations resulting from implementation of the proposal.

Utilization

§ “The applicant's past and proposed provision of health care services to relevant patient populations and payer mix, including, but not limited to, access to services by Medicaid recipients and indigent persons;”
(Conn.Gen.Stat. § 19a-639(a)(6))

25. Complete [OHCA Table 5](#) and [OHCA Table 6](#) for the past three fiscal years (“FY”), current fiscal year (“CFY”) and first three projected FYs of the proposal, for each of the Applicant’s existing and/or proposed services. **Note: for OHCA Table 6, if the first year of the proposal is only a partial year, provide the partial year and then provide projections for the first three complete FYs. In addition, please make sure that the fiscal years reported on OHCA Table 6 are the same fiscal years reported for the financial projections and payer mix tables (OHCA Tables 4 and 7).**

Response:

Please see OHCA Tables 5 and 6.

26. Provide a detailed explanation of all assumptions used in the derivation/ calculation of the projected service volume; explain any increases and/or decreases in volume reported in OHCA Table 5 and 6.

Response:

As shown in OHCA Table 5, adult and pediatric volume has fluctuated in recent years due to the program’s reliance on dental residents. Residents’ collective skill base and years of experience can drive more or less volume, as patient throughput is impacted by the time it takes the resident dentist to properly care for patients. YNHH is also impacted by “no show” rates, which are high among the Medicaid and indigent population, and can fluctuate each year and lead to volume changes. Within pediatrics, there has been a decline in volume due to increased competition for Medicaid patients from for-profit dental practices. Oral surgery volume has increased and is projected to increase further.

As shown in OHCA Table 6, adult and pediatric dental volume is projected to remain flat in the projected years, and equal to FY 17 annualized volume. New dental leadership is in place at YNHH which is expected to stabilize the program. Oral surgery visit volume is projected to increase due to a newly formed contract with Tricare. An analysis of potential referrals from the Veteran’s Administration has indicated 563 additional visits are expected as result of Tricare. For the volume projections, only 50% of this figure (or 281 visits) are projected in FY 18 as dentists become credentialed with Tricare, and Tricare patients learn of YNHH services. However, by FY 19 and beyond, the full 563 incremental visits are anticipated.

27. Provide the current and projected patient population mix (number and percentage of patients by payer) for the proposal using [OHCA Table 7](#) and provide all assumptions. **Note: payer mix should be calculated from patient volumes, not patient revenues. Also, current year should be the most recently completed fiscal year.**

Response:

Please see OHCA Table 7.

§ "Whether the applicant has satisfactorily identified the population to be served by the proposed project and satisfactorily demonstrated that the identified population has a need for the proposed services;" (Conn.Gen.Stat. § 19a-639(a)(7))

28. Describe the population (as identified in question 8(a)) by gender, age groups or persons with a specific condition or disorder and provide evidence (i.e., incidence, prevalence or other demographic data) that demonstrates a need for the proposed service or proposal. **Please note: if population estimates or other demographic data are submitted, provide only publicly available and verifiable information (e.g., U.S. Census Bureau, Department of Public Health and Connecticut State Data Center) and document the source.**

Response:

There will be no change in the population being served. At the proposed One Long Wharf location, adult, pediatric, and oral surgery dental patients will continue to be served.

29. Using [OHCA Table 8](#), provide a breakdown of utilization by town for the most recently completed fiscal year. Utilization may be reported as the number of persons, visits, scans or other unit appropriate for the information being reported.

Response:

Please see OHCA Table 8.

§ "The utilization of existing health care facilities and health care services in the service area of the applicant;" (Conn.Gen.Stat. § 19a-639(a)(8))

30. Using [OHCA Table 9](#), identify all existing providers in the service area and, as available, list the services provided, population served, facility ID (see table footnote), address, hours/days of operation and current utilization of the facility. Include providers in the towns served or proposed to be served by the Applicant, as well as providers in towns contiguous to the service area.

Response:

Please see OHCA Table 9.

31. Will this proposal shift volume away from existing providers in the area? If not, explain in detail why the proposal will have no impact on existing provider volumes.

Response:

The proposal is expected to have no impact on existing provider volumes. It is anticipated that current YNHH patients at all YNHH dental locations will continue to receive care at the consolidated One Wharf location in New Haven.

32. If applicable, describe what effect the proposal will have on existing physician referral patterns in the service area.

Response:

The proposal is expected to have no impact on existing physician referral patterns in the service area. There is no termination of services being proposed, or changes to the scope of services provided by YNHH. Physician referrals to YNHH dental services will occur in the future as they occur currently.

§ “Whether the applicant has satisfactorily demonstrated that the proposed project shall not result in an unnecessary duplication of existing or approved health care services or facilities;” (Conn.Gen.Stat. § 19a-639(a)(9))

33. If applicable, explain why approval of the proposal will not result in an unnecessary duplication of services.

Response:

The proposal is not expected to result in unnecessary duplication of services as no new services are being proposed. The proposal includes consolidation of services to one centralized location, and maintenance of the current scope of services provided by YNHH’s dental service including adult, pediatrics, and oral surgical care.

§ “Whether the applicant has satisfactorily demonstrated that the proposal will not negatively impact the diversity of health care providers and patient choice in the geographic region;” (Conn.Gen.Stat. § 19a-639(a)(11))

34. Explain in detail how the proposal will impact (i.e., positive, negative or no impact) the diversity of health care providers and patient choice in the geographic region.

Response:

The proposal is expected to have no impact on the diversity of health care

providers and patient choice in the geographic region. Patients will continue to have access to the same dental services in a centralized location in New Haven.

Tables

**TABLE 1
APPLICANT'S SERVICES AND SERVICE LOCATIONS**

Service	Street Address, Town	Population Served	Days/Hours of Operation	New Service or Proposed Termination
Adult Dental Services	789 Howard Avenue, New Haven, CT	For all locations, residents of Greater New Haven and portions of Fairfield County	M-F 8:30am-5pm	N/A; proposal is a relocation and consolidation of services
Adult Dental Services	2560 Dixwell Avenue Hamden, CT		M-F 8:30am-5pm	
Pediatric Dental Services	1 Long Wharf Drive New Haven, CT		M-F 8:30am-5pm	
Oral Surgery Services	330 Orchard Street New Haven, CT		M-F 8:30am-5pm	

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**TABLE 2
SERVICE AREA TOWNS**

789 HOWARD AVENUE, NEW HAVEN LOCATION

Town*	Reason for Inclusion
Branford Bridgeport East Haven Guilford Hamden Milford New Haven North Haven Shelton Stratford West Haven	Represents 75% of volume, and adjusted to ensure contiguous towns

2560 DIXWELL AVENUE, HAMDEN LOCATION

Town*	Reason for Inclusion
Branford Cheshire East Haven Hamden Milford New Haven North Haven West Haven	Represents 75% of volume, and adjusted to ensure contiguous towns

1 LONG WHARF, NEW HAVEN LOCATION

Town*	Reason for Inclusion
East Haven Hamden New Haven West Haven	Represents 75% of volume, and adjusted to ensure contiguous towns

330 ORCHARD STREET, NEW HAVEN LOCATION

Town*	Reason for Inclusion
Ansonia Branford Bridgeport Derby East Haven Hamden Milford New Haven Stratford Trumbull Wallingford West Haven	Represents 75% of volume, and adjusted to ensure contiguous towns

*List [official town name](#) only - village or place names are not acceptable.

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**TABLE 3
TOTAL PROPOSAL CAPITAL EXPENDITURE**

Purchase/Lease	Cost
Equipment (Medical, Non-medical, Imaging)	\$549,057
Land/Building Purchase*	\$0
Construction/Renovation**	\$1,906,326
Other (specify) (A/E fees, testing fees, project management costs, signage, movers, contingency)	\$332,769
Total Capital Expenditure (TCE)	\$2,788,152
Lease (Medical, Non-medical, Imaging)***	\$0
Total Lease Cost (TLC)	\$0
Total Project Cost (TCE+TLC)	\$2,788,152

*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.

Anticipated commencement date for construction: January 2018
Anticipated completion date for construction: September 2018
Anticipated commencement of operations: October 2018

Please see Exhibit H for a description of the proposed building work and a copy of the floor plan

***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.

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**TABLE 4
PROJECTED INCREMENTAL REVENUES AND EXPENSES**

	FY 2018*	FY 2019*	FY 2020*	FY 2021*
Revenue from Operations	\$37,500	\$75,000	\$75,000	\$75,000
Total Operating Expenses	\$34,274	(\$247,065)	(\$320,632)	(\$320,632)
Gain/Loss from Operations	\$3,226	\$322,065	\$395,632	\$395,632

*Fill in years using those reported in the Financial Worksheet attached.

Note: please make sure that the fiscal years reported on the Financial Worksheet are the same fiscal years reported for the financial projections, utilization and payer mix tables (OHCA Tables 4, 6 and 7).

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**TABLE 5
HISTORICAL UTILIZATION BY SERVICE**

Service**	Actual Volume (Last 3 Completed FYs)			CFY Volume*
	FY 2014***	FY 2015***	FY 2016***	FY 2017***
Adult Dental Services (New Haven)	4,881	4,788	4,412	4,004
<u>Adult Dental Services (Hamden)</u>	<u>3,612</u>	<u>3,804</u>	<u>4,062</u>	<u>3,976</u>
Adult Dental Services - Subtotal	8,493	8,592	8,474	7,980
Pediatric Dental Services (New Haven)	14,881	20,698	19,065	16,902
Oral Surgery Services (New Haven)	6,996	6,662	7,720	8,302
Total	30,370	35,952	35,259	33,184

*For periods greater than 6 months, report annualized volume, **identify the months covered** and the method of annualizing. For periods less than 6 months, report actual volume and **identify the months covered**.

Note: CFY volume represents annualized volume based on 6 months of data. Annualized volume calculated by dividing 6 months of data by 6 and multiplying total by 12.

**Identify each service type and level adding lines as necessary. Provide the number of visits or discharges as appropriate for each service type and level listed.

***Fill in years. If the time period reported is not *identical* to the fiscal year reported in Table 4 of the application, provide the date range using the mm/dd format as a footnote to the table.

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**TABLE 6
PROJECTED UTILIZATION BY SERVICE**

Service*	Projected Volume			
	FY 2018**	FY 2019**	FY 2020**	FY 2021**
Adult Dental Services	7,980	7,980	7,980	7,980
Pediatric Dental Services	16,902	16,902	16,902	16,902
Oral Surgery Services	8,583	8,865	8,865	8,865
Total	33,465	33,747	33,747	33,747

Note: FY 18 projects volume prior to the completion of the construction/renovation. Go-live for the One Long Wharf location expected at the beginning of FY 19.

*Identify each service type by location and add lines as necessary. Provide the number of visits/discharges as appropriate for each service listed.

**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. If the time period reported is not *identical* to the fiscal year reported in Table 4 of the application, provide the date range using the mm/dd format as a footnote to the table.

Note: please make sure that the fiscal years reported on the Financial Worksheet are the same fiscal years reported for the financial projections, utilization and payer mix tables (OHCA Tables 4, 6 and 7).

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**TABLE 7
 APPLICANT'S CURRENT AND PROJECTED PAYER MIX – 789 HOWARD AVENUE, NEW HAVEN LOCATION**

Payer	Actual FY 2016**		CFY 2017		Projected							
					FY 2018**		FY 2019**		FY 2020**		FY 2021**	
	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0	Please refer to table below for payer mix for consolidated site at One Long Wharf, New Haven starting in FY 19					
Medicaid*	1,704	39	1,638	41	1,638	41						
CHAMPUS & TriCare	0	0	0	0	0	0						
Total Government	1,704	39	1,638	41	1,638	41						
Commercial Insurers	480	11	406	10	406	10						
Uninsured	2,228	51	1,960	49	1,960	49						
Workers Compensation	0	0	0	0	0	0						
Total Non-Government	2,708	61	2,366	59	2,366	59						
Total Payer Mix	4,412	100	4,004	100	4,004	100						

APPLICANT'S CURRENT AND PROJECTED PAYER MIX – 2560 DIXWELL AVENUE, HAMDEN LOCATION

Payer	Actual FY 2016**		CFY 2017		Projected							
					FY 2018**		FY 2019**		FY 2020**		FY 2021**	
	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0	Please refer to table below for payer mix for consolidated site at One Long Wharf, New Haven starting in FY 19					
Medicaid*	1,743	43	1,730	44	1,730	44						
CHAMPUS & TriCare	0	0	0	0	0	0						
Total Government	1,743	43	1,730	44	1,730	44						
Commercial Insurers	471	12	476	5	476	5						
Uninsured	1,848	45	1,770	51	1,770	51						
Workers Compensation	0	0	0	0	0	0						
Total Non-Government	2,319	57	2,246	56	2,246	56						
Total Payer Mix	4,062	100	3,976	100	3,976	100						

Note: FY 18 projects volume and payer mix prior to the completion of the construction/renovation. Go-live for the One Long Wharf location expected at the beginning of FY 19.

APPLICANT'S CURRENT AND PROJECTED PAYER MIX – 1 LONG WHARF, NEW HAVEN LOCATION

Payer	Actual		CFY 2017		Projected							
	FY 2016**				FY 2018**		FY 2019**		FY 2020**		FY 2021**	
	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0	Please refer to table below for payer mix for consolidated site at One Long Wharf, New Haven starting in FY 19					
Medicaid*	14,438	76	12,448	74	12,448	74						
CHAMPUS & TriCare	0	0	0	0	0	0						
Total Government	14,438	76	12,448	74	12,448	74						
Commercial Insurers	1,797	9	1,560	9	1,560	9						
Uninsured	2,830	15	2,894	17	2,894	17						
Workers Compensation	0	0	0	0	0	0						
Total Non-Government	4,627	24	4,454	26	4,454	26						
Total Payer Mix	19,065	100	16,902	100	16,902	100						

APPLICANT'S CURRENT AND PROJECTED PAYER MIX – 330 ORCHARD STREET, NEW HAVEN LOCATION

Payer	Actual		CFY 2017		Projected							
	FY 2016**				FY 2018**		FY 2019**		FY 2020**		FY 2021**	
	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0	Please refer to table below for payer mix for consolidated site at One Long Wharf, New Haven starting in FY 19					
Medicaid*	3,479	45	3,628	44	3,628	42						
CHAMPUS & TriCare	0	0	0	0	281	3						
Total Government	3,479	45	3,628	44	3,909	45						
Commercial Insurers	737	10	430	5	430	6						
Uninsured	3,504	45	4,244	51	4,244	49						
Workers Compensation	0	0	0	0	0	0						
Total Non-Government	4,241	55	4,674	56	4,674	55						
Total Payer Mix	7,720	100	8,302	100	8,583	100						

Note: FY 18 projects volume and payer mix prior to the completion of the construction/renovation. Go-live for the One Long Wharf location expected at the beginning of FY 19.

APPLICANT'S PROJECTED PAYER MIX – 1 LONG WHARF, NEW HAVEN LOCATION

Payer	Actual FY 2016**		CFY 2017		Projected							
					FY 2018**		FY 2019**		FY 2020**		FY 2021**	
	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%
Medicare*							0	0	0	0	0	0
Medicaid*							19,444	58	19,444	58	19,444	58
CHAMPUS & TriCare							563	2	563	2	563	2
Total Government							20,007	59	20,007	59	20,007	59
Commercial Insurers							2,872	9	2,872	9	2,872	9
Uninsured							10,868	32	10,868	32	10,868	32
Workers Compensation							0	0	0	0	0	0
Total Non-Government							13,740	41	13,740	41	13,740	41
Total Payer Mix							33,747	100	33,747	100	33,747	100

Note: FY 18 projects volume and payer mix prior to the completion of the construction/renovation. Go-live for the One Long Wharf location expected at the beginning of FY 19.

*Includes managed care activity.

Fill in years. Current year should be the most recently **completed fiscal year. Ensure the period covered by this table corresponds to the period covered in the projections provided. New programs may leave the "current" column blank.

Note: please make sure that the fiscal years reported on the Financial Worksheet are the same fiscal years reported for the financial projections, utilization and payer mix tables (OHCA Tables 4, 6 and 7).

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**TABLE 8
UTILIZATION BY TOWN**

789 HOWARD AVENUE, NEW HAVEN LOCATION

Town	Utilization FY 2016**
New Haven	1,749
West Haven	389
Hamden	313
East Haven	186
Branford	161
Bridgeport	129
Milford	100
North Haven	98
Stratford	81
Meriden	79
Waterbury	62
Shelton	59
Guilford	55
Wallingford	42
Norwalk	41
Seymour	40
Madison	39
Middletown	39
Orange	37
Naugatuck	35
Cheshire	35
Other***	646
Total	4,412

2560 DIXWELL AVENUE, HAMDEN LOCATION

Town	Utilization FY 2016**
Hamden	1,198
New Haven	929
West Haven	308
North Haven	198
East Haven	133
Cheshire	121
Milford	100
Branford	83
Stratford	82
Woodbridge	77
Wallingford	63
Norwalk	53
Guilford	51
Bridgeport	46
Meriden	36
Other***	584
Total	4,062

1 LONG WHARF, NEW HAVEN LOCATION

Town	Utilization FY 2016**
New Haven	10,607
West Haven	2,274
Hamden	1,120
East Haven	682

Bridgeport	508
Milford	327
Waterbury	265
Meriden	264
Ansonia	258
Branford	209
Stratford	204
Wallingford	203
North Haven	182
Woodbridge	128
Stamford	121
Shelton	97
Danbury	94
Norwalk	92
Other***	1,429
Total	19,065

330 ORCHARD STREET, NEW HAVEN LOCATION

Town	Utilization FY 2016**
New Haven	2,411
Bridgeport	1,068
West Haven	511
Hamden	380
East Haven	259
Stratford	223
Meriden	211
Waterbury	188
Milford	181
Ansonia	146
Trumbull	137
Branford	127
Norwalk	107
Shelton	104
Derby	95
Wallingford	94
Norwich	89
North Haven	85
Guilford	79
Seymour	77
Other***	1,148
Total	7,720

*List inpatient/outpatient/ED volumes separately, if applicable

Fill in most recently **completed fiscal year.

***Other includes aggregate of towns with small volume.

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**TABLE 9
SERVICES AND SERVICE LOCATIONS OF EXISTING PROVIDERS****

Service or Program Name	Population Served	Facility ID*	Facility's Provider Name, Street Address and Town	Hours/ Days of Operation	Current Utilization
Kool Smiles (general dentistry, oral surgery, orthodontics)	Not available	1568603934	531 Elm St, New Haven, CT 06511	M to F 8am-5pm, Sat 9am-2pm	Not available

Version 4/19/17

Columbia Dental (general dentistry, oral maxillofacial surgery, orthodontics)	1134240922	46 Prince St #301, New Haven, CT 06519	M to F 8:30am- 7pm, Sat 8:30am- 6pm
Aspen Dental (general dentistry, oral surgery, denture services)	1134346992	2335 Dixwell Ave, Suite H4, Hamden, CT 06514	M to Sat 7am-9pm, Sun 9:30am- 6pm
Community Health Fair Haven (general dentistry, oral surgery)	1104803444	374 Grand Ave, New Haven, CT 06513	M to Th 8:30am- 6:00pm, Fri 8:30am- 4:00pm, 2nd & 4th Sat of each month 8:30am- 12:30pm
Cornell Scott-Hill Health (general dentistry, oral surgery)	1518172451	428 Columbus Avenue, New Haven CT 06519 226 Dixwell Avenue, New Haven 06511	M,W,F 8:30am- 5:00pm, T & Th 8:30am- 8:30pm, Sat 8:30am- 12:30pm
Dr. Dental (general dentistry, cosmetic dentistry, oral surgery, and TMJ disorders)	1578955860 1104187673	89 Church Street, New Haven, CT 06510 122 Amity Road New Haven, CT 06515	(Church St) M to F 8am- 7:30pm, Sat 9am- 3:00pm (Amity Rd) M & F 10am- 7pm, Sat 9am- 3pm
Parkway Dental (general dentistry, cosmetic dentistry, orthodontics)	1598041154	1869 Dixwell Avenue, Suite H4, Hamden, CT 06514	M,T,F 9am-5pm, W 11am- 7pm, Th 10am-

				6pm, Sat 9am- 2pm	
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*Provide the Medicare, Connecticut Department of Social Services (DSS), or National Provider Identifier (NPI) facility identifier and label column with the identifier used.

**note: all providers serve both adults and pediatrics.

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EXHIBIT A
DETERMINATION LETTER FROM OHCA

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

Raul Pino, M.D., M.P.H.
Commissioner



Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

Office of Health Care Access

May 9, 2017

VIA EMAIL ONLY

Shraddha Patel
Director, Strategy and Regulatory Planning & Reporting
Yale New Haven Hospital
789 Howard Avenue
New Haven, CT 06511

RE: Certificate of Need Determination Report Number 17-32166-DTR
Relocation of Dental Program

Dear Ms. Patel:

On May 8, 2017, the Office of Health Care Access ("OHCA") received your Certificate of Need ("CON") Determination Form on behalf of Yale New Haven Hospital ("YNHH") with respect to the relocation of its dental program.

YNHH is a licensed hospital that currently offers outpatient dental services at the following locations: 1 Long Wharf Drive, New Haven; 789 Howard Avenue, New Haven; 330 Orchard Street, New Haven; and 2560 Dixwell Avenue, Hamden. YNHH is proposing the relocation of the dental services available at 789 Howard Avenue and 330 Orchard Street to its 1 Long Wharf Drive location, which will be renovated and expanded. There are no anticipated changes to the patient population or payer mix. Effectively, YNHH is terminating the dental services at its 789 Howard Avenue and 330 Orchard Street locations.

Connecticut General Statutes § 19a-638(a)(5) requires a CON for the "termination of inpatient or outpatient services offered by a hospital...". Since the dental services currently provided by YNHH at the 789 Howard Avenue and 330 Orchard Street locations will be terminated, a **CON is required** for YNHH's proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Kimberly R. Martone".

Kimberly R. Martone
Director of Operations

C: Rose McLellan, License and Applications Supervisor, DPH, DHSR.



Phone: (860) 418-7001 • Fax: (860) 418-7053
410 Capitol Avenue, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph

Affirmative Action/Equal Opportunity Employer



EXHIBIT B
YNHH LICENSE

STATE OF CONNECTICUT

Department of Public Health

LICENSE

License No. 0044

General Hospital

In accordance with the provisions of the General Statutes of Connecticut Section 19a-493:

Yale-New Haven Hospital, Inc. of New Haven, CT d/b/a Yale-New Haven Hospital, Inc. is hereby licensed to maintain and operate a General Hospital.

Yale-New Haven Hospital, Inc. is located at 20 York Street, New Haven, CT 06510-3220.

The maximum number of beds shall not exceed at any time:

- 134 Bassinets
- 1407 General Hospital Beds

This license expires **September 30, 2017** and may be revoked for cause at any time.

Dated at Hartford, Connecticut, October 1, 2015. RENEWAL.

SATELLITES:

- Hill Regional Career High School, 140 Legion Avenue, New Haven, CT
- Branford High School Based Health Center, 185 East Main Street, Branford, CT
- Walsh Middle School, 185 Damascus Road, Branford, CT
- James Hillhouse High School Based Health Center, 480 Sherman Parkway, New Haven, CT
- Weller Building, 425 George Street, New Haven, CT
- Yale-New Haven Psychiatric Hospital, 184 Liberty Street, New Haven, CT
- Yale-New Haven Shoreline Medical Center, 111 Goose Lane, Guilford, CT
- Pediatric Dentistry Center, 1 Long Wharf Drive, New Haven, CT
- YNHASC Temple Surgical Center, 60 Temple Street, New Haven, CT
- YNHASC Women's Surgical Center, 40 Temple Street, New Haven, CT
- Mauro-Sheridan School Based Health Center, 191 Fountain Street, New Haven, CT
- Yale-New Haven Hospital Dental Center, 2560 Dixwell Avenue, Hamden, CT
- Murphy School Based Health Center, 14 Brushy Plain Road, Branford, CT
- YNHCH at Bridgeport, 267 Grant Street, 6th Floor, Bridgeport, CT
- Pediatric Primary Care Center, 226 Mill Hill Avenue, Bridgeport, CT
- Yale-New Haven Hospital-Saint Raphael Campus, 1450 Chapel Street, New Haven, CT
- Adolescent Day Hospital, 646 George Street, New Haven, CT
- Children's Psychiatric Day Hospital, 1450 Chapel Street, New Haven, CT
- Elder Care Clinic/Edith Johnson Tower, 114 Bristol Street, New Haven, CT
- Troup Magnet Academy School-Based Health Center, 259 Edgewood Avenue, New Haven, CT
- Adult PHP, 1100 Sherman Avenue, Hamden, CT
- Project MotherCare at Wheat, 674 Washington Avenue, West Haven, CT
- Barnard Environmental Studies Magnet School, 170 Derby Avenue, New Haven, CT
- Project Eldercare, 2080 Whitney Avenue, Suite 150, Hamden, CT
- Shoreline Child and Adolescent Mental Health Services, 21 Business Park Drive, Branford, CT
- Yale-New Haven Hospital Urology, Parkview Bldg., 1291 Boston Post Road, Suite 205, Madison, CT
- *Psychiatric Day Hospital, 425 George Street, New Haven
- *Adult Psychiatric PHP and Continuing Care, 1294 Chapel Street, New Haven, CT

License Revised to Reflect:

*Change of address for (2) Satellites effective 2/4/15

Removed (4) Satellites effective 9/19/14



Jewel Mullen MD

Jewel Mullen, MD, MPH, MPA
Commissioner

EXHIBIT C
CVs

SUMMARY: Health Care Executive with extensive leadership experience at academic medical centers, community teaching hospitals and children's hospitals, including strategic and program development, capital project development, hospital operations and physician relations. Strong background in health policy and health advocacy efforts, and close collaborations with national, state, and community leaders.

**PROFESSIONAL
EXPERIENCE:**

YALE-NEW HAVEN HOSPITAL, New Haven, CT (2010-Present)

**Senior Vice President, Operations, Yale-New Haven Hospital
Executive Director, Yale-New Haven Children's Hospital**

Member of the executive management team of the 1,500 bed Yale-New Haven Hospital, Yale-New Haven Health System and affiliates of the Yale School of Medicine.

- Direct Women's, Children's, Perioperative Services, Radiology, Laboratory, Transport, Ambulatory Strategy and Services and oversee the Patient Experience.
- Launched \$65M project for new Neonatal Intensive Care Unit, \$25M fund raised.
- Established regional network of Ambulatory facilities

SPARER ASSOCIATES, INC., New York, N. Y. (2009-2010)

President

Provided strategic planning and business development consultation to a range of clients in the health care industry, including hospitals, physician groups, and corporations.

NEW YORK-PRESBYTERIAN HOSPITAL, New York, N.Y. (1997 – 2008)

Senior Vice President and Chief Operating Officer – Women's Children's and Community Health (2000-2008)

Member of the corporate management team of New York-Presbyterian Hospital (NYP), the 2,300 bed academic teaching hospital of Columbia and Cornell.

- Directed Women's, Children's, Emergency services and transfer/access service lines, the 1M-visit Ambulatory Care Network of NYP, Revenue Cycle Operations of NYP, and two Medicaid Managed Care Plans.
- Produced \$250M in enhanced recurring revenue in seven years.
- Secured over \$1M/year in grants and contracts to support Ambulatory Network.

Executive Director, Children's Hospital of New York-Presbyterian (1998-2008)

- Led design and development of the new 202-bed Morgan Stanley Children's Hospital, opened in November 2003, including \$120M Capital Campaign to fund project.
- Developed 100-bed children's hospital-within-a-hospital, Komansky Center for Children's Health, at Weill Cornell Campus.
- Created 16-hospital regional NYP Children's Health System and Medical Advisory Board.

MONMOUTH MEDICAL CENTER, Long Branch, N.J. (1989 – 1997)

An affiliate of the Saint Barnabas Health Care System

Executive Director (1996-1997)

Managed transition of Monmouth Medical Center, a 527-bed community teaching hospital, from freestanding to a merged affiliate of newly formed Saint Barnabas Health Care System.

Executive Vice President and Chief Operating Officer (1992-1996)

- Headed Medical Center's reengineering effort, reducing expenses by 15 % over two years.
- Established Jacqueline M. Wilentz Comprehensive Breast Center, Cardiac Cath and MRI Centers.
- Developed master site plan for hospital campus.

LONG ISLAND JEWISH MEDICAL CENTER, New Hyde Park, N.Y. (1987 – 1989)

Vice President and Administrator, Schneider Children’s Hospital

Member of the corporate management of Long Island Jewish Medical Center (LIJMC), 850-bed teaching hospital affiliate of the State University of New York at Stony Brook, responsible for 150-bed Schneider Children’s Hospital.

UNIVERSITY HOSPITALS OF CLEVELAND, Cleveland, Ohio (1977 – 1987)

Vice President

Member of the corporate management of University Hospitals of Cleveland (UHC), the 900-bed primary teaching hospital affiliate of Case Western Reserve University.

- Executive responsibility for 240–bed Rainbow Babies & Children’s Hospital (RB&C)
- Developed RB&C’s first strategic and annual operating plans.
- Formed Association of Ohio Children’s Hospitals in collaboration with Cincinnati, Columbus, Akron and Dayton Children’s Hospitals

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS

New York, N.Y. (1975 – 1977)

Program Coordinator, the Child Health Care Project of the Robert Wood Johnson Foundation

BELLEVUE HOSPITAL CENTER, New York, N.Y. (1973 – 1975)

Assistant Director

HOSPITAL FOR JOINT DISEASES & MEDICAL CENTER, New York, N.Y. (1973)

Administrative Resident

EDUCATION: **Master of Public Administration in Health Policy Planning and Administration, 1976**
Wagner School of Public Administration
New York University, New York, N.Y.

Bachelor of Arts in Political Science, 1971
School of Government and Public Affairs
American University, Washington, D.C.

PROFESSIONAL APPOINTMENTS/ MEMBERSHIPS: *Fellow, Branford College, Yale University, 2012 -Present*
Board of Trustees, Ronald McDonald House of Connecticut, 2010-Present
CEO Forum & Strategic Planning Committee, Child Health Corporation of America, 2005 – 2008
Board of Trustees, National Association of Children’s Hospitals and Related Institutions, 2000 - 2006
Officer and Member of Executive Committee 2003 – 2006; Education Council 2006 – 2008
Board of Trustees, Randall’s Island Sports Foundation, 2008-2012
Board of Trustees, Angels on a Leash, Westminster Kennel Club, 2007-2010
Vice Chairperson, Board of Trustees, Monmouth County Urban League, 1995-1998
Board of Trustees, United Cerebral Palsy of Monmouth-Ocean Counties, 1995-1999
Board of Trustees, Central Jersey Blood Bank, 1995-1997
Board of Trustees, Ranney School, 1994-2008
Board of Trustees, Regional Perinatal Consortium of Monmouth-Ocean Counties, 1992-1997
Board of Trustees, Ronald McDonald House of Long Island, 1987-1989
Board of Trustees, Association of Ohio Children’s Hospitals, 1985-1987 President-elect, 1987
Instructor, Department of Pediatrics, Case Western Reserve University School of Medicine, 1977-1987
Health Services Project Review Committee, American Heart Association of Northeast Ohio, 1977-1984
Instructor, St. Francis College, Brooklyn, New York, 1976-1977
Instructor, Department of Pediatrics, Columbia University College of Physicians and Surgeons, 1976-1977

CURRICULUM VITAE

Carla A. Carusone, RN

Home Address: 40 Hathaway Lane
Madison, Connecticut 06443
(203) 421-0017

Office Address: Yale New Haven Hospital
Clinical Program Development
300 George Street 4th Floor Room 446
New Haven, Connecticut 06510
OFFICE (203) 688-3449; FAX (203) 688-3293
Email: carla.carusone@ynhh.org

Connecticut License # R44287

PROFESSIONAL EXPERIENCE

Yale-New Haven Hospital, New Haven, Connecticut

Director of Specialty Programs, Program Development
(November 2012- present)

Responsibilities include:

- Recognize market trends, evaluate their impact on Trauma, Bariatric and Specialty Programs which include: helicopter, sleep, medicine, e-ICU and Injury Prevention that contribute to strategic plans, develop operational plans and ensure understanding, alignment and commitment of all staff within span of control.
- Collaborates with Department and Divisional leadership to design, develop, and implement clinically and fiscally responsive program philosophies, goals, and objectives.
- Ensures that continuous quality improvement forms a basis for unit/program activity.
- Formulates recommendations for programmatic change based on trends related to market demands, research, and changes in clinical practice.
- Establishes systems/processes that ensure effective unit/program operation.
- Ensures the establishment of evidence-based practice standards requiring excellence from all team members.
- Develops, administers, and communicates practices and procedures that are consistent with Divisional and Hospital policies and strategies.
- Understands and communicates all relevant regulatory standards to staff, ensuring that standards are met or exceeded.
- Establishes systems to ensure effective utilization and availability of equipment and supplies.
- Develops and executes strategies to maintain or increase patient volume in both Trauma, Bariatrics and Provider Based areas based on strategic direction determined by senior management.
- Provides vision and leadership to staff in a collaborative environment that offers job satisfaction, recognition, and stimulates innovative thinking to accomplish goals and objectives.
- Holds unit leadership and staff accountable for achieving high levels of performance consistent with evidence-based practice.

- Ensures systems are established to manage the on-going developing of staff.
- Ensures the development of leadership talent.
- In collaboration with division leadership and human resources, ensures that systems/processes are in place for the recruitment and retention of adequate and appropriate human resources to meet patient, regulatory, fiscal, and developmental requirements for the unit/program.
- Foster and environment that supports the development of staff; staff education, professional development including CME opportunities and identifying deficiencies and scheduling in-service teaching.
- Collaborate with medical directors to provide clinical leadership to staff.
- Promotes the organization to all customers by interpreting and communicating Yale New Haven-s mission and values, acting as a loyal, supportive, and informed spokesperson for the unit/program, division, and Hospital.
- Identifies and communicates opportunities for collaboration with other departments and the medical staff.
- Participates in implementing strategic efforts by influencing unit leadership and championing projects within the unit/program, allocating resources, and utilizing project management skills.
- Models customer service standards and demonstrates value for all people in the work environment
- Ensures that confidentiality of patient, staff, and appropriate management data is maintained.
- Ensure that desired clinical outcomes are achieved through cost effective and efficient processes.
- In conjunction with Trauma, Bariatric and Provider Based leadership, establishes and manages a process for monitoring and controlling staff turnover by title and type.
- Develops and implements processes to collect relevant clinical indicator data which serves as a reliable proxy for clinical effectiveness and quality of care
- Oversees and develops systems to ensure accountability for operations and managerial effectiveness.
- Develops and manages a unit budget to ensure the delivery of cost-effective, quality care.
- Develops comprehensive analysis for financial and programmatic recommendations for division leadership utilizing consistent tools for resource analysis
- Communicates comprehensive rationale for financial decisions and determines level of understanding amount staff and physicians
- Evaluates the unit/program-s operation for potential implementation of cost effective changes.
- Facilitates staff, physicians, and other health care providers compliance with financial decisions.
- Ensures required resources are available to meet with unit/program priorities and reflect staff and physician input

***Associate Director of Trauma & Surgical Emergencies
(April 2009-November 2012)***

Responsibilities include:

- Management of the Surgical Specialty Practice staff, including: Adult and Pediatric Trauma Program Managers, Injury Prevention and National Surgical Quality Improvement Program (NSQIP) Coordinators, Licensed Practical Nurses and Administrative Assistants
- Development and oversight of the Department of Surgery Morbidity and Mortality Review Process

- Development and oversight of the National Surgical Quality Improvement Program(NSQIP) for Adult and Pediatric Surgery Department
- Oversight and management of all Surgical Specialty Clinics including: Orthopedics, ENT, Dermatology, Hearing, Speech and Language, Surgery, Urology, Eye, Eye Consult Service, Dermatology Surgery, Sports Medicine, and Podiatry.
- Oversight of Emergency Management Credentialing Program
- Maintain regulatory requirements
- Maintain clinical competencies of direct reports
- Collaborate with physicians, nurses, and other members of the healthcare team to lead and organize multidisciplinary performance improvement initiatives.
- Develop and lead Quality Improvement and Performance improvement initiatives
- Participates in the development of strategies to improve overall departmental outcomes
- Direct report to the Senior V.P. of Administration

Trauma Program Manager Section of Trauma, Surgical Critical Care & Surgical Emergencies (March 2002 – 2009)

Responsibilities included:

- Management of the Trauma Program staff, including Trauma Coordinators, Registry, Mid-level practitioners, administrative assistants
- Coordinated the care of trauma patients admitted to both the Adult and Pediatric Emergency Rooms
- Maintained regulatory requirements of an Adult and Pediatric Level 1 Trauma Centers
- Collaborated with physicians, nurses, and other members of the healthcare team to lead and organize multidisciplinary performance improvement initiatives.
- Identified and developed clinical standards and protocols that met institutional regulatory requirements, practice standards and enhanced evidence-based practice of trauma patients.
- Provided educational support to YNHH staff and the community at large
- Coordinated verification of Adult and Pediatric Level 1 Trauma Center
- Provided leadership on trauma issues at the local and state level
- Direct report to the V.P. of Administration and the Trauma Medical Director

Off Shift Administrator, Patient Service Administration (1997 – March 2002)

Responsibilities included:

- Served as the clinical, educational, and administrative resource to adult medical/surgical and pediatric/obstetric patient care areas on the evening shift.
- Responsible to members of health care team for clinical consultation and role modeling during high acuity situations on inpatient and emergency care units.
- Collaborated with Nursing Education Department to provide education to evening shift clinical staff as well as maintaining programmatic responsibilities for pediatric orientation curriculum.
- Responsible for administrative functions of staffing and scheduling of off-shift, clinical personnel; guidance and counseling to clinical and non-clinical evening shift personnel; and responded to all patient care concerns.

Clinical Manager Emergency Department (1995-1997)

Responsibilities included:

- Clinical and fiscal management of the Level 1 Trauma Adult Emergency Department, which has over 70,000 annual visits including: 2 Acute Care areas, Urgent Visit, Crisis Intervention Unit and Chest Pain Center.

Staffing Coordinator Resource Pool (1993-1995)

Responsibilities included:

- Clinical and fiscal management of a diverse float pool.
- Day to day management of 175 employees including the interviewing, hiring, coordination of competency- based orientation and continuing education programs.
- Employee counseling, disciplinary action and merit based performance appraisals.
- Administrative coverage for the Nursing Resource Pool Coordinator for day to day management of up to 365 employees.
- On going coordination and implementation of patient focused operational redesign.

Coordinator Advanced Life Support Training Yale Section of Emergency Medicine (1992-1994)

Responsibilities included:

- Developed and implemented a medical education program for undergraduate and post graduate candidates including basic and advanced life support.
- Maintenance of educational course records.
- Coordinated and Scheduled classes.

Triage/Charge/ Staff Nurse Adult Emergency Department (1989-1992)

Responsibilities included:

As Triage/Charge Nurse:

- Held responsibility for directing the nursing care of a Trauma Level I combined Adult and Pediatric Emergency Department that served over 70,000 patients annually. This included responsibility for 28- Acute Care, 5- Urgent Care, 7- Intoxicated Observational Unit, 2- Trauma Care, 13- Crisis Intervention Unit, and 4- Chest Pain Center beds.
- Oriented new RN hires to the charge nurse role and responsibilities

As Staff Nurse:

- Ministered to critically ill medical and surgical pediatric and adult patients
- Administered Conscious Sedation as ordered for orthopedic injuries as well as diagnostic testing
- Precepted new staff hires.

NSI Traveling Nurses, Dallas, Texas

Travel Nurse (1989)

Emergency Room staff nurse in various Trauma Level I teaching hospitals, including Yale-New Haven Hospital.

Our Lady of the Lake Regional Medical Center, Baton Rouge, LA

Staff Nurse, Trauma Intensive Care Unit (1988-1989)

State of Louisiana Department of Hospitals

Earl K Long Memorial Hospital

Clinical Coordinator Emergency Services (1987-1988)

Planned and implemented Quality Assurance program for Emergency Services.
Revised and updated Emergency Services Policy and Procedures Manual. Planned and coordinated unit based orientation for new employees. Administrative duties as nursing service supervisor for 400 bed facility. Assisted Nurse Manager with planning and scheduling of professional and non professional staff.

Charity Hospital of Louisiana

Clinical Nurse II, Emergency Department (1986-1987)

Level I Trauma Center with over 100,000 annual visits.

Earl K. Long Memorial Hospital

Staff Nurse, Emergency Department (1984-1986)

Level II Trauma Center with 50,000 annual visits.

EDUCATION

Bachelor of Science in Nursing with President's Honors
Chamberlain College of Nursing, St Louis, Missouri

Diploma in Nursing 1984
Our Lady the Lake College of Nursing, Baton Rouge, LA

General Studies 1983
Louisiana State University, Baton Rouge, LA

COMMITTEE MEMBERSHIP

Yale-New Haven Hospital:

- 2005-present Quality Improvement for the Department of Surgery (YNHH)
- 2002-present Adult Trauma Multidisciplinary Quality Improvement (YNHH)
- 2002-present Pediatric Trauma Multidisciplinary Quality Improvement (YNHH)
- 1999-present Disaster Management (YNHH)

State of Connecticut:

- 2007-2016 Board of Directors- Connecticut Trauma Conference
- 2005-2006 Connecticut American College of Surgeons Participant of Executive Summary Trauma System Consultation State of CT
- 2006-present State of CT Trauma Committee
- 2006-present State of CT Disaster Committee
- 2005-present Connecticut Trauma Coordinator Meeting Group (Connecticut Hospital Association)
2008 Co-Chairperson
- 2017CV

- 2005-present State of Connecticut Trauma Data Review Sub-Committee (Connecticut Hospital Association)
- 2005-present Southwestern Trauma Conference-Faculty and Planning Committee, Trumbull CT

National:

- 2012-present Trauma Center Association of America- Advocacy Committee
- 2012-present Trauma Center Association of America- Reimburse Committee
- 2008-2010 Trauma Center Association of America Pediatric Committee
- 2009-2011 Judicial Committee- Society of Trauma Nurses (STN) - Chairperson
- 2007-2012 Eastern Association for the Surgery of Trauma (EAST) - Membership Committee
- 2007-2015 Society of Trauma Nurses EAST Planning Committee

CERTIFICATIONS:

- 2010-present Pediatric Life Support and Automatic External Defibrillator, Instructor, American Heart Association
- 2009-present CPR Basic Life Support and Automatic External Defibrillator, Instructor, American Heart Association
- 2008-present Advanced Trauma Life Support (ATLS) - Course Coordinator- American College of Surgeons
- 2003-present Trauma Nursing Core Course (TNCC) - Provider- Emergency Nurses Association
- 2002-present Advanced Disaster Life Support -Instructor- American Medical Association
- 2002-present Advanced Disaster Life Support -Provider- American Medical Association
- 2000-present Basic Disaster Life Support -Provider- American Medical Association
- 1998-present Advanced Cardiac Life Support - Provider- American Heart Association
- 1998-present CPR Basic Life Support and Automatic External Defibrillator-Provider- American Heart Association
- 1995-present Cultural Diversity Consulting Pair –Facilitator- Yale-New Haven Hospital

GRANTS:

Assisted in the securing of the following grants:
2017CV

- 2015 Emergency Medical Services for Children- Received \$118,941.50 from Health Resources and Services (HRSA). Maternal and Child Health Bureau (MCHB)
- 2015 Buckle Up For Life- Received \$70,000 from Cincinnati Children's Hospital and Toyota
- 2015 Kohl's Child Safety Program- Received \$70,836 from the Kohl's Foundation
- 2015 Child Passenger Safety Fitting Station Resource Grant- Received \$50,000.00 from Connecticut Department of Transportation State Project #0195-0709-AO
- 2015 Yale-New Haven Children's Hospital Community Traffic Safety Program Grant- Received \$109,000.00 from Connecticut Department of Transportation State Project #0195-0709-AE –
- 2014 Kohl's Child Safety Program- Received \$104, 718 from the Kohl's Foundation- Principle Investigator
- 2014 Head Injuries and Bike Helmets- Received \$3,000 from Yale-New Haven Hospital Auxiliary Special Projects Funding Grant Program - Principle Investigator.
- 2014 Window Guard and Safety Gate Project - Received \$1,000 from the Injury Free Coalition for Kids National Office sponsored by Toys R US - Principle Investigator.
- 2013 Carbon Monoxide Poisoning Safety Program - Received \$1,000 from Yale-New Haven Hospital Auxiliary Special Projects Funding Grant Program - Principle Investigator.
- 2013 Bicycle Helmet Safety Program - Received \$2,000 from Yale-New Haven Hospital Auxiliary Special Projects Funding Grant Program - Principle Investigator
- 2011 Carbon Monoxide Poisoning Safety Program - Received \$2,000 from Yale-New Haven Hospital Auxiliary Special Projects Funding Grant Program
- 2011 Bicycle Helmet Safety Program - Received \$1,500 from Yale-New Haven Hospital Auxiliary Special Projects Funding Grant Program
- 2011 Child Passenger Safety Seats for Low Income Families - Received \$2,500 from Yale-New Haven Hospital Auxiliary Special Projects Funding Grant Program

PUBLICATIONS

Violano, P., Davis, K., Lane, V., Lofthouse, R, Carusone, C. *Establishing an Injury Prevention Program to Address Pediatric Pedestrian Collisions.* Journal of Trauma Nursing. 2009, 16(4), 216-219.

Davis, Kimberly A. MD, FACS; Cabbad, Nicole C. BS; Schuster, Kevin M. MD; Kaplan, Lewis J. MD; **Carusone, Carla RN**; Leary, Tucker MBA; Udelsman, Robert MD, MBA. *Trauma Team Oversight Improves Efficiency of Care and Augments Clinical Economic Outcomes.* Journal of Trauma-Injury Infection & Critical Care. 65(6):1236-1244, December 2008.

Schechter, Elissa M, Kaplan, Lewis, Hojman, Horacio, Bontempo, Laura; **Carusone, Carla**; Evans. Leigh V. Efficacy of a Human Patient Simulator to Improve Senior Residents' Skills in Functioning as a Team Leader during Trauma Resuscitations. *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare.* 1(2):98, Summer 2006.

POSTER PRESENTATIONS

- Sept. 2015 Pina, Violano, RN, Dana Clifton, **Carla Carusone, RN**, Ena Williams, RN Sgt. Al McFadden. Abstract and Poster – Police Academy League (PAL) Camp: An Injury Prevention Community Outreach Program to Gun Violence. September 30, 2014 - *Trauma Centers Association of America 17th Annual Trauma Conference, San Antonio, Texas - Best Practice Poster Winner.*
- April 2013 Linda Roney, RN, Kimberly Barre, RN, Lonnie Avery, Debra Mraz, Nelson Delgado, Marc Auerbach, MD, Felix Lui, MD, Kimberly davis, MD, Edward Snyder, MD, Yanyun Wu, MD, Anne Baker, Laurie Bizzario-Hart, Blushan Shah, Roger Bolduk, Yania Padilla Sierra, Calvin Norway, Pina Violano, RN, **Carla Carusone, RN**, Karen Santucci, MD, Kristen Bechtel, MD, Bill Kean, RN, Jason Malia, RN, April Aysseh, RN, Denine Baxter, RN, Josep Pansiello, MD, John Giuliano, MD, Daniela Marcoccia, APRN, Doruk Ozgediz, MD, Michael Caty, MD. Improving the Massive Transfusion Process for Pediatric Trauma Patients. *Joseph A. Zaccagnino Patient Safety and Clinical Quality Conference, New Haven, CT.*
- Nov. 2012 Kimberly Barre, RN, CCRN, **Carla Carusone, RN, BSN**, Greg Klaus, BSN, RN, Rebecca Lofthouse, BSN, MS, RN, Linda Roney, MSN, RN-BC, CPEN, Pina Violano, MSPH, RN-BC, CCRN, CPS-T. The Making of Yale-New haven Children's Hospital as a Verified Level I Pediatric Trauma Center. *Pediatric Trauma Symposium, New Haven, CT.*
- July 2009 Marilyn W. Hirsch, MS, RN, **Carla A Carusone, RN**, Thomas J Balcezak, MD, Michael O'Brien, MD; Kevin M. Schuster, MD, Linda L. Maerz, MD, Robert B. Schlessel, MD, Leo M. Cooney, MD, Robert Udelsman, MD, R. Lawrence Moss, MD. A Multidisciplinary Approach to Quality Improvement in an Academic Health Center: A Preliminary Report. *2009 ACS NSQIP National Conference, San Diego, CA.*
- May 2009 Violano, Pina & **Carusone, Carla.** Development of a Hospital Based Car Passenger Safety Program- *Sigma Theta Tau- Delta Mu Induction Ceremony, East Haven, CT.*
- May 2009 Moss, Lawrence, Hirsch, Marilyn, Balcezak, Tom, **Carusone, Carla**, Ferrigno, Debra, Abramczyk, Mary-Ann. Use of National Surgical Quality Improvement Program Data to Identify Surgical Improvement at YNHH. *Joseph A. Zaccagnino Patient Safety and Clinical Quality Conference, New Haven, CT.*
- May 2009 Moss, Lawrence, Hirsch, Marilyn, Ferrigno, Debra, Balcezak, Tom, **Carusone, Carla.** Yale-New Haven Children's Hospital's Role in Developing a National System for Assessing Outcomes in Children's Surgery. *Joseph A. Zaccagnino Patient Safety and Clinical Quality Conference, New Haven, CT.*
- October 2008 **Carusone, Carla, RN.** Trauma Activation Fees- What's New?

PROFESSIONAL ORGANIZATIONS

2017CV

2008-present American Association of Professional Coders- New Haven Chapter

2006-present Eastern Association of the Surgery of Trauma
2007-2010 Membership Committee

2006-present Society of Trauma Nursing
2008-2016 EAST Planning Committee

REFERENCES

Available upon request

CURRICULUM VITAE

Name: Christel M. Haberland DDS, MS

Proposed for Promotion to: Assistant Clinical Professor, Department of Surgery

Term: July 1, 2013 to June 30, 2016

School: Yale University School of Medicine (and the Graduate School)

Reason for Promotion: Dr. Haberland is a valued lecturer, instructor, and full-time faculty member of the Dental Department. She is committed to the education of our residents and caring for our patients. As a junior faculty she has been involved in clinical research and some publications. Dr. Haberland is a great mentor and fulfills the requirements for promotion to Asst. Clinical Professor.

Education:

Certificate in Pediatric Dentistry	Yale-New Haven Hospital	07/2007-06/2009
D.D.S.	The Ohio State University	04/1998-06/2000
M.S. in Dentistry	The Ohio State University	01/1995-03/1998
Certificate in Oral Pathology	The Ohio State University	01/1995-12/1997
DDS	Universidad Francisco Marroquin, Guatemala	01/1991-10/1994
B.S.	Universidad Francisco Marroquin, Guatemala	02/1988-12/1990

Career/Academic Appointments:

Clinical Instructor, Department of Pathology, Yale School of Medicine	11/2012-present
Clinical Instructor, Department of Surgery, Yale School of Medicine	07/2011-present
Associate Pediatric Dentist, Yale-New Haven Hospital, CT	05/2010-present
Resident in Pediatric Dentistry, Yale-New Haven Hospital, CT	07/2007-06/2009
Associate Dentist, Yarmosky Pediatric Dentist 200 Elm Street Pittsfield, MA 01201	09/2005-01/2007
Associate Dentist, Aventura Pediatric Dentistry 2797 NE 207th St., Aventura, FL 33180	03/2003-06/2005
Assistant Professor, Department of Oral Pathology, Medicine and Surgery Kornberg School of Dentistry, Temple University, PA	08/2000-06/2002
Resident in Oral and Maxillofacial Pathology, The Ohio State University	01/1995-03/1998

Licensure:

Connecticut Dental License (10093)	07/2009-present
Massachusetts Dental License (21441)	09/2005-09/2007
Florida Dental License (DN16141)	03/2003-present
Pennsylvania Dental License (DS-031401-L)	08/2000-08/2003
Ohio Dental License (21268)	08/2000-08/2002

Board Certification:

American Board of Pediatric Dentistry	09/2010
American Board of Oral and Maxillofacial Pathology	10/2003

Lectures, Courses, Oral and Poster Presentations:

New London Dental Society, CT "Differential Diagnosis of Acute And Chronic Oral Ulcerative Diseases" (Lecture)	03/2013
Milford Dental Society, Milford, CT "Differential Diagnosis of Oral Mucosal Ulcerative Conditions" (Lecture)	11/2012
AAOMP Meeting Minneapolis, MN "Superficially Invasive Squamous Cell Carcinoma" (Oral Presentation)	06/2012
Shoreline Dental Society, Branford, CT "Differential Diagnosis of Oral Vesiculo-Bullous Diseases" (Lecture)	01/2012
AAOMP Meeting Puerto Rico, Clinical Pathologic Conference Case Discussant	05/2011
AAOMP Meeting Puerto Rico "Orofacial Manifestations of Inherited Systemic Hyalinosis: Case Report and Review of the Literature" (Oral Presentation)	05/2011
AAOMP Meeting Tucson, AZ "Neonatal Teeth in 6-week-old Baby with Bilateral Cleft Lip and Palate Case Report and Review of the Literature" (Poster Presentation)	06/2010
AAPD Meeting Honolulu, HI "Bispectral Index Monitoring of Sedation Depth in Pediatric Patients" (Poster Presentation)	05/2009
Berkshire Dental Society, Lenox MA "Differential Diagnosis of Oral Ulcerative Lesions" (Lecture)	12/2006
Berkshire Medical Center, General Practice Residency Program Pittsfield, MA "Pediatric Oral Pathology" & "Diagnosis and Management of Oral Ulcerations" (Lectures)	10/2006
Half-day Seminar, Greater New York Dental Meeting, New York, NY "Differential Diagnosis of Oral Soft Tissue Lesions" (Lecture)	11/2003
Ryan White Oral Health Training, San Juan PR "Diagnosis and Management of Oral Diseases in HIV-Positive Patients" (Lecture)	04/2002
District of Columbia Dental Society, Annual Hygienist Program, Washington DC "Oral Soft Tissue Lesions, a Rational Approach- Hints of How to Make Classifying and Diagnosing Easier" (Lecture)	03/2002

AAOMP Meeting Dallas, TX "Prevalence of Fluconazole-Resistant Strains Oral Candida albicans in Healthy Outpatients" (Oral Presentation) 05/1998

AAOMP Meeting Vancouver BC "Linear Epidermal Nevus With Oral Mucosal Lesions: Report of Five Cases" (Oral Presentation) 05/1997

IAOP Meeting Toronto ON, Clinico-Pathologic Conference Case Discussion 08/1996

AAOMP Meeting Baltimore, MD "Referral Patterns, Lesion Prevalence, and Patient Care Parameters in a Clinical Oral Pathology Practice." (Oral Presentation) 06/1996

PROFESSIONAL SERVICE

CT State Dental Association
Member, Council on New Membership 06/2013-06/2014

American Academy of Oral and Maxillofacial Pathology
Member, Education Committee 05/2011-05/2015

Peer Review Groups/Grant Study Sections

Member, Pediatric Protocol Review Committee,
Yale University School of Medicine, Department of Pediatrics 01/2011- present

Journal Service

Reviewer, Head and Neck Pathology Journal 01/2013-present
Reviewer, Journal Dentistry for Children 12/2012-present
Member, Editorial Board, Pediatric Dentistry Journal 05/2012- present
Reviewer for Pediatric Dentistry (Oral Pathology Section) 06/2007- present

Professional Organizations

Member, International Association for Dental Research 05/2010- present
American Academy of Pediatric Dentistry
Active Member 07/2009- present
Student Member 07/2007- 06/2009
Associate Member 01/2004- 06/2007

Member, American Board of Oral and Maxillofacial Pathology 10/2003-present

American Dental Association
Tripartite Member (New Haven Dental Society/
Connecticut State Dental Association, American Dental Association) 07/2009-present
Student Member 07/2007-07/2009

Tripartite Member (Berkshire District Dental Society/ Massachusetts Dental Society/ American Dental Association)	09/2005-06/2007
Tripartite Member (South Florida District Dental Association/ Florida Dental Association/American Dental Association)	03/2002-08/2005
Member, International Association of Oral Pathologists	03/1996-present
Member, American Academy of Oral and Maxillofacial Pathology	02/1995-present

Public Service

Volunteer Pediatric Dentist, Connecticut Mission of Mercy, Bridgeport CT	06/2013
Volunteer Dentist, Global Dental Expeditions-Global Dental Relief Project. Kathmandu, Nepal	10/2009-11/2009
Volunteer Pediatric Dentist, Connecticut Mission of Mercy, Tolland CT	03/2008

BIBLIOGRAPHY:

1. Peer-Reviewed Manuscripts

Cox, D, Haberland C. Clinico-pathologic Conference Case 4. Hyalinizing Clear Cell Carcinoma. Head and Neck Pathol 2011; 5: 281-5

Haberland C, Baker S, Liu H. Bispectral Index Monitoring of Sedation Depth in Pediatric Dental Patients Anesth Progress 2011; 58: 66-72.

Haberland-Carrodeguas C, Fornatora ML, Reich RF, and Freedman PD. Detection of human papillomavirus DNA in oral inverted ductal papillomas . Journal of Clinical Pathology 2003; 56:910-913

Haberland C, Allen C, Beck FM, Buesching W, Koletar S, Sundstrom P. Prevalence of Fluconazole- Resistant Strains of Candida albicans in Healthy Outpatients. Journal of Oral Pathology and Medicine 2002; 31: 99-105.

Haberland C.M. Allen CM, Beck FM Referral Patterns, Lesion Prevalence, and Patient Care Parameters in a Clinical Oral Pathology Practice. Oral Surg, Oral Med, Oral Pathol Oral Radiol Endod 1999; 87: 583-8.

2. Case Reports, Technical Notes, Letters

Haberland-Carrodeguas C, Allen CM, Carlos R, Flaitz CM, Hicks J, Lovas JG, Stahl S. Linear Epidermal Nevus with Oral Mucosal Involvement. Report of 5 cases. Oral Diseases 2008; 14:131-7.

3. Others

Prasad ML, Haberland C. Polymorphous Low-Grade Adenocarcinoma. Encyclopedia of Pathology. Editor Krieken HV. Section Editor Volavsek M. Springer. 2012, (In-press)

CURRICULUM VITAE

Name: Michael P. Johnson D.M.D., Diplomate ABOMS, Fellow ABOMS

Proposed for Appointment to: Assistant Clinical Professor

Term: Continuous

School: Yale University School of Medicine

Reason for Appointment: Dr. Johnson is a valued lecturer, instructor, and faculty member of our Oral Surgery department. He is committed to the education of our residents. In addition to his academic achievements, he is a Diplomate, American Board of Oral and Maxillofacial Surgeons and an Executive Board Member, CT Society of Oral and Maxillofacial Surgeons. Dr. Johnson is a great mentor to our Residents and fulfills the requirements for promotion to Asst. Clinical Professor.

Address: 43 Oriole Circle
Guilford, CT 06437
Phone: 203 671-1751

E-mail: mpjst6@yahoo.com

Education:

Oral and Maxillofacial Surgery Residency Training, 2001-2005
Hospital of Saint Raphael and Yale New Haven Hospital
Yale School of Medicine

D.M.D.

University of Pittsburgh School of Dental Medicine, 2001
Dean's Distinction, OKU Honors

B.S. Biology,

Eastern Connecticut State University, 1997
University Honors Scholar

Career/Academic Appointments:

Current:

Partner, Private Practice Oral and Maxillofacial Surgeon
Hamden-Shoreline Oral and Maxillofacial Surgery Associates P.C.,
Four Locations in Guilford, Hamden, & Clinton, Wallingford, CT
Share the responsibilities in managing, maintaining, and growing a multiple
office, multiple doctor OMS group practice

Provide exceptional oral and maxillofacial surgical health care to the communities of Southern Connecticut

Faculty, Part-Time Academic Oral and Maxillofacial Surgeon
Yale – New Haven Hospital

Oversee and provide clinical instruction to the Oral Maxillofacial Surgery Residents and General Practice and Pediatric Dentistry Residents; provide a clinical curriculum to both the OMFS Resident and GPR/ pediatric dental residents in the area of Oral and Maxillofacial Surgery. Render medical, administrative and teaching services to staff members and patients of the Hospital.

Attending Surgeon, Oral and Maxillofacial Surgery

Yale-New Haven Hospital

Appointments in Department of Dentistry, Department of Surgery, New Haven, CT

2004 – 2005

Chief Resident

Oral and Maxillofacial Surgery

Hospital of Saint Raphael and Yale New-Haven Hospital, affiliate of Yale University School of Medicine, New Haven, CT

2001-2004

Resident

Oral and Maxillofacial Surgery

Hospital of Saint Raphael, affiliate of Yale University School of Medicine, New Haven, CT

Board Certification:

Diplomate, American Board of Oral and Maxillofacial Surgeons, 2007

PROFESSIONAL

Professional Organizations

Diplomate, American Board of Oral and Maxillofacial Surgeons

Fellow, American Association of Oral and Maxillofacial Surgeons

Executive Board Member, Connecticut Society of Oral and Maxillofacial Surgeons

Evaluator, State of CT / CSOMS Anesthesia Office Evaluations, 2005-current

Member, American Dental Society of Anesthesiology

Member, American Dental Association, Connecticut State Dental Association

President, CT Shoreline Dental Association, 2011-2012

Vice President, CT Shoreline Dental Association, 2010-2011

Education Program Director, CT Shoreline Dental Association. 2009-2010

Treasurer, CT Shoreline Dental Association, 2008-2009
Secretary, CT Shoreline Dental Association, 2007-2008
Member, Omicron Kappa Upsilon Dental Honor Society

Professional Honors & Recognition:

- 2011-2012 – “Bernard Levine Teacher of the Year Award”
Yale-New Haven Hospital Oral and Maxillofacial Surgery Residency Program
- 2008, 2009, 2010, 2011, 2012 – “Connecticut Magazine” Top Dentist, Oral and Maxillofacial Surgery
- 2002 - 1st Place, Hospital of Saint Raphael Annual Resident Research Symposium
- 2001 - Omicron Kappa Upsilon Dental Honor Society
- 2001 - Outstanding Achievement in Oral and Maxillofacial Radiology Award, American Academy of Oral and Maxillofacial Radiology
- 2000 - Outstanding Accomplishment in Dental Research Award, American Association for Dental Research
- 2000 - 3rd Place, American Association for Dental Research National Student Research Group Caulk/Dentsply clinical research competition, 2000 IADR/AADR meeting, Washington D.C.
- 2000 - ADA/Dentsply Student Clinician Award, University of Pittsburgh School of Dental Medicine American Student Dental Association Research Competition
- 2000 - Ralph W. Phillips Student Research Fellowship, The Academy of Operative Dentistry
- 2000 - Morgan Scholarship, University of Pittsburgh School of Dental Medicine Alumni Association
- 1999 - Oral and Maxillofacial Surgery Foundation Research Training Award for Health Professions Students through American Association of Oral and Maxillofacial Surgeons
- 1999 - 1st Place, Clinical Science Category, University of Pittsburgh School of Dental Medicine Research Competition

Lectures, Courses, Web-based Education:

Lecturer, Yale-New Haven Hospital OMS Training Program and the Yale-New Haven Hospital Department of Dentistry Training Programs:

- “Orthognathic Surgery”
- “Odontogenic Infections of the Head and Neck”
- “Maxillofacial Trauma”
- “Principles of Dentoalveolar Surgery”
- “Oral and Maxillofacial Bone Grafting”
- “Transitioning from Residency to Private Practice”
- “Basics of Craniofacial Syndromes”
- “Surgical Management of Maxillofacial Pathology”

Shoreline Dental Society, 1/29/2013
“Cysts and Tumors of the Jaws”

Examiner (Surgery I and Surgery II), 2008 - current

Mock Oral and Maxillofacial Surgery Oral Board Exam, Yale New Haven Hospital and UConn residency training programs, 2008 - current

Yale New Haven Hospital Oral and Maxillofacial Surgery Program Interview committee, 2005, 2008 - current

Faculty advisor for Resident Research projects, 2007 - current

- Clinical Study of the Use of Glycopyrolate to Reduce Reactive Airway in Office Anesthesia
- OMS Survey: Desirable Characteristics of Recently Trained OMS for Employment
- Mandibular Angle Fracture Infection Rate
- Implant Survival in OMS Training Program
- Maxillofacial Osteomyelitis

6/2011:

Advisory Board, Organogenesis

2005:

Resident Presentation with Discussion at the:
38th Annual CSOMS Educational Symposium titled:
"Maxillofacial Trauma: Lessons I've Learned"
Speaker: Edward Ellis III, DDS, MS

2005: Lecture:

"Orthognathic Surgery: Alive and Well", Yale-New Haven Hospital Department of Dental Surgery Grand Rounds

2004: Lecture:

"Surgical Management of a Patient with Hypoprothrombinemia and History of Anaphylaxis After Plasma Administration.", New York University, William F. Harrigan Society Annual Meeting

2004: Lecture:

"Comparative Analysis of the Treatment of Mandibular Fractures at a Level 1 and a Level 2 Trauma Center", Hospital of Saint Raphael Grand Rounds, Annual Resident Research Symposium

2003: Lecture:

"Cardiovascular Effects of Sevoflurane Anesthesia in Pediatric Oral and Maxillofacial Surgery", Hospital of Saint Raphael Grand Rounds, Annual Resident Research Symposium

2002: Lecture:

"Anesthetic Management of Patients Susceptible to Malignant Hyperthermia at the Hospital of St. Raphael 1978-2000", Hospital of Saint Raphael Grand Rounds, Annual Resident Research Symposium

BIBLIOGRAPHY:

Hinic P, Johnson MP, Kelly JP., "Desired Training Characteristics of a Potential Oral and Maxillofacial Surgery Practice Associate: A Connecticut Survey Response." *Journal of Oral and Maxillofacial Surgery*, Volume 70, Issue 2, Pages 492-497, February 2012

Nair MK, Ludlow JB, May KN, Nair UP, Johnson MP, Close JM., "Diagnostic accuracy of intraoral film and direct digital images for detection of simulated recurrent decay. *Oper Dent*. 2001 May-Jun;26(3):223-30.

Nair MK, Webber RL, Johnson MP., "Comparative evaluation of Tuned Aperture Computed Tomography for the detection of mandibular fractures," *Dentomaxillofac Radiol*. 2000 Sep;29(5):297-301.

Ziska MH, T Giovanello, MP Johnson, J Baly., "Disseminated Lyme disease and pregnancy," IX Annual International Conference on Lyme Borreliosis & other Tick-borne Disorders. 1996. Mass. USA.

Frank J. Romano, D.M.D.

120 Charter Oak Road, Fairfield, CT 06824

H: (203) 259-7647

W: (203) 372-0881

docfrankr@sbcglobal.net

EMPLOYMENT

HISTORY:

- 1993 – Present **Frank J. Romano, D.M.D.**, 2240 Madison Avenue, Bridgeport, CT 06606
General Dentistry, Private Practice – Owner
Provide all phases of general and cosmetic dentistry for adults and children.
Manage all personnel and financial operations.
- 2003 – Present **Danbury Hospital**, Danbury, CT
Vice-Chairman, Department of Dentistry and General Practice Residency
Assist the chairman and director, Dr. Thomas Kahl, with the management and operation of the Department of Dentistry and the General Practice Residency Program. Assisted in the preparation of the 2004 and 2011 CODA Accreditation Site Visits, both times achieving approval without reporting requirements.
- 1997 – Present **Danbury Hospital**, Danbury, CT
Director of the General Dentistry Resident Operating Room Program
Perform general dentistry on adults and children with physical and intellectual disabilities in the O.R. with the assistance of the residents. The residents are instructed on proper O.R. procedures and protocol, including admitting and discharging patients, and working with the O.R. team of anesthesiologists and nurses. The goal and objective of this program is to develop residents who are competent in hospital and operating room dentistry and to encourage them to continue to care for special needs patients once they graduate.
- 1991 – Present **Danbury Hospital, Department of Dentistry**, Danbury, CT
Attending
Provide direct patient care and supervise the dental residents. Lecture residents on general dentistry topics, including treatment planning, practice management, emergency dentistry, restorative dentistry and special needs dentistry.
- 1988 – 1989 **Danbury Hospital**, Danbury, CT
Residency Program, General Practice
Hospital dental program with special emphasis on oral surgery, periodontics, endodontics, and restorative dentistry along with operating room dentistry for special needs patients.
- EDUCATIONAL**
- BACKGROUND:**
- 1984 - 1988 **Fairleigh Dickinson University, School of Dental Medicine**,
Hackensack, NJ - **Doctor of Dental Medicine (DMD) – Degree**
- 1987 – 1988 **Fairleigh Dickinson University, Department of Endodontics**,
Hackensack, NJ – **Teaching Fellowship**

Frank J, Romano, DMD

1987 – 1988 **Fairleigh Dickinson University, Department of Prosthodontics –
Hackensack, NJ - Complete Dentures Teaching Fellowship**

1980 – 1984 **Fairfield University, Fairfield, CT
Bachelor of Science with a major in biology and a minor in psychology**

APPOINTMENTS:

April, 2005 **Commission on Dental Accreditation
Consultant for the American Dental Association – Site Visitor for General
Practice Residency and AEGD program accreditation**

March, 2004 **Disaster Mortuary Operations Response Team (DMORT)
Forensic Odontologist under Health and Human Services for Region 1, New
England**

MEMBERSHIPS:

2014 **American Academy of Developmental Medicine and Dentistry**

2000 - Present **American Dental Education Association**

1988 – Present **Special Care Dentistry Association**

1988 – Present **American Dental Association, Bridgeport Dental
Association and Connecticut State Dental Association**

AWARDS:

1988 **Endodontics Award of Excellence
Fairleigh Dickinson University, Department of Endodontics**

RESEARCH:

1985 – 1988 **Fairleigh Dickinson University, Department of Oral Microbiology,
Hackensack, NJ – Research Assistant
Studied the effects of calcium lactate on acid production by oral bacteria.
Presented research results, “Cheddar Cheese Effect on Acid Production by
S. mutans and L. casei,” at the American Association for Dental Research,
March 1986, Washington, D.C.**

Academic Education:

2014 **ADEA/AAL Institute for Allied Health Education
Completed 2 programs (40 Credit hours) in Teaching Foundations in Allied
Health Education and Clinical Teaching Practices.**

Medical Staff

2016 **Bridgeport Hospital
Department of Surgery, Clinical Assistant, Provisional**

1991-Present **Danbury Hospital
Department of Dentistry, Attending**

CURRICULUM VITAE

Date of Revision: 9/1/2014
Name: Derek M. Steinbacher, DMD, MD
Proposed for Promotion to: Associate Professor, Department of Surgery
Section of Plastic
Term: August 1, 2013 – June 30, 2016
School: Yale University School of Medicine (and the Graduate School)

Reason for Promotion:

Education:

B.S	James Madison University	1997
M.S	University of Pennsylvania	2001
D.M.D.	University of Pennsylvania	2001
M.D	Harvard Medical School	2004

Career/Academic Appointments:

7/2001-6/2002	Intern, Oral/Maxillofacial Surgery, Massachusetts General Hospital, Boston, MA
7/2004-6/2006	Resident, General Surgery, Massachusetts General Hospital, Boston, MA
7/2006-6/2007	Chief Resident, Oral/Maxillofacial Surgery, Massachusetts General Hospital, Boston, MA
7/2007-6/2009	Fellow, Plastic and Reconstructive Surgery, John Hopkins Hospital/University of Maryland, Baltimore, MD
7/2009-6/2010	Fellow, Craniofacial Surgery, University of Pennsylvania/Children's Hospital of Philadelphia, Philadelphia, PA
8/2010-present	Assistant Professor, Dept of Surgery (Plastic), Yale University School of Medicine, New Haven, CT
8/2010-present	Assistant Professor, Dept of Pediatrics, Yale University School of Medicine, New Haven, CT

Administrative Positions:

2014-present	Medical Board, Yale New Haven Hospital
2014-present	Chief, Dentistry, Oral/Maxillofacial Surgery, Yale New Haven Hospital, New Haven, CT
2011-present	Director, Craniofacial Center, Yale University School of Medicine, New Haven, CT

Board Certification:

Diplomate American Board of Plastic Surgery (8101)
Fellow American College of Surgeons
Fellow American Academy Pediatrics
Diplomate American Board Oral and Maxillofacial Surgery (22444)

State of Connecticut, Physician/Surgeon License (048790)
State of Connecticut, Dental License (10263)
Pennsylvania Bureau of Professional and Occupational Affairs, Medical License (MD436828)
Pennsylvania Bureau of Professional and Occupational Affairs, Dental License (DS038086)
Maryland Board of Physicians, Medical License (D0065657)
Maryland State Board of Dentistry (14003)
Massachusetts Medical License (221422)
Commonwealth of Massachusetts, Board of Registration in Dentistry (20452)
North East Regional Board of Dental Examiners
National Board of Dental Examiners Part 1-2
National Board of Medical Examiners Step 1-3
Federal DEA (BS9792032)
Massachusetts DEA (MS0630726C)
Maryland DEA (D65462)

Professional Honors & Recognition:

Rhinoplasty Society
American Academy of Craniomaxillofacial Surgeons
American Society of Maxillofacial Surgeons
American Cleft Palate Craniofacial Association
American Society Craniofacial Surgery
Northeastern Society Plastic Surgeons
New England Society Plastic and Reconstructive Surgery
American Society Plastic Surgery
Fellow Puerto Rican Society for Arts and Sciences
American Society of Maxillofacial Surgeons, CRANIO Award
American Society of Maxillofacial Surgeons, Biomet Craniofacial Scholar Award
Oral and Maxillofacial Surgery Educational Foundation
Harvard Medical School, *cum laude*
University of Pennsylvania, cumulative grade point average 4.0/4.0, class rank 1
Omicron Kappa Upsilon, Eta Chapter
Sigma Xi, Scientific Research Society
Matthew Cryer Honor Society, Eta Sigma Sigma
Bernard G. Sarnat Craniofacial Biology Research Award
Thomas P. Hinman Scholar
Academy of General Dentistry Award
Alpha Omega International Scholarship Award
Achievement Award in Pharmacology and Therapeutics
Quintessence Research Achievement Award
Endodontic Achievement Award
Leonard Abrams, DDS, Award in Dental Anatomy and Occlusion
American Dental Society of Anesthesiology, Daniel F. Lynch Essay Award, 1st Place
University of Pennsylvania School of Dental Medicine Preventive Dentistry Award
Program for Medically Complex Patients Honors Student
William Goldman Foundation Scholarship
Benjamin and Mary Siddons Measey Foundation Scholarship
William Walden Graduate Scholarship
Raymond J. Harris Scholarship
Omicron Delta Kappa Leadership Honor Society
National Institutes of Health Summer Intramural Research Training Award

Colgate-Palmolive Research Scholar
James Madison University, *magna cum laude*
President's and Dean's List
Alpha Chi Rho Award for Outstanding Academic Achievement
Beta Beta Beta Biological Honor Society
Alpha Epsilon Delta Honor Society

Grant/Clinical Trials History:

Current Grants

Agency: Yale Department of Surgery, Charles Ohse Grant
I.D.# 1742817
Title: "Vascularization of bioengineered bone constructs"
P.I.: Derek Steinbacher, M.D.
Project period: 01/24/2014 – 06/30/2015

Agency: Plastic Surgery Foundation
I.D.# M155954
Title: "FGFR2 mitigates aberrant suture fusion in Crouzon syndrome"
P.I.: Derek Steinbacher, M.D.
Project period: 07/01/2013 – 06/30/2014

Agency: Yale Department of Surgery, Charles Ohse Grant
I.D.# 469206
Title: "Pharmacological modulation of the NO/cGMP pathway reverses cigarette-smoke induced skin flap necrosis"
P.I.: Derek Steinbacher, M.D.
Project period: 01/10/2013 – 06/30/2014

Agency: KLS
I.D.# R11431
Title: "Synostosis rescue in Crouzon Mice"
P.I.: Derek M. Steinbacher, M.D.
Project period: 07/01/2012 – 03/31/2014

Agency: Synthes
I.D.# R10918
Title: "Novel Worm gear device for Cranial Distraction Osteogenesis"
P.I.: Derek Steinbacher, M.D.
Project period: 04/01/2011 – 03/31/2013

Agency: Yale Department of Surgery
I.D.# 0061AM
Title: "The osteogenic behavior of Adipose-derived and mesenchymal stem cells"
P.I.: Derek Steinbacher, M.D.
Project period: 08/01/2011 – 03/31/2014

Past Grants

Agency: Yale Department of Surgery, Charle Ohse Grant
I.D.# 22430A

Title: "3-dimensional morphologic characterization of craniofacial conditions"
P.I.: Derek Steinbacher, M.D.
Percent effort: 2%
Direct costs per year: \$5000
Total costs for project period: \$10,000
Project period: 09/01/2010 – 03/31/2012

NIH Grant Advisor

Agency: National Institutes of Health, NIDCR
I.D.# K99 DE024194-0
Title: "Identification of human orofacial enhancers and their role in orofacial clefts"
P.I.: James Noonan, PhD (Justin Cotney, PhD)
Project period: 04/01/2014 – 03/30/2019

Clinical Trial Reviewer

Department of Defense, Regenerative Medicine Clinical Trial Program, 2014.

Thesis Advisor (Yale University, School of Medicine)

Pfaff, Miles J. Mitigation of Shp2 and Grb2 Activation Prevents Fibroblast Growth Factor Receptor 2 Signaling-Induced Craniosynostosis Through an ERK1/2-Dependent Pathway, 2014.

Yuhasz, Mikell. Comparing the Efficacy of Calvarial Transport Distraction and Simultaneous Adipose Grafting With and Without Radiation, 2014.

Hashim, Peter. The Implications of Deformational Plagiocephaly on Language Processing, 2013.

Beckett, Joel. Dymorphology and Dysfunction in the Brain and Calvarial Vault of Nonsyndromic Craniosynostosis, 2013.

Invited Speaking Engagements, Presentations, Symposia & Workshops Not Affiliated With Yale:

International/National

2014: American Society of Plastic Surgeons, Annual Meeting, Chicago, IL: "3-dimensional planning in Orthognathic surgery." (Panel discussion)

2014: American Society of Plastic Surgeons, Annual Meeting, Chicago, IL: "Aesthetic Orthognathic Surgery."

2014: Festschrift Honoring Dr. Leonard B, Kaban, Massachusetts General Hospital, Boston, MA: "3-dimensional planning in craniomaxillofacial surgery."

2014: NESPS, Providence, RI: "Cleft lip."

2014: ASMS Principles Course, New York, NY: "Dental extractions in craniomaxillofacial surgery," "Concepts in orthognathic surgery"

2014: AO Craniomaxillofacial Principles Course, New York, NY: "Condylar fractures"

2013: Seattle Children's Hospital, Visiting Professor, Seattle, WA: "3-dimensional planning in craniomaxillofacial surgery," "Transverse maxillofacial discrepancies."

2013: ASMS, Principles Course, Philadelphia, PA: "Craniomaxillofacial splints," "Local anesthesia in craniomaxillofacial surgery."

- 2013: AO Craniomaxillofacial, Principles Course, Cambridge, MA: "Rigid fixation in Mandibular reconstruction," "Secondary correction of Orbitozygomatic deformities."
- 2013: Combined Yale/Pitt Orthognathic Workshop and Course, Co-director.
- 2012: AO/Synthes: Craniomaxillofacial Fellows Course, Orlando, FL: "3-dimensional Planning in distraction osteogenesis."
- 2012: AO Craniomaxillofacial, Principles Course, Boston, MA: "Orbitozygomatic deformities," "Frontal sinus fractures."
- 2011: AO Craniomaxillofacial, Principles, Chicago, IL: "Frontal Sinus Fractures."
- 2010: AO Craniomaxillofacial, Distraction, Philadelphia, PA: "Curvilinear mandibular distraction."
- 2010: AO Craniomaxillofacial, Complex Reconstruction, Vail, CO: "Multidimensional Mandibular Distraction"

Regional

- 2014: New Haven Dental Society, Keynote address: "Cleft orthognathic surgery."
- 2013: Connecticut Society Pediatric Dentistry Meeting: "3-D planning and Mandibular distraction osteogenesis."
- 2012: University of Connecticut Orthodontics Seminar: "Treatment Planning in Orthognathic Surgery."
- 2012: Fairfield Orthodontic and Dental Society: "Current Concepts in Orthognathic Surgery."
- 2012: Stamford Hospital Pediatric Grand Rounds: "Cleft and Craniofacial Surgery"
- 2012: Oakstone Review Course, New York, NY, "Maxillofacial Trauma"
- 2012: Oakstone Review Course, New York, NY, "Scalp and Cranial Reconstruction."
- 2012: Oakstone Review Course, New York, NY, "Ear Deformities and Otoplasty."
- 2012: Oakstone Review Course, New York, NY, "Cleft Lip and Palate."
- 2011: Greenwich Hospital Pediatric Grand Rounds: "Cleft and Craniofacial Surgery"
- 2011: Bridgeport Hospital Pediatric Grand Rounds: "Cleft and Pediatric Plastic Surgery"
- 2011: Greenwich Hospital Maternal Fetal Medicine Grand Rounds: "Prenatal Diagnosis of Cleft and Craniofacial Problems"
- 2011: Shoreline Dental Society: "Orthognathic Surgery"
- 2011: Wallingford Orthodontic Study Club: "Orthognathic Surgery"
- 2011: Torrington Dental Society: "Orthognathic Surgery"
- 2011: Middletown Dental Society: "Orthognathic Surgery"

Peer-Reviewed Presentations & Symposia Given at Meetings Not Affiliated With Yale:

International/National

- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Calvarial Transport Distraction Osteogenesis in an Irradiated Field."
- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "3D Nasolabial Changes following Le Fort I Osteotomy."
- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Alar-columellar and lateral nostril changes following tongue-in-groove rhinoplasty."
- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Orbital dysmorphism in metopic synostosis."

- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Spatial repositioning is improved using 3D planning for free fibular mandibular reconstruction."
- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Two methods for frontal bandeau construction and repositioning in metopic synostosis."
- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Mandibular volumetric increase following distraction osteogenesis."
- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Accuracy of free fibular mandibular reconstruction using virtual surgical planning."
- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Immediate fat grafting in primary cleft lip repair."
- 2014: XXII Congress of European Cranio-Maxillofacial Surgery, Prague, CZ. "Correction of severe enophthalmos by simultaneous fat grafting and anatomical orbital reconstruction."
- 2014: American Association of Plastic Surgeons, 93rd Annual Meeting. Miami, FL. "3D Nasolabial changes following Le Fort I Osteotomy."
- 2014: American Society Aesthetic Plastic Surgeons, The Aesthetic Meeting. Rhinoplasty Society 19th Annual Meeting. San Francisco, CA. "Alar-columellar and lateral nostril changes following tongue-in-groove rhinoplasty."
- 2014: American Cleft Palate – Craniofacial Association, 71st Annual meeting. Indianapolis, IN. "Cleft orthognathic surgery." (Master class)
- 2014: American Cleft Palate – Craniofacial Association, 71st Annual meeting. Indianapolis, IN. "Three-dimensional orbital dysmorphology in metopic synostosis."
- 2014: American Cleft Palate – Craniofacial Association, 71st Annual meeting. Indianapolis, IN. "Mandiobular volumetric increase following distraction osteogenesis."
- 2014: Plastic Surgery Research Council. 58th Annual Meeting. New York, NY. "Evaluation of cranial bone transport distraction with and without adipose grafting."
- 2014: Plastic Surgery Research Council. 58th Annual Meeting. New York, NY. "Dynamic culture enhances osteogenesis performance comparing donor matched adipose and bone marrow mesenchymal stem cells.".
- 2013: International Federation for Adipose Therapeutics and Science, 11th Annual Symposium on Adipose Stem Cells and Clinical Applications of Adipose Tissue. New York, NY. "Processing technique influences adipose stem cell concentration and cell viability in lipoaspirate."
- 2013: International Federation for Adipose Therapeutics and Science, 11th Annual Symposium on Adipose Stem Cells and Clinical Applications of Adipose Tissue. New York, NY. "Osteogenic performance of donor matched human adipose and bone marrow MSCs under dynamic culture."

- 2013: International Society of Craniofacial Surgery, XV Biennial International Congress, Jackson Hole, WY. "Evaluation of cranial transport distraction with and without adipose grafting."
- 2013: International Society of Craniofacial Surgery, XV Biennial International Congress, Jackson Hole, WY. "Osteogenic performance of donor matched human adipose and bone marrow MSCs under dynamic culture."
- 2013: Northeastern Society of Plastic Surgeons, 30th Annual Meeting, Washington, D.C. "Targeted cranial bone transport distraction is enhanced using a novel device."
- 2013: Northeastern Society of Plastic Surgeons, 30th Annual Meeting, Washington, D.C. "Comparison of symmetry and interfragmentary gap size in free fibular mandibular reconstruction: free-form versus 3D-planned."
- 2013: Northeastern Society of Plastic Surgeons, 30th Annual Meeting, Washington, D.C. "Evaluating neural development in deformational plagiocephaly and craniosynostosis using event-related potentials.."
- 2013: Plastic Surgery Research Council, Los Angeles CA. "PDE-5 inhibition lessens skin flap necrosis in nicotine exposed rats."
- 2013: Society for Neuroscience, 43rd Annual Meeting, San Diego, CA. "Neural correlates of language development in infants at risk for autism and infants with cranial deformities."
- 2013: School of Medicine Research Day. "Implications of infant head shape deformity on language processing."
- 2012: American Medical Association Conference. "Cranial Bone Transport Distraction Osteogenesis Using a Novel Worm-Gear Device."
- 2012: XXI Congress of European Cranio-Maxillofacial Surgery, Dubrovnik, Croatia, "Mandibular reconstruction comparing 3D and conventional free fibula grafts"
- 2012: XXI Congress of European Cranio-Maxillofacial Surgery, Dubrovnik, Croatia, "Cranial bone transport distraction osteogenesis using a novel worm-gear device"
- 2012: XXI Congress of European Cranio-Maxillofacial Surgery, Dubrovnik, Croatia, "A morphologic evaluation and sutural fusion rescue strategy in Crouzon mice"
- 2012: XXI Congress of European Cranio-Maxillofacial Surgery, Dubrovnik, Croatia, "Improved accuracy of fronto-orbital advancement for metopic synostosis using preoperative planning"
- 2012: American Society Plastic Surgeons, New Orleans, LA, "A range of zygomatic hypoplasia exists in Treacher Collins Syndrome"
- 2012: American Cleft Palate-Craniofacial Association, 69th Meeting and Symposia, San Jose, CA, "Volumetric comparison of the mandible in Treacher Collins Syndrome and Hemifacial Microsomia"

- 2012: American Cleft Palate-Craniofacial Association, 69th Meeting and Symposia, San Jose, CA, "Volumetric analysis of the mandible in Treacher Collins Syndrome"
- 2012: American Cleft Palate-Craniofacial Association, 69th Meeting and Symposia, San Jose, CA, "3D Evaluation of the zygomata in Treacher Collins Syndrome"
- 2012: American Cleft Palate-Craniofacial Association, 69th Meeting and Symposia, San Jose, CA, "Volumetric Analysis of the mandibular condyle in Treacher Collins Syndrome"
- 2012: American Cleft Palate-Craniofacial Association, 69th Meeting and Symposia, San Jose, CA, "Improved accuracy of fronto-orbital advancement for metopic synostosis using preoperative planning"
- 2011: International Society of Craniofacial Surgery, XIV Biennial International Congress, Livingstone, Zambia, "Is nasal mucoperiosteal closure necessary in cleft palate repair?"
- 2011: International Society of Craniofacial Surgery, XIV Biennial International Congress, Livingstone, Zambia, "An analysis of mandibular volume in hemifacial microsomia"
- 2011: International Society of Craniofacial Surgery, XIV Biennial International Congress, Livingstone, Zambia, "Volumetric comparison of the mandible in Treacher Collins Syndrome and Hemifacial Microsomia"
- 2011: International Society of Craniofacial Surgery, XIV Biennial International Congress, Livingstone, Zambia, "Volumetric analysis of the mandible in Treacher Collins Syndrome"
- 2011: International Society of Craniofacial Surgery, XIV Biennial International Congress, Livingstone, Zambia, "Temporal hollowing following surgical correction of unicoronal synostosis"
- 2011: American Cleft Palate-Craniofacial Association, 68th Meeting and Symposia, San Juan, PR, "Expansion of the posterior cranial vault using distraction osteogenesis"
- 2011: American Cleft Palate-Craniofacial Association, 68th Meeting and Symposia, San Juan, PR, "Is nasal mucoperiosteal closure necessary in cleft palate repair?"
- 2011: American Cleft Palate-Craniofacial Association, 68th Meeting and Symposia, San Juan, PR, "An analysis of mandibular volume in hemifacial microsomia"
- 2010: International Society of Craniofacial Surgery, XIV Biennial International Congress, Oxford, UK, "TWIST-1 genotype and phenotype in Saethre-Chotzen Syndrome."
- 2003: American Association of Oral and Maxillofacial Surgeons, 85th Annual Meeting, Scientific Sessions and Exhibition. Orlando, FL, "Mandibular Advancement by Distraction Osteogenesis for Tracheostomy-Dependent Children with Severe Micrognathia."

2003: Harvard Medical School, 63rd Annual Soma Weiss Research Day, Boston, MA,
"Treatment of Tracheostomy-Dependent Children with Severe Micrognathia"

1999: International Association of Dental Research, 77th General Session, Vancouver, BC,
"Signaling from G protein-Coupled Receptors to the c-jun Promoter Involves Multiple
MAP Kinase Cascades."

Professional Service

Journal Service:

Editorial Board

2012-present J of Craniomaxillofacial Trauma and Reconstruction

Ad Hoc Reviewer

2010-present Plastic and Reconstructive Surgery, J of Craniofacial Surgery, J of
Craniomaxillofacial Trauma and Reconstruction, Cleft Palate Craniofacial Journal, J of Oral and
Maxillofacial Surgery, Annals of Plastic Surgery, Annals of Surgery, PlosOne,

Professional Service for Professional Organizations:

Plastic Surgery Research Council

2013-present Member, Scientific Committee, Panelist

American Society Craniofacial Surgery

2014-present Member, Education Committee

American Cleft Palate-Craniofacial Association

2011-present Member, Membership Committee

American Society Maxillofacial Surgery

2010-2011 Member, Education Committee

Jorge Posada Foundation

2011-present Board Advisor Member

Public Service:

2011 Featured Expert and Consultant, National Geographic Production, *Treacher
Collins Syndrome*, National Geographic Channel

International Surgical Service

2013 Thailand. Cleft lip and palate reconstruction, Healing the Children

2010 Krakow, Poland. Children's Medical Foundation of Central and Eastern Europe,
Dr. Scott Bartlett, Jagiellonian University, Syndromic synostosis

2009 Dominican Republic. Cleft lip and palate and burn reconstruction

Bibliography:

Peer-Reviewed Original Research

1. **Steinbacher, DM**, Marinissen, MJ, Chiarello, M, Gutkind, JS: Signaling from G protein-Coupled Receptors to the c-jun Promoter Involves Multiple MAP Kinase Cascades. *J Dent Res*, 78(5), 1999.
2. **Steinbacher, DM**: The maxillomandibular phenotype and racial affinity of the Tepe Hissar skull population. *Penn Dental Journal*. Vol 100; 6-8, 2000.
3. **Steinbacher, DM**: Propofol: a sedative-hypnotic anesthetic agent for use in ambulatory procedures. *Anesth Prog* 48(2):66-71, 2001.
4. **Steinbacher, DM**, Glick, M.: The dental patient with asthma. An update and oral health considerations. *JADA* 132:1229-1239, 2001.
5. **Steinbacher, DM**, Kaban, LB, Troulis, MJ: Treatment of Tracheostomy-Dependent Children with Severe Micrognathia. *J Oral Maxillofac Surg*. 61(1): 78a-79, 2003.
6. **Steinbacher, DM**, Kaban, LB, Troulis, MJ: Mandibular Advancement by Distraction Osteogenesis for Tracheostomy-Dependent Children with Severe Micrognathia. *J Oral Maxillofac Surg*. 63(8):1072-9, 2005.
7. **Steinbacher, DM**, Dolan, RW. Isolated Non-Hodgkin's Lymphoma of the Mandible. *Oral Oncology* 42(5): 187-189, May 2006.
8. **Steinbacher, DM**, Upton, J., Rahbar R., Ferraro, N. F. Yolk Sac Tumor of the Mandible. *J Oral Maxillofac Surg* 66(1):151-3, 2008.
9. **Steinbacher DM**, Padwa BL, Mulliken JB. Simultaneous Harvesting Cancellous Iliac Bone for Alveolar Cleft Closure and Dermis for Augmentation of Median Tubercle. *Cleft Palate-Craniofac*. 46(3), 295-8, 2009.
10. **Steinbacher DM**, Singh N., Katz R., Khalifeh M. Augmentation Mastopexy Using an Autologous Fascial Sling. *Aesthetic Plastic Surgery*, Oct;34(5):664-71, 2010.
11. Munding GS, **Steinbacher DM**, Bishop JA, Tufaro AP. Giant Pilomatricoma Involving the Parotid: Case Report and Literature Review. *Journal of Cranio-Maxillofacial Surgery*. Oct; 39(7):519-24, 2011.
12. **Steinbacher DM**, Bartlett SP. The Relationship of the Mandibular Body and Ramus in Treacher Collins Syndrome. *J Craniofac Surg*, Jan;22(1):302-5, 2011.
13. **Steinbacher DM**, McGrath JL, Low DW. Is nasal mucoperiosteal closure necessary in cleft palate repair? *Plast Reconstr Surg*. Feb;127(2):768-73, 2011.
14. **Steinbacher DM**, Skirpan, J, Puchala J, Bartlett SP. Expansion of the Posterior Cranial Vault using Distraction Osteogenesis. *Plast Reconstr Surg*. Feb;127(2):792-801, 2011.
15. **Steinbacher DM**, Gougoutas A, Bartlett SP. An analysis of mandibular volume in hemifacial microsomia. *Plast Reconstr Surg*. Jun;127(6):2407-12, 2011.

16. **Steinbacher DM**, Wink J, Bartlett SP. Temporal hollowing following surgical correction of unicoronal synostosis. *Plast Reconstr Surg.* Jul;128(1):231-40, 2011.
17. Teng E, **Steinbacher DM**. Repair of the Cocaine-induced Cleft Palate using the Modified Double-opposing Z-plasty. *Cleft Palate Craniofac J.* Jan 22, 2012.
18. Patel A, Turner J, Travieso R, Clune J, **Steinbacher DM**, Persing JA. Celebrating Bernard Sarnat's 100th Birthday: A Review of Pathology and Management of Craniosynostosis. *J Craniofac Surg.* Jan;23(1):105-12, 2012.
19. Chang C, **Steinbacher DM**. Novel splint allowing concurrent midface and occlusal control during orotracheal intubation. *J Craniofac Surg.* Mar;23(2):571-2, 2012.
20. Turner J, Travieso R, Chang C, Bartlett SP, **Steinbacher DM**. An analysis of mandibular volume in Treacher Collins Syndrome. *Plast Reconstr Surg.* Apr;129(4):751e-3e, 2012.
21. Travieso R, Turner J, Chang C, Teng E, Gougoutas A, Bartlett SP, **Steinbacher DM**. Mandibular volumetric comparison of Treacher-Collins syndrome and hemifacial microsomia. *Plast Reconstr Surg.* Apr;129(4):749e-51e, 2012.
22. Diluna ML, **Steinbacher DM**. Simulated fronto-orbital advancement achieves reproducible results in metopic synostosis. *J Craniofac Surg.* May; 23(3):e231-4, 2012.
23. Shah A, Patel A, **Steinbacher DM**. Simulated frontoorbital advancement and intraoperative templates enhance reproducibility in craniosynostosis. *Plast Reconstr Surg.* Jun 129(6):1011e-10123, 2012.
24. Buonocore SD, Walker ME, **Steinbacher DM**. Repair of the median microform cleft lip using Z-plasty. *Mod Plast Surg.* 2:43-45, 2012.
25. McGrath J, Gerety PA, Derderian CA, **Steinbacher DM**, Vossough A, Bartlett SP, Nah HD, Taylor JA. Differential closure of the spheno-occipital synchondrosis in syndromic craniosynostosis. *Plast Reconstr Surg* July 6, 2012.
26. Wong K, Pfaff MJ, Chang CC, Travieso R, **Steinbacher DM**. A range of malar and masseteric hypoplasia exists in Treacher Collins Syndrome. *J Plast Reconstr Aesth Surg,* Aug 20, 2012.
27. Beckett JA, Chadha P, Persing JA, **Steinbacher DM**. Classification of Trigonocephaly in Metopic Synostosis. *Plast Reconstr Surg.* Sept; 130(3):442e-7e, 2012.
28. Morrison R, Beckett JA, **Steinbacher DM**. Simultaneous costochondral ramus-condyle reconstruction and mandibular distraction for hemifacial microsomia. *J Oral Maxillofac Surg,* Oct;70(10):e541-6, 2012.
29. Shah A, Patel A, **Steinbacher DM**. Soft-tissue coverage for mandibular fractures using two miniplates. *J Craniomax Traum Recon,* 5(4):253-254, 2012.
30. Beckett JA, Persing JA, **Steinbacher DM**. Bilateral orbital dysmorphology in unicoronal synostosis. *Plast Reconstr Surg.*131(1):125-30, 2013.

31. Wu W, Niklasson LA, **Steinbacher DM**. The effect of age on human adipose derived stem cells. *Plast Reconstr Surg*, 131(1):27-37, 2013.
32. Travieso R, Chang CC, Turner JS, Beckett J, Wong K, Teng E, **Steinbacher DM**. A range of condylar hypoplasia exists in Treacher Collins Syndrome. *J Oral Maxillofac Surg* 71(2):393-7, 2013.
33. Wong KR, Phillips JH, **Steinbacher DM**. Bilateral bookend pericranial flaps. *Plast Reconstr Surg*. 131(2): 295e-296e, 2013. .
34. Pfaff MJ, Chang CC, Patel A, **Steinbacher DM**. Bridge of bone canthopexy: Technique and morphologic assessment. *J Plast Reconstr Aesthet Surg*. Feb 12, 2013.
35. Koch FP, Yuhasz MM, Travieso R, Wong K, Clune J, Zuang ZW, **Steinbacher DM**. Targeted cranial bone transport distraction is enhanced using a novel device. *Plast Reconstr Surg*. Mar;131(3):453e-5e, 2013.
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37. Pfaff MJ, Persing JA, **Steinbacher DM**. Zygomatic dysmorphology in Unicoronal Synostosis. *J Plast Reconstr Aesth Surg* Aug;66(8):1096-102, 2013.
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EXHIBIT D
LETTER OF SUPPORT

YaleNewHavenHealth

Yale New Haven Hospital

July 11, 2017

Connecticut Department of Public Health
Office of Health Care Access
410 Capitol Avenue
P.O. Box 340308
Hartford, CT 06134

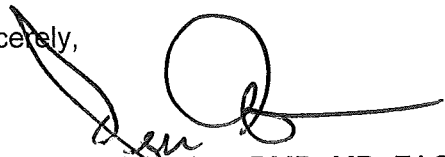
Dear Commissioner Raul Pino;

As Chief of Dental Services at Yale New Haven Hospital, it gives me great pleasure to write this letter of support for the consolidation of four dental clinics into one existing location. This consolidation initiative, to move Adult Dentistry and Oral and Maxillofacial Surgery into the same location as the existing Pediatric Clinic has been well assessed and vetted through senior hospital leadership, facilities, compliance, program directors and administration. I am confident that our patient population will be better served under one roof, allowing them easier access to the treatment and care they require. I believe this consolidation effort is an important component of the excellent clinical care and teaching environment here at the Yale New Haven Hospital that will foster even greater successes within one geographical location.

The primary purpose of this consolidation is to provide the resources and infrastructure necessary to best care for our patient population. Currently, patients may experience delays in receiving care, as they are seen at either the Adult or Pediatric Clinics and are then scheduled for a follow-up appointment at the Oral and Maxillofacial Clinic, which is at a separate physical location. Scheduling a follow-up appointment could take several days or weeks which is not ideal for the patient. This proposed consolidated office location is patient-centered and would provide that higher level of care in the same suite, therefore emergent patients could be slotted in that same day, which helps avoid rescheduling at a separate location and the need to find a ride at a later date for care that could be provided at one comprehensive location. The new site is judiciously configured to provide both an Adult and Pediatric waiting area, and additional treatment rooms, such as an Orthodontia room. In addition, this consolidation allows us the opportunity to further streamline our clinical and business operations by implementing the EPIC Wisdom electronic health record system that is used by the entire Yale New Haven Health System, ensuring accuracy, consistency and continuity in our delivery of patient care.

I believe our superior service and support offerings are a demonstration of the overall commitment that Yale New Haven Hospital Dental Services has to our patients, as well as our Residency Programs. All of us here at Yale New Haven Hospital look forward to this consolidation project, as we are excited to enhance our overall Dental Services Program offerings.

Sincerely,



Derek M. Steinbacher, DMD, MD, FACS
Chief of Dental Services
Craniomaxillofacial Surgery
Yale Plastic Surgery

EXHIBIT E
FINANCIAL ASSISTANCE POLICY

Service Area: Corporate Business Services	YALE NEW HAVEN HEALTH SYSTEM POLICIES & PROCEDURES	
Title: Financial Assistance Programs Policy		
Date Approved: 09/20/2013	Approved by: Boards of Trustees Senior Vice President, Finance	
Date Effective: 09/20/2013 1/1/2017 Lawrence + Memorial Hospital and Westerly Hospital	Date Reviewed/Revised: 01/21//2015, 09/30/2016, 12/16/2016	
Distribution: MCN Policy Manager	Policy Type (I or II): Type I	
Supersedes: Yale New Haven Hospital Financial Assistance Programs for Hospital Services (NC:F-4) Bridgeport Hospital Financial Assistance Programs for Hospital Services (9-13) Greenwich Hospital Overview of Financial Assistance Programs for Hospital Services Lawrence + Memorial Hospital and Westerly Hospital Charity Care, Financial Assistance, Free Bed Fund Policy		

PURPOSE

Yale New Haven Health System (“YNHHS”) recognizes that patients may not be able to pay for medically necessary health care without financial assistance. Consistent with its mission, YNHHS is committed to assuring that the ability to pay will be considered carefully when setting amounts due for emergency and other medically necessary hospital services.

In furtherance of its mission, YNHHS has established the Financial Assistance Programs (“FAP”) to assist individuals with paying for emergency and other medically necessary care. The objectives of the FAP are to:

- (i) Specify all financial assistance available under the FAP;
- (ii) Provide clear information regarding eligibility criteria, application requirements and the method for applying for financial assistance;
- (iii) Describe the basis for calculating amounts charged to FAP-eligible patients for emergency or other medically necessary care; and
- (iv) Describe the steps YNHHS hospitals take to widely publicize this FAP within the communities served by YNHHS.

APPLICABILITY

This policy applies to each licensed hospital affiliated with YNHHS, including Bridgeport Hospital (“BH”), Greenwich Hospital (“GH”), Lawrence + Memorial Hospital (“LMH”), Yale-New Haven Hospital (“YNHH”) and Westerly Hospital (“WH”) (each a “Hospital”).

POLICY

I. Scope and Provider List

- A. **Emergency and Other Medically Necessary Care.** The FAP apply to emergency and other medically necessary care, including inpatient and outpatient services, billed by a Hospital. The FAP exclude: (a) private room or private duty nurses; (b) services that are not medically necessary, such as elective cosmetic surgery; (c) other elective convenience fees, such as television or telephone charges, and (d) other discounts or reductions in charges not expressly described in this policy.
- B. **Provider List.** A list of providers who provide emergency and other medically necessary care at a Hospital can be found here:

https://www.ynhh.org/~media/files/ynhhs/forms/financial/011117/ynhh_fap_policy_list_2017.pdf

The list indicates if the provider is covered under the FAP. If the provider is not covered under this FAP, patients should contact the provider’s office to determine if the provider offers financial assistance and if so what the provider’s financial assistance policy covers.

II. Financial Assistance Programs and Eligibility

Financial assistance is available to individuals who are residents of the United States of America, or citizens of the United States residing abroad, who complete the required financial assistance application and meet the additional eligibility requirements described below.

- A. **Free Care.** The Free Care program provides care at no cost to Hospital patients with gross annual family income less than or equal to 250% of the Federal Poverty Guidelines (*see* Attachment 1), and who have applied and been approved or receive a valid denial for State medical assistance, within the last six months.

In addition, YNHHS on behalf of BH, GH, and YNHH uses a third party screening tool to assist in identifying individuals with self-pay balances who have not applied for financial assistance, but whose income is less than or equal to 250% of the Federal Poverty Level (*i.e.*, eligible for free care). If a patient is identified through this process outstanding hospital balances may be adjusted to charity (free) care.

- B. **Discounted Care.** If a Hospital patient does not have insurance and his or her gross annual family income is more than 250% of the Federal Poverty Level the Hospital will discount care to the Hospital’s AGB (as defined in Section III below and on Attachment 1 hereto).

Financial Assistance Programs Policy

- C. **Restricted Bed Funds.** You may be eligible to receive restricted bed funds, which are funds that have been donated to the Hospital to provide free or discounted care to individuals who meet the individual fund criteria. There are no specific income limits for receipt of restricted bed funds. Eligibility is determined on a case-by-case basis by the fund nominators based on financial hardship. All patients who fill out the requisite financial assistance application will automatically be considered for restricted bed funds.
- D. **Other Hospital-Specific Financial Assistance programs.**
- (i) **Yale New Haven Hospital Me & My Baby Program.** This program is available to Yale New Haven Hospital patients. It provides prenatal, labor and delivery services, and some post-partum care free of charge. You may be eligible if you live in New Haven County, do not have any type of health insurance and your family earns less than 2 ½ times the Federal Poverty Level. For more information or to request an application see our representatives at the Yale New Haven Hospital Women’s Center or call 203-688-5470.
 - (ii) **Greenwich Hospital Outpatient Clinic** serves patients insured by Medicare, Medicaid, or insurances offered through Access Health CT and whose family income is less than 4 times the Federal Poverty Level. Further, the clinic provides discounted care to individuals who are not eligible for insurance and who reside in Greenwich and have family income less than 4 times the Federal Poverty Level. For more information or to obtain an application please call 203-863-3334.

III. Limitation on Charges - Amounts Billed to FAP-Eligible Patients

Where there is an award of financial assistance that does not cover 100% of YNHHS charges for the service, the amounts charged to patients eligible for financial assistance under this Policy will not be more than the amount a Hospital generally bills patients who have insurance coverage for such care (“AGB”). YNHHS calculates AGB annually by Hospital using the “look back method” and based on Medicare fee-for-service rates, including Medicare beneficiary cost-sharing amounts and all private health insurers that pay claims to each Hospital facility for the prior fiscal year. YNHHS may apply the percentage discount by Hospital, or may elect to use the percentage discount most favorable to YNHHS patients. AGB is set forth on Attachment 1 hereto.

As used herein, the “amount generally billed” and “look back method” have the meanings set forth in Internal Revenue Code §501(r)(5) and 1.501(r)-5.

IV. Method of Applying for Assistance

To be eligible for financial assistance, the patient must complete the requisite application for financial assistance (“Application”). The Application sets forth (i) FAP available programs and eligibility requirements, (ii) the documentation requirements for determinations of eligibility, and (iii) the contact information for FAP assistance. The Application also specifies that (i) the Hospital will respond to each Application in writing, (ii) patients may re-apply for financial assistance under the FAP at any time, and (iii) additional free bed funds become available every year. Hospitals may not

Financial Assistance Programs Policy

deny financial assistance under the FAP based on failure to provide information or documents that the FAP or the Application do not require as part of the Application.

YNHHS Hospitals will make reasonable efforts to determine eligibility and document any determinations of financial assistance eligibility in the applicable patient accounts. Once Hospital identifies a patient is FAP-eligible, Hospital shall:

- (i) Provide a billing statement indicating amount the individual owes as a FAP-eligible patient, including how the amount was determined and states, or describes, how the individual can get information regarding the AGB for the care;
- (ii) Refund to the individual any amount he or she has paid for the care that exceeds the amount he or she is determined to be personally responsible for paying as a FAP-eligible individual, unless such excess amount is less than \$5, or such other amount set by the IRS; and
- (iii) Take reasonable measures to reverse any extraordinary collection actions.

V. Non-Payment – Legal Action

A Hospital (and any collection agency or other party to which it has referred debt) shall not engage in any extraordinary collection action (“ECA”) before making reasonable efforts to determine if a patient or any other individual having financial responsibility for a self-pay account (Responsible Individual(s)) eligible for financial assistance under this FAP. Any ECA must be approved by the Vice President of Corporate Business Services or his designee(s), prior to the initiation of any ECA.

The Hospital will follow its A/R billing cycle in accordance with internal operational processes and practices. As part of such processes and practices, the Hospital will, at a minimum, notify patients about its FAP from the date care is provided and throughout the A/R billing cycle (or during such period as is required by law, whichever is longer) by:

1. All patients will be offered a plain language summary and an application form for financial assistance under the FAP as part of the discharge or intake process from a Hospital.
2. At least three separate statements for collection of self-pay accounts will be mailed or emailed to the last known address of the patient and any other Responsible Individual(s); provided, however, that no additional statements need be sent after a Responsible Individual(s) submits a complete application for financial assistance under the FAP or has paid in-full. At least 60 days shall have elapsed between the first and last of the required three mailings. It is the Responsible Individual(s) obligation to provide a correct mailing address at the time of service or upon moving. If an account does not have a valid address, the determination for "Reasonable Effort" will have been made. All single patient account statements of self-pay accounts will include but not limited to:
 - a. An accurate summary of the hospital services covered by the statement;
 - b. The charges for such services;

Financial Assistance Programs Policy

- c. The amount required to be paid by the Responsible Individual(s) (or, if such amount is not known, a good faith estimate of such amount as of the date of the initial statement); and
 - d. A conspicuous written notice that notifies and informs the Responsible Individual(s) about the availability of financial assistance under the FAP including the telephone number of the department and direct website address where copies of documents may be obtained.
3. At least one of the statements mailed or emailed will include written notice that informs the Responsible Individual(s) about the ECAs that are intended to be taken if the Responsible Individual(s) does not apply for financial assistance under the FAP or pay the amount due by the billing deadline. Such statement must be provided to the Responsible Individual(s) at least 30 days before the deadline specified in the statement. A plain language summary will accompany this statement. It is the Responsible Individual(s) obligation to provide a correct mailing address at the time of service or upon moving. If an account does not have a valid address, the determination for "Reasonable Effort" will have been made.
 4. Prior to initiation of any ECA, an oral attempt will be made to contact Responsible Individual(s) by telephone at the last known telephone number, if any, at least once during the series of mailed or emailed statements if the account remains unpaid. During all conversations, the patient or Responsible Individual(s) will be informed about the financial assistance that may be available under the FAP.
 5. Subject to compliance with the provisions of this policy, a YNHHS Hospital may take the ECA listed on Attachment 2 of this Policy to obtain payment for medical services provided.

VI. Policy Availability

Copies of the FAP, a plain language summary of the FAP and FAP application are available at <https://www.ynhhs.org/billing-insurance.aspx>.

Each Hospital makes available copies of the FAP, a plain language summary of the FAP and FAP application on request, free of charge, by mail or in the Hospital Emergency Department and at all points of registration in paper form in English and the primary language of any population with limited English proficiency that constitutes 5% or more of the population the Hospital serves. See Attachment 3 for a list of languages.

Contact Corporate Business Services toll free at (855) 547-4584 for information regarding eligibility or the programs that may be available to you, to request a copy of the FAP, plain language summary of the FAP, FAP application form, or Billing and Collection Policy to be mailed to you, or if you need a copy of the FAP, plain language summary, or FAP application form translated to a language other than English. Further, patients may ask Patient Registration, Patient Financial Services and Social Work/Case Management about initiating the FAP application process.

Financial Assistance Programs Policy

Further efforts to widely publicize the FAP include publishing notices in newspapers of general circulation; providing written notice of FAP in billing statements; providing notice of FAP in oral communications with patients regarding the amount due; and holding open houses and other informational sessions.

VII. Management Oversight Committee

The FAP will be overseen by a management oversight committee chaired by a Senior Vice President, YNHHS and comprised of representatives from Corporate Business Services, patient financial services, patient relations, finance, and the medical staff, as necessary. This committee will meet on a monthly basis.

VIII. Compliance with State Law

Each Hospital shall comply with relevant State laws, including, without limitation, Connecticut General Statutes governing Collections by Hospitals from Uninsured Patients and Rhode Island *Statewide Standard for the Provision of Charity Care* set forth in Section 11.3 of the Rhode Island Department of Health Rules and Regulations Pertaining to Hospital Conversions (the “RI Regulations”) and the *Statewide Standard for the Provision of Uncompensated Care* set forth in Section 11.4 of the RI Regulations.

REFERENCES

Internal Revenue Code 501(c)(3)
Internal Revenue Code 501(r)
Conn. Gen. Stat. § 19a-673 et seq.
RI Regulations 11.3 and 11.4

RELATED POLICIES

YNHHS Billing and Collections Policy
Yale-New Haven Hospital Policy – Distribution of Free Care Funds NC:F-2

Financial Assistance Programs Policy

Attachment 1

250% of the Federal Poverty Guidelines (FPG)

Family size:	Maximum Income:
1	\$30,150
2	\$40,600
3	\$51,050
4	\$61,500
5	\$71,950
6	\$82,400

**Add \$10,450 for each additional family member*

Amounts Generally Billed (AGB)

Patients eligible for financial assistance under this Policy will receive assistance according to the following:

All YNHHS Hospitals:

Annual Family Income	Amount of Discount % of Charges	Patient Pays % of Charges
< or = 250% FPG	100%	0
> 250% FPG	69%	31%

**For calendar year 2017, AGB (% of charges): BH 32%, GH 32%, LMH 55%, YNH 31% and WH 31%*

Attachment 2

EXTRAORDINARY COLLECTION ACTIONS

Property Liens

Liens on personal residences are permitted only if:

- a) The patient has had an opportunity to apply for free bed funds and has either failed to respond, refused, or been found ineligible for such funds;
- b) The patient has not applied or qualified for other financial assistance under the Hospital's Financial Assistance Policy, to assist in the payment of his/her debt, or has qualified, in part, but has not paid his/her responsible part;
- c) The patient has not attempted to make or agreed to a payment arrangement, or is not complying with payment arrangements that have been agreed to by the Hospital and patient;
- d) The aggregate of account balances is over \$10,000 and the property(ies) to be made subject to the lien are at least \$300,000 in assessed value; and
- e) The lien will not result in a foreclosure on a personal residence.

Attachment 3

Limited English Proficiency Languages

Albanian
Arabic
Simplified Chinese
French
French Creole (Haitian Creole)
German
Greek
Hindi
Italian
Japanese
Korean
Pashto
Persian Dari
Persian Farsi
Polish
Portuguese
Portuguese Creole (Cape Verdean)
Russian
Spanish
Swahili
Tagalog
Tigrinya
Turkish
Vietnamese

EXHIBIT F
FINANCIAL WORKSHEET

NON-PROFIT

Applicant: Please provide one year of actual results and three years of projections of **Total Entity** revenue, expense and volume statistics without, incremental to and with the CON proposal in the following reporting format:

LINE	Total Entity:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
		FY16	FY17	FY17	FY17	FY18	FY18	FY18	FY19	FY19	FY19	FY20	FY20	FY20	FY21	FY21	FY21
Description		Actual Results	Projected W/out CON	Projected Incremental	Projected With CON	Projected W/out CON	Projected Incremental	Projected With CON	Projected W/out CON	Projected Incremental	Projected With CON	Projected W/out CON	Projected Incremental	Projected With CON	Projected W/out CON	Projected Incremental	Projected With CON
A. OPERATING REVENUE																	
1	Total Gross Patient Revenue	\$9,004,923,000	11,205,036,000		\$11,205,036,000	11,384,816,000	\$37,500	\$11,384,853,500	11,771,899,744	\$75,000	\$11,771,974,744	12,113,284,837	\$75,000	\$12,113,359,837	12,464,570,097	\$75,000	\$12,464,645,097
2	Less: Allowances	\$6,394,391,000	8,403,777,000		\$8,403,777,000	8,538,612,000		\$8,538,612,000	8,828,924,808		\$8,828,924,808	9,084,963,627		\$9,084,963,627	9,348,427,573		\$9,348,427,573
3	Less: Charity Care				\$0			\$0			\$0			\$0			\$0
4	Less: Other Deductions				\$0			\$0			\$0			\$0			\$0
	Net Patient Service Revenue	\$2,610,532,000	\$2,801,259,000	\$0	\$2,801,259,000	\$2,846,204,000	\$37,500	\$2,846,241,500	\$2,942,974,936	\$75,000	\$2,943,049,936	\$3,028,321,209	\$75,000	\$3,028,396,209	\$3,116,142,524	\$75,000	\$3,116,217,524
5	Medicare	\$768,589,000	\$824,742,563		\$824,742,563	\$837,975,204		\$837,975,204	\$866,466,361		\$866,466,361	\$891,593,886		\$891,593,886	\$917,450,108		\$917,450,108
6	Medicaid	\$258,301,000	\$277,172,623		\$277,172,623	\$281,619,739		\$281,619,739	\$291,194,810		\$291,194,810	\$299,639,459		\$299,639,459	\$308,329,003.49		\$308,329,003
7	CHAMPUS & TriCare				\$0		\$37,500	\$37,500		\$75,000	\$75,000		\$75,000		\$75,000	\$75,000	
8	Other				\$0			\$0			\$0			\$0			\$0
	Total Government	\$1,026,890,000	\$1,101,915,186	\$0	\$1,101,915,186	\$1,119,594,943	\$37,500	\$1,119,632,443	\$1,157,661,171	\$75,000	\$1,157,736,171	\$1,191,233,345	\$75,000	\$1,191,308,345	\$1,225,779,112	\$75,000	\$1,225,854,112
9	Commercial Insurers	\$1,413,632,000	\$1,516,912,784		\$1,516,912,784	\$1,541,250,999		\$1,541,250,999	\$1,593,653,533		\$1,593,653,533	\$1,639,869,485		\$1,639,869,485	\$1,687,425,701		\$1,687,425,701
10	Uninsured				\$0			\$0			\$0			\$0			\$0
11	Self Pay	\$170,010,000	\$182,431,030		\$182,431,030	\$185,358,058		\$185,358,058	\$191,660,232		\$191,660,232	\$197,218,379		\$197,218,379	\$202,937,711.75		\$202,937,712
12	Workers Compensation				\$0			\$0			\$0			\$0			\$0
13	Other				\$0			\$0			\$0			\$0			\$0
	Total Non-Government	\$1,583,642,000	\$1,699,343,814	\$0	\$1,699,343,814	\$1,726,609,057	\$0	\$1,726,609,057	\$1,785,313,765	\$0	\$1,785,313,765	\$1,837,087,864	\$0	\$1,837,087,864	\$1,890,363,412	\$0	\$1,890,363,412
	Net Patient Service Revenue^a (Government+Non-Government)	\$2,610,532,000	\$2,801,259,000	\$0	\$2,801,259,000	\$2,846,204,000	\$37,500	\$2,846,241,500	\$2,942,974,936	\$75,000	\$2,943,049,936	\$3,028,321,209	\$75,000	\$3,028,396,209	\$3,116,142,524	\$75,000	\$3,116,217,524
14	Less: Provision for Bad Debts	\$63,352,000	\$74,179,000		\$74,179,000	\$75,170,000		\$75,170,000	\$76,191,000		\$76,191,000	\$77,242,000		\$77,242,000	\$78,325,000		\$78,325,000
	Net Patient Service Revenue less provision for bad debts	\$2,547,180,000	\$2,727,080,000	\$0	\$2,727,080,000	\$2,771,034,000	\$37,500	\$2,771,071,500	\$2,866,783,936	\$75,000	\$2,866,858,936	\$2,951,079,209	\$75,000	\$2,951,154,209	\$3,037,817,524	\$75,000	\$3,037,892,524
15	Other Operating Revenue	\$145,705,000	\$90,820,000		\$90,820,000	\$69,566,000		\$69,566,000	\$68,756,000		\$68,756,000	\$73,205,000		\$73,205,000	\$75,287,000		\$75,287,000
17	Net Assets Released from Restrictions				\$0			\$0			\$0			\$0			\$0
	TOTAL OPERATING REVENUE	\$2,692,885,000	\$2,817,900,000	\$0	\$2,817,900,000	\$2,840,600,000	\$37,500	\$2,840,637,500	\$2,935,539,936	\$75,000	\$2,935,614,936	\$3,024,284,209	\$75,000	\$3,024,359,209	\$3,113,104,524	\$75,000	\$3,113,179,524
B. OPERATING EXPENSES																	
1	Salaries and Wages	\$854,231,200	916,379,626		\$916,379,626	927,847,840	(\$125,632)	\$927,722,208	955,683,276	(\$338,130)	\$955,345,145	984,353,774	(\$338,130)	\$984,015,644	1,013,884,387	(\$338,130)	\$1,013,546,257
2	Fringe Benefits	\$242,050,900	249,466,437		\$249,466,437	259,278,414	(\$45,730)	\$259,232,684	267,056,766	(\$123,079)	\$266,933,687	275,068,469	(\$123,079)	\$274,945,390	283,320,523	(\$123,079)	\$283,197,444
3	Physicians Fees	\$740,894,000	707,185,123		\$707,185,123	714,710,885		\$714,710,885	736,152,212		\$736,152,212	758,236,778		\$758,236,778	780,983,882		\$780,983,882
4	Supplies and Drugs	\$500,426,200	546,950,193		\$546,950,193	557,918,292		\$557,918,292	574,655,841		\$574,655,841	591,895,516		\$591,895,516	609,652,381		\$609,652,381
5	Depreciation and Amortization	\$94,381,700	122,966,620		\$122,966,620	131,756,085	\$170,782	\$131,926,867	135,708,767	\$227,710	\$135,936,477	139,780,030	\$227,710	\$140,007,740	143,973,431	\$227,710	\$144,201,141
6	Provision for Bad Debts-Other ^b				\$0			\$0			\$0			\$0			\$0
7	Interest Expense	\$22,464,000	23,012,534		\$23,012,534	23,035,339		\$23,035,339	23,726,399		\$23,726,399	24,438,191		\$24,438,191	25,171,337		\$25,171,337
8	Malpractice Insurance Cost	\$22,728,500	24,579,729		\$24,579,729	25,380,761		\$25,380,761	26,142,184		\$26,142,184	26,926,449		\$26,926,449	27,734,243		\$27,734,243
9	Lease Expense	\$31,516,900	24,231,498		\$24,231,498	25,021,182	\$34,854	\$25,056,036	25,771,817	(\$13,565)	\$25,758,252	26,544,972	(\$87,132)	\$26,457,840	27,341,321	(\$87,132)	\$27,254,189
10	Other Operating Expenses	\$97,542,600	95,828,240		\$95,828,240	98,951,202		\$98,951,202	101,919,738		\$101,919,738	104,977,330		\$104,977,330	108,126,650		\$108,126,650
	TOTAL OPERATING EXPENSES	\$2,606,236,000	\$2,710,600,000	\$0	\$2,710,600,000	\$2,763,900,000	\$34,274	\$2,763,934,274	\$2,846,817,000	(\$247,065)	\$2,846,569,935	\$2,932,221,510	(\$320,632)	\$2,931,900,878	\$3,020,188,155	(\$320,632)	\$3,019,867,523
	INCOME/(LOSS) FROM OPERATIONS	\$86,649,000	\$107,300,000	\$0	\$107,300,000	\$76,700,000	\$3,226	\$76,703,226	\$88,722,936	\$322,065	\$89,045,001	\$92,062,699	\$395,632	\$92,458,331	\$92,916,369	\$395,632	\$93,312,001
	NON-OPERATING REVENUE	\$71,896,000	\$34,200,000		\$34,200,000	\$34,200,000		\$34,200,000	\$34,200,000		\$34,200,000	\$34,200,000		\$34,200,000	\$34,200,000		\$34,200,000
	EXCESS/(DEFICIENCY) OF REVENUE OVER EXPENSES	\$158,545,000	\$141,500,000	\$0	\$141,500,000	\$110,900,000	\$3,226	\$110,903,226	\$122,922,936	\$322,065	\$123,245,001	\$126,262,699	\$395,632	\$126,658,331	\$127,116,369	\$395,632	\$127,512,001
	Principal Payments				\$0			\$0			\$0			\$0			\$0
C. PROFITABILITY SUMMARY																	
1	Hospital Operating Margin	3.1%	3.8%	0.0%	3.8%	2.7%	8.6%	2.7%	3.0%	429.4%	3.0%	3.0%	527.5%	3.0%	3.0%	527.5%	3.0%
2	Hospital Non Operating Margin	2.6%	1.2%	0.0%	1.2%	1.2%	0.0%	1.2%	1.2%	0.0%	1.2%	1.1%	0.0%	1.1%	1.1%	0.0%	1.1%
3	Hospital Total Margin	5.7%	5.0%	0.0%	5.0%	3.9%	8.6%	3.9%	4.1%	429.4%	4.1%	4.1%	527.5%	4.1%	4.0%	527.5%	4.1%
	D. FTEs	10,875	11,323		11,323	11,345	(2.0)	11,343	11,367	(8.4)	11,359	11,390	(8.4)	11,382	11,412	(8.4)	11,404
E. VOLUME STATISTICS^c																	
1	Inpatient Discharges	79,490	79,490		79,490	79,490		79,490	79,490		79,490	79,490		79,490	79,490		79,490
2	Outpatient Visits	1,336,011	1,344,768		1,344,768	1,385,111	281	1,385,392	1,426,664	563	1,427,227	1,469,464	563	1,470,027	1,513,548	563	1,514,111
	TOTAL VOLUME	1,415,501	1,424,258	0	1,424,258	1,464,601	281	1,464,882	1,506,154	563	1,506,717	1,548,954	563	1,549,517	1,593,038	563	1,593,601

^aTotal amount should equal the total amount on cell line "Net Patient Revenue" Row 14.

^bProvide the amount of any transaction associated with Bad Debts not related to the provision of direct services to patients. For additional information, refer to FASB, No.2011-07, July 2011.

^cProvide 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.

EXHIBIT G
FINANCIAL ASSUMPTIONS

Financial assumptions without CON:

Net revenue increases: 1-3%

Expense increases: 1-3%

FTE increases: 0-1%

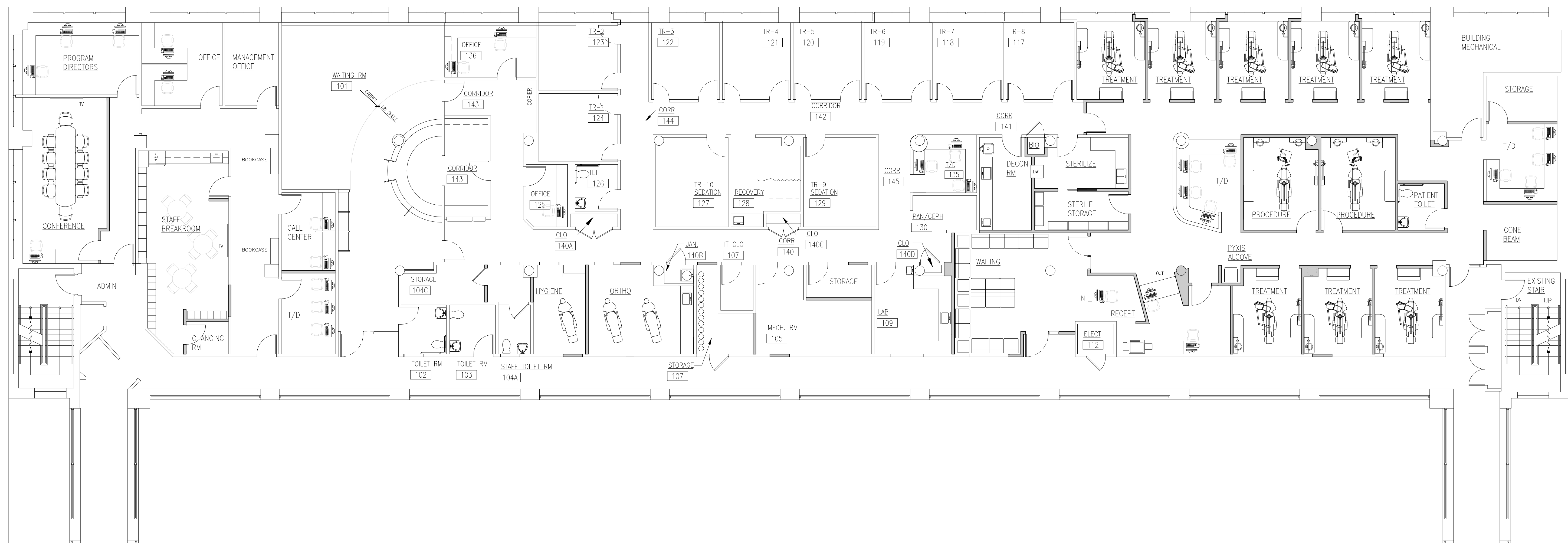
Financial assumptions with CON:

- Volume/Revenue
 - o Assume 281 incremental Tricare outpatient dental visits in FY 2018 with a revenue of \$37,500 (compared to FY 2017)
 - o Assume total of 563 incremental Tricare outpatient dental visits in FY2019 with revenue of \$75,000 (compared to FY 2017)
 - o Assume no further growth in outpatient dental visits from FY 2020 - FY 2021
 - o Assume no rate change in Tricare payments
- Depreciation
 - o Assume 15 years depreciation for construction
 - o Assume 7 years depreciation for equipment and soft costs
 - o Assume 9 months of depreciation in FY18 as constructions will begin in January
- Lease
 - o Current lease in Hamden location ends in May 2019
 - o Assume new lease at the One Long Wharf location will start in January 2018, therefore incremental lease to the hospital would be $\$46,472/12*9=\$34,854$ in FY2018
 - o Assume lease for Hamden is still in place for FY19 (Oct-May). Total savings for the hospital would be \$13,565 for full FY19. (incremental from FY17 for 8 months would be $\$46,472/12*8=\$30,981$ but then lease in Hamden is eliminated for June-Sep totaling \$44,546)
 - o Assume lease payment would continue in Hamden until May 2019 unless contract can be transferred/terminated prior to expiration
- Salaries
 - o FTE reduction anticipated due to attrition and redeployment of staff to other open positions
 - o Although full savings are projected for the entire year in FY 2018 and FY 2019, the exact timing of the reductions is not yet known; thus actual savings may be lower should the reductions occur after October 1 of each respective fiscal year
- Fringe
 - o Fringe savings tied to salary savings; fringe estimated to be 36.4% of salary expense

EXHIBIT H
DESCRIPTION OF BUILDING WORK AND FLOOR PLAN

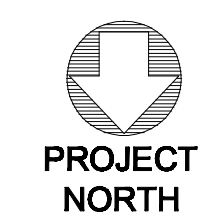
One Long Wharf Dental Project - Proposed Building Work

- 11,530 square feet
- Construction of includes expansion into two vacant spaces along with reconfiguration of existing space
- Also includes: lower level protection and project phasing
- Replacement of existing floor and ceiling due to layout change
- Also add emergency power, upgrade medical gases, and HVAC
- Furniture and equipment includes medical equipment, furniture, IT costs, and security equipment and design



FLOOR PLAN
SCALE: 3/16"=1'-0"

PRELIMINARY NOT FOR CONSTRUCTION



REVISIONS



Joseph T. Sopot, AIA
ARCHITECTS

225 Montwese St
Branford, CT 06405
Phone/FAX
(203) 483 5229
e-mail:
jsopot@sepotarchitects.com

CEN TEK engineering
Centered on Solutions™

www.CentekEng.com
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road, Branford, CT 06405

PROFESSIONAL SEAL

YALE NEW HAVEN HOSPITAL

ORAL SURGERY CLINIC
1 LONG WHARF
NEW HAVEN, CT

YNHH NO:	-
PROJECT NO:	JSA-1623
DRAWN BY:	JSA
CHECKED BY:	JSA
SCALE:	3/16"=1'-0"
DATE:	05/01/17

SCHEMATIC FLOOR PLAN

A1



Supplemental CON Application Form
Termination of a Service
Conn. Gen. Stat. § 19a-638(a)(5),(7),(8),(15)

Applicant: Yale New Haven Hospital

Project Name: Relocation and Consolidation of Outpatient Dental Services


Affidavit

Applicant: Yale New Haven Hospital

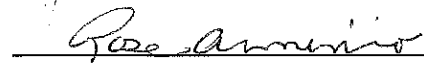
Project Title: Relocation and Consolidation of Outpatient Dental Services

I, Vincent Tammaro, CFO
(Name) (Position – CEO or CFO)

of Yale New Haven Health System being duly sworn, depose and state that the said facility complies with the appropriate and applicable criteria as set forth in the Sections 19a-630, 19a-637, 19a-638, 19a-639, 19a-486 and/or 4-181 of the Connecticut General Statutes.

 7.24.17
Signature Date

Subscribed and sworn to before me on 7.24.17



Notary Public/Commissioner of Superior Court
ROSE ARMINIO
NOTARY PUBLIC
State of Connecticut

My commission expires: February 28, 2018

1. Project Description: Service Termination

a. Please provide

- i. a description of the history of the services proposed for termination, including when they commenced,

Response:

Not applicable. No services are being terminated. The proposal involves the relocation of YNHH dental services, without a change in services offered.

- ii. whether CON authorization was received and,

Response:

Not applicable.

- iii. if CON authorization was required, the docket number for that approval.

Response:

Not applicable.

- b. Explain in detail the Applicant’s rationale for this termination of services, and the process undertaken by the Applicant in making the decision to terminate.

Response:

Not applicable. No services are being terminated. The proposal involves the relocation of YNHH dental services, without a change in services offered.

- c. Did the proposed termination require the vote of the Board of Directors of the Applicant? If so, provide copy of the minutes (excerpted for other unrelated material) for the meeting(s) the proposed termination was discussed and voted on.

Response:

Not applicable. No services are being terminated. The proposal involves the relocation of YNHH dental services, without a change in services offered. The proposed relocation does not require a vote of the Board of Directors.

2. Termination’s Impact on Patients and Provider Community

- a. For each provider to which the Applicant proposes transferring or referring clients, provide the below information for the last completed fiscal year and current fiscal year.

Response:

Not applicable. No services are being terminated, therefore there are no transfers or referrals of patients to non-YNHH providers being proposed. The current YNHH dental patients will continue to receive the same dental services at YNHH’s consolidated location at One Long Wharf in New Haven.

**TABLE A
PROVIDERS ACCEPTING TRANSFERS/REFERRALS**

Facility Name	Facility ID*	Facility Address	Total Capacity	Available Capacity	Utilization FY XX**	Utilization Current CFY***

* Please provide either the Medicare, Connecticut Department of Social Services (DSS), or National Provider Identifier (NPI) facility identifier and label column with the identifier used.

** Fill in year and identify the period covered by the Applicant’s FY (e.g., July 1-June 30, calendar year, etc.). Label and provide the number of visits or discharges as appropriate.

*** For periods greater than 6 months, report annualized volume, identifying the number of actual months covered and the method of annualizing. For periods less than six months, report actual volume and identify the period covered.

- a. Provide evidence (e.g., written agreements or memorandum of understanding) that other providers in the area are willing and able to absorb the displaced patients.

Response:

Not applicable. No services are being terminated, therefore there are no transfers or referrals of patients to non-YNHH providers planned. Thus, there are no agreements in place.

- b. Identify any special populations that utilize the service(s) and explain how these populations will maintain access to the service following termination at the specific location; also, specifically address how the termination of this service will affect access to care for Medicaid recipients and indigent persons.

Response:

YNHH’s dental services treat a high portion of Medicaid patients and indigent persons. No services are being terminated. The proposal involves the relocation of YNHH dental services, without a change in services offered. The proposal will increase accessibility for patients to YNHH dental services. The proposed One Long Wharf location is easier to access than any of the other existing dental locations. The location is on a bus route, which provides greater access for patients who use public

transportation. It also has free parking and is located minutes from major highways, I-95 and I-91.

- c. Describe how clients will be notified about the termination and transfer to other providers.

Response:

No services are being terminated and there is no transfer to other providers planned. The proposal involves the relocation of YNHH dental services. Patients will be notified of these changes through direct mailing from YNHH's marketing department. Additionally, a letter will be mailed from the YNHH dental department to active patients that will detail the relocation plan and timeline, the One Long Wharf location street address, and site contact information.

- d. For DMHAS-funded programs only, attach a report that provides the following information for the last three full FYs and the current FY to-date:
 - i. Average daily census;
 - ii. Number of clients on the last day of the month;
 - iii. Number of clients admitted during the month; and
 - iv. Number of clients discharged during the month.

Response:

Not applicable.

Olejarz, Barbara

From: Rival, Jessica
Sent: Friday, August 18, 2017 9:16 AM
To: Diane.Smith2@ynhh.org
Cc: Lazarus, Steven; Riggott, Kaila; Olejarz, Barbara
Subject: 17-32181-CON Yale Dental Services Completeness Letter
Attachments: CON 17-32181 Completeness Letter jr.pdf; CON 17-32181 Completeness Letter jr.docx

Good morning Ms. Smith,

Please see the attached completeness letter in the above referenced matter. Please confirm receipt of this email and provide your written responses to OHCA no later than **October 17, 2017**.

Sincerely,

Jessica Rival

CCT Health Care Analyst
Office of Health Care Access
Connecticut Department of Public Health
410 Capitol Avenue MS#13HCA
Hartford, CT 06134
Phone: 860-418-7035
Fax: 860-418-7053
<http://www.ct.gov/ohca>



STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Raul Pino, M.D., M.P.H.
Commissioner



Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

Office of Health Care Access

Via Email Only

August 18, 2017

Ms. Diane L. Smith
Regulatory Planner
Strategy and Regulatory
2 Howe St. 3rd floor
New Haven, CT 06519
Diane.Smith2@ynhh.org

RE: Certificate of Need Application: Docket Number: 17- 32181-CON
Termination, relocation, and consolidation of adult outpatient dental services.
Certificate of Need Completeness Letter

Dear Ms. Smith:

On July 25, 2017, OHCA received the Certificate of Need application from Yale New Haven Hospital ("Applicant" or "Hospital") seeking authorization to terminate dental services at 789 Howard Avenue, New Haven, and 2560 Dixwell Avenue, Hamden, and oral surgery services at 330 Orchard Street, New Haven and relocate these services to one consolidated location at 1 Long Wharf Dr., New Haven, which currently houses outpatient pediatric dental services. OHCA requests additional information pursuant to Connecticut General Statutes §19a-639a(c). *Please "reply all" to electronically confirm receipt of this email as soon as you receive it.* Provide responses to the questions below in both a Word document and PDF format as an attachment to a responding email. ***Please email your responses to both of the following email addresses: OHCA@ct.gov and Kaila.Riggott@ct.gov.***

Paginate and date your response (i.e., each page in its entirety). Repeat each OHCA question before providing your response. Information filed after the initial CON application submission (e.g., completeness response letter, prefiled testimony, late file submissions, etc.) must be numbered sequentially from the Applicant's preceding document. Begin your submission using



Phone: (860) 418-7001 • Fax: (860) 418-7053
410 Capitol Avenue, MS#13HCA
Hartford, Connecticut 06134-0308
www.ct.gov/dph

Affirmative Action/Equal Opportunity Employer



Page 108 and reference “**Docket Number: 17-32181-CON.**” Pursuant to Section 19a-639a(c) of the Connecticut General Statutes, you must submit your response to this request for additional information no later than sixty days after the date this request was transmitted. Therefore, please provide your written responses to OHCA no later than **October 17, 2017, 4:30 p.m.**, otherwise your application will be automatically considered withdrawn.

- 1) Page 21 of the application states that “Coordinated care has been demonstrated to improve quality of care as patients are given a single, agreed upon care plan, and adherence is more likely when provider feedback is not contradictory or confusing, and when the patient is involved in the planning process.” Are there any scholarly articles or other evidence, to support this statement?
- 2) Page 21 of the application describes utilization of the Hamden office in terms of chair utilization rate, visits per day, and visits per hour. Please provide comparable information for all current dental sites.
- 3) Page 23 of the application states “the current financial loss for the dental program is expected to continue after the consolidation of sites, but will be reduced to a degree due to efficiencies gained through the co-location.” This does not appear to be reflected in the Hospital’s Financial Worksheet A, which shows program gains.
 - a. Please reconcile your statement with the financial data. Please provide actual program revenue and expenses for the dental program for FYs 15-17 using the table below.

HISTORICAL INCREMENTAL REVENUES AND EXPENSES

	FY 2015	FY 2016	FY 2017
Revenue from Operations			
Total Operating Expenses			
Gain/Loss from Operations			

- b. Please provide projected incremental revenues and expenses for the dental program for FYs 18-21 using the table below.

PROJECTED INCREMENTAL REVENUES AND EXPENSES

	FY 2018	FY 2019	FY 2020	FY 2021
Revenue from Operations				
Total Operating Expenses				
Gain/Loss from Operations				


- c. Please discuss to what degree the Hospital expects financial losses to be reduced. In what areas will these reductions be evidenced?

- 4) Page 32 of the application describes a construction period of January 2018 through September 2018. Pages 34-36 reflect that it is expected that the consolidation will be complete in early FY 19.
 - a. Will there be any cessation or reduction to any of the dental services during the construction, reorganization and final consolidation of the dental services?
 - b. Please provide a copy of the transition plan. Discuss the relocation and consolidation from start through completion including, how the relocation will occur, if there will be staggered site closures, time frames, etc.

- 5) Page 33 of the application, Table 5, provides information on historical utilization by service. Please indicate if the data for 2017 is annualized. If not, please indicate the months represented.

If you have any questions concerning this letter, please contact Kaila Riggott at (860) 418-7037.

Sincerely,

 Digitally signed
by Jessica Rival
Date: 2017.08.18
09:10:15 -04'00'

Jessica Rival
CCT-Health Care Analyst

User, OHCA

From: Patel, Shraddha <SHRADDHA.PATEL@YNHH.ORG>
Sent: Thursday, September 07, 2017 2:52 PM
To: User, OHCA; Riggott, Kaila
Subject: RE: 17-32181-CON Yale Dental Services Completeness Letter
Attachments: YNHH Dental CON Completeness Question Responses 9-7-17.pdf; YNHH Dental CON Completeness Question Responses 9-7-17.docx

Good afternoon,

Attached please find YNHH's response to OHCA's completeness letter regarding Docket 17-32181-CON.

Please contact us if you have any questions.

Thank you,
Shraddha

Shraddha Patel, FACHE
Director of Strategy and Regulatory Planning & Reporting
2 Howe 3rd Floor
New Haven, CT 06519
Phone: 860-912-5324
Email: shraddha.patel@ynhh.org

YaleNewHavenHealth

From: Rival, Jessica [<mailto:Jessica.Rival@ct.gov>]
Sent: Friday, August 18, 2017 9:16 AM
To: Smith, Diane <DIANE.SMITH2@YNHH.ORG>
Cc: Lazarus, Steven <Steven.Lazarus@ct.gov>; Riggott, Kaila <Kaila.Riggott@ct.gov>; Olejarz, Barbara <Barbara.Olejarz@ct.gov>
Subject: 17-32181-CON Yale Dental Services Completeness Letter

Good morning Ms. Smith,

Please see the attached completeness letter in the above referenced matter. Please confirm receipt of this email and provide your written responses to OHCA no later than **October 17, 2017**.

Sincerely,

Jessica Rival
CCT Health Care Analyst
Office of Health Care Access
Connecticut Department of Public Health
410 Capitol Avenue MS#13HCA
Hartford, CT 06134
Phone: 860-418-7035

Fax: 860-418-7053
<http://www.ct.gov/ohca>



This message originates from the Yale New Haven Health System. The information contained in this message may be privileged and confidential. If you are the intended recipient you must maintain this message in a secure and confidential manner. If you are not the intended recipient, please notify the sender immediately and destroy this message. Thank you.

**Docket Number: 17-32181-CON
 Completeness Letter Responses**

- 1) Page 21 of the application states that “Coordinated care has been demonstrated to improve quality of care as patients are given a single, agreed upon care plan, and adherence is more likely when provider feedback is not contradictory or confusing, and when the patient is involved in the planning process.” Are there any scholarly articles or other evidence, to support this statement?

Response:

There are scholarly articles and other evidence to support the statement made on Page 21 of the CON application. Please refer to Exhibit A for copies.

- 2) Page 21 of the application describes utilization of the Hamden office in terms of chair utilization rate, visits per day, and visits per hour. Please provide comparable information for all current dental sites.

Response:

Utilization data for the other YNHH dental practices in New Haven is included below:

	Chair Utilization Rate	Visits per Day	Visits per Hour
Adult Dental Services – Hamden*	38%	16	2.3
Adult Dental Services – New Haven	36%	18	2.5
Oral Surgery Services – New Haven	64%	31	4.4
Pediatric Dental Services – New Haven	76%	76	10.9

*data for Hamden office provided in original CON document on Page 21

- 3) Page 23 of the application states “the current financial loss for the dental program is expected to continue after the consolidation of sites, but will be reduced to a degree due to efficiencies gained through the co-location.” This does not appear to be reflected in the Hospital’s Financial Worksheet A, which shows program gains.

- a. Please reconcile your statement with the financial data. Please provide actual program revenue and expenses for the dental program for FYs 15-17 using the table below.

	FY 2015	FY 2016	FY 2017*
Revenue from Operations	\$4,794,583	\$4,952,773	\$4,404,982
Total Operating Expenses	\$6,763,159	\$6,857,970	\$7,205,121
Gain/Loss from Operations	(\$1,969,154)	(\$1,905,197)	(\$2,800,139)

*annualized based on 10 months of data (from Oct 1, 2016 – July 31, 2017)

Response:

The table above reflects the financials for the YNHH dental program in totality and in isolation. As shown above, the dental program operates at a loss.

- b. Please provide projected incremental revenues and expenses for the dental program for FYs 18-21 using the table below.

PROJECTED INCREMENTAL REVENUES AND EXPENSES				
	FY 2018	FY 2019	FY 2020	FY 2021
Revenue from Operations	\$4,442,482	\$4,479,982	\$4,479,982	\$4,479,982
Total Operating Expenses	\$7,239,395	\$6,958,056	\$6,884,489	\$6,884,489
Gain/Loss from Operations	(\$2,796,913)	(\$2,478,074)	(\$2,404,507)	(\$2,404,507)

Response:

As noted in the prior response to completeness question 3a, the YNHH dental program operates at a loss in totality and in isolation. The proposal outlined in the CON application is projected to result in incremental operating gains for the dental program as shown in the original CON application in Table 4 on page 32 and in Financial Worksheet A on page 97. However, as demonstrated in the table above, completed in response to question 3b of the completeness questions, the gains will improve the financial performance of the dental program, but will not be significant enough to result in profitability for the dental program overall. The dental program will still operate at a loss in FY 2018 – FY 2021, but the loss will be reduced from FY 2017 levels.

- c. Please discuss to what degree the Hospital expects financial losses to be reduced. In what areas will these reductions be evidenced?

Response:

As shown on Table 4 (Page 32) and Financial Worksheet A (Page 97) of the original CON document, and in the table above in response to completeness question 3b, the financial losses for the dental program are projected to be reduced as follows by year compared to FY 2017:

- FY 2018 – dental program losses will be reduced by \$3,226 compared to FY 2017
- FY 2019 – dental program losses will be reduced by \$322,065 compared to FY 2017
- FY 2020 – dental program losses will be reduced by \$395,632 compared to FY 2017
- FY 2021 – dental program losses will be reduced by \$395,632 compared to FY 2017

As referenced in Exhibit G (Page 99) of the original CON and shown on the Financial Worksheet A (Page 97), net lease savings and salary and fringe savings are the drivers of the reduced financial losses.

- 4) Page 32 of the application describes a construction period of January 2018 through September 2018. Pages 34-36 reflect that it is expected that the consolidation will be complete in early FY 19.
- a. Will there be any cessation or reduction to any of the dental services during the construction, reorganization and final consolidation of the dental services?

Response:

There will be no cessation or reduction of any of the dental services during the construction, reorganization, and final consolidation of the dental services. As outlined in the response to Completeness Question 4b below, the transition will be phased and timed so all services will be available to the extent they are available now.

- b. Please provide a copy of the transition plan. Discuss the relocation and consolidation from start through completion including, how the relocation will occur, if there will be staggered site closures, time frames, etc.

Response:

There will be no cessation or reduction of any of the dental services during the construction, reorganization, and final consolidation of the dental services. The transition will be phased and timed, thus enabling YNHH to maintain the same level of service that currently exists.

Upon CON approval, construction and renovation will commence at the One Long Wharf location. During this time, the existing pediatric dental service currently operating at the One Long Wharf location will remain open with its existing operating days and hours in place. As outlined in the original CON filing on Page 101, the construction and renovation entails expansion of exam rooms and treatment rooms for the adult and oral surgery services to be added to the site. There will be no disruption to the pediatric dental service during this time.

Approximately 3-4 months prior to the October 1, 2018 go-live, all adult dental appointments and services in the YNHH Hamden adult dental clinic located at 2560 Dixwell Avenue, Hamden, CT, will be transitioned to the YNHH New Haven adult dental clinic located at 789 Howard Avenue, New Haven, CT. Prior to this transition, all patients will be notified by direct phone call and written correspondence of the upcoming location change for their appointment. Signage will also be posted within the Hamden clinic waiting room and other spaces communicating the upcoming changes. Since the Hamden and New Haven clinics share the same electronic medical record, there will be seamless continuity of care documentation.

Upon completion of construction and regulatory approvals to occupy the space attained at the end of September 2018, both the oral surgery practice located at 330 Orchard Street, New Haven, CT and the adult dental services located at 789 Howard Avenue, New Haven, CT will relocate to the One Long Wharf location. Prior to this transition, all patients will be notified by direct phone call and written correspondence of the upcoming location change for their appointment. Signage will also be posted within the oral surgery and adult dental services clinic waiting rooms and other spaces communication the upcoming changes.

All staff will be provided with orientation and training of the new dental clinic prior to transitioning to the One Long Wharf location. This will occur on an ongoing basis to minimize the impact to service availability.

Please refer to Exhibit B for timeline with additional detail.

- 5) Page 33 of the application, Table 5, provides information on historical utilization by service. Please indicate if the data for 2017 is annualized. If not, please indicate the months represented.

Response:

Data for FY 2017 on Page 33, Table 5, was annualized based on 6 months of data (from Oct 1, 2016 – March 31, 2017). Annualized volume calculated by dividing the 6 months of data by 6 and multiplying total by 12.

EXHIBIT A
SUPPORTING DOCUMENTATION

Factors affecting therapeutic compliance: A review from the patient's perspective

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Objective: To explore and evaluate the most common factors causing therapeutic non-compliance.

Methods: A qualitative review was undertaken by a literature search of the Medline database from 1970 to 2005 to identify studies evaluating the factors contributing to therapeutic non-compliance.

Results: A total of 102 articles was retrieved and used in the review from the 2095 articles identified by the literature review process. From the literature review, it would appear that the definition of therapeutic compliance is adequately resolved. The preliminary evaluation revealed a number of factors that contributed to therapeutic non-compliance. These factors could be categorized to patient-centered factors, therapy-related factors, social and economic factors, healthcare system factors, and disease factors. For some of these factors, the impact on compliance was not unequivocal, but for other factors, the impact was inconsistent and contradictory.

Conclusion: There are numerous studies on therapeutic noncompliance over the years. The factors related to compliance may be better categorized as “soft” and “hard” factors as the approach in countering their effects may differ. The review also highlights that the interaction of the various factors has not been studied systematically. Future studies need to address this interaction issue, as this may be crucial to reducing the level of non-compliance in general, and to enhancing the possibility of achieving the desired healthcare outcomes.

Keywords: patient compliance, adherence, factors

Introduction

The ultimate aim of any prescribed medical therapy is to achieve certain desired outcomes in the patients concerned. These desired outcomes are part and parcel of the objectives in the management of the diseases or conditions. However, despite all the best intention and efforts on the part of the healthcare professionals, those outcomes might not be achievable if the patients are non-compliant. This shortfall may also have serious and detrimental effects from the perspective of disease management. Hence, therapeutic compliance has been a topic of clinical concern since the 1970s due to the widespread nature of non-compliance with therapy. Therapeutic compliance not only includes patient compliance with medication but also with diet, exercise, or life style changes. In order to evaluate the possible impact of therapeutic non-compliance on clinical outcomes, numerous studies using various methods have been conducted in the United States (USA), United Kingdom (UK), Australia, Canada and other countries to evaluate the rate of therapeutic compliance in different diseases and different patient populations. Generally speaking, it was estimated that the compliance rate of long-term medication therapies was between 40% and 50%. The rate of compliance for short-term therapy was much higher at between 70% and 80%, while the compliance with lifestyle changes was the lowest at 20%–30% (DiMatteo 1995). Furthermore, the rates of non-compliance with different types of treatment also differ greatly. Estimates

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showed that almost 50% of the prescription drugs for the prevention of bronchial asthma were not taken as prescribed (Sabaté 2003). Patients' compliance with medication therapy for hypertension was reported to vary between 50% and 70% (Sabaté 2003). In one US study, Monane et al found that antihypertensive compliance averaged 49%, and only 23% of the patients had good compliance levels of 80% or higher (Monane et al 1996). Among adolescent outpatients with cancer, the rate of compliance with medication was reported to be 41%, while among teenagers with cancer it was higher at between 41% and 53% (Tebbi et al 1986). For the management of diabetes, the rate of compliance among patients to diet varied from 25% to 65%, and for insulin administration was about 20% (Cerkoney and Hart 1980). More than 20 studies published in the past few years found that compliance with oral medication for type 2 diabetes mellitus ranged from 65% to 85% (Rubin 2005). As previously mentioned, if the patients do not follow or adhere to the treatment plan faithfully, the intended beneficial effects of even the most carefully and scientifically-based treatment plan will not be realized. The above examples illustrate the extent of the problem of therapeutic non-compliance and why it should be a concern to all healthcare providers.

Definition of compliance

To address the issue of therapeutic non-compliance, it is of first and foremost importance to have a clear and acceptable definition of compliance. In the Oxford dictionary, compliance is defined as the practice of obeying rules or requests made by people in authority (Oxford Advanced Learner's Dictionary of Current English). In healthcare, the most commonly used definition of compliance is "patient's behaviors (in terms of taking medication, following diets, or executing life style changes) coincide with healthcare providers' recommendations for health and medical advice" (Sackett 1976). Thus, therapeutic non-compliance occurs when an individual's health-seeking or maintenance behavior lacks congruence with the recommendations as prescribed by a healthcare provider. Other similar terms have been used instead of compliance, and the meaning is more or less identical. For example, the term adherence is often used interchangeably with compliance. Adherence is defined as the ability and willingness to abide by a prescribed therapeutic regimen (Inkster 2006). Recently, the term "concordance" is also suggested to be used. Compared with "compliance", the term concordance makes the patient the decision-maker in the process and denotes patients-prescribers agreement and harmony (Vermeire et al 2001). Although there are slight and

subtle differences between these terms, in clinical practice, these terms are used interchangeably (albeit may not be totally correctly). Therefore, the more commonly used term of compliance will be used throughout this article.

Types of non-compliance

After defining what is meant by compliance, the next question that comes to mind to the healthcare providers would be: "What are the common types of non-compliance encountered in clinical medicine?" A knowledge and understanding of the various types of non-compliance commonly encountered in clinical practice would allow the formulation of strategies to tackle them effectively. A review of the literature reveals several types of commonly reported or detected non-compliance. (Table 1) Besides the types of non-compliance encountered, another logical question to ask in trying to complete the jigsaw puzzle of therapeutic non-compliance would be: "In clinical medicine, what is considered to be good or acceptable compliance?" Although it must be acknowledged that this is still controversial, in relation to good medication compliance, it has commonly been defined as taking 80 to 120% of the medication prescribed (Sackett et al 1975; Monane et al 1996; Avorn et al 1998; Hope et al 2004). For compliance with other treatment such as exercise or diet, the definition of acceptable compliance varied among different studies and there does not seem to be any commonly accepted criterion to define good or acceptable compliance.

Problems with therapeutic non-compliance

Before we can formulate strategies to tackle the issue of therapeutic non-compliance, we need to assess the clinical and other implications of therapeutic non-compliance.

From the perspective of healthcare providers, therapeutic compliance is a major clinical issue for two reasons. Firstly, non-compliance could have a major effect on treatment outcomes and direct clinical consequences. Non-compliance is directly associated with poor treatment outcomes in patients with diabetes, epilepsy, AIDS (acquired immunodeficiency syndrome), asthma, tuberculosis, hypertension, and organ transplants (Sabaté 2003). In hypertensive patients, poor compliance with therapy is the most important reason for poorly controlled blood pressure, thus increasing the risk of stroke, myocardial infarction, and renal impairment markedly. Data from the third NHANES (the National Health and Nutrition Examination Survey), which provides periodic information on the health of the US population, showed that blood pressure was controlled in only 31% of

Table 1 Type of reported non-compliance

Type of non-compliance	Reference
Receiving a prescription but not filling it	Donovan and Blake 1992
Taking an incorrect dose	
Taking medication at the wrong times	
Increasing or decreasing the frequency of doses	
Stopping the treatment too soon	
Delaying in seeking healthcare	Vermeire et al 2001
Non-participation in clinic visits	
Failure to follow doctor's instructions	Gordis 1979
"Drug holidays", which means the patient stops the therapy for a while and then restarts the therapy	Cummings et al 1982; Vermeire 2001
"White-coat compliance", which means patients are compliant to the medication regimen around the time of clinic appointments	Cramer et al 1990; Feinstein 1990; Vermeire 2001; Burnier et al 2003

the hypertension patients between 1999 and 2000 (Hajjar and Kotchen 2003). It is likely that non-compliance with treatment contributed to this lack of blood pressure control among the general population. For therapeutic non-compliance in infectious diseases, the consequences can include not only the direct impact such as treatment failures, but also indirect impact or negative externalities as well via the development of resistant microorganisms (Sanson-Fisher et al 1992). In addition, it has been shown that almost all patients who had poor compliance with drugs eventually dropped out of treatments completely, and therefore did not benefit at all from the treatment effects (Lim and Ngah 1991).

Besides undesirable impact on clinical outcomes, non-compliance would also cause an increased financial burden for society. For example, therapeutic non-compliance has been associated with excess urgent care visits, hospitalizations and higher treatment costs (Bond and Hussar 1991, Svarstad et al 2001). It has been estimated that 25% of hospital admissions in Australia, and 33%–69% of medication-related hospital admissions in the USA were due to non-compliance with treatment regimens (Sanson-Fisher et al 1992; Osterberg and Blaschke 2005). Additionally, besides direct financial impact, therapeutic non-compliance would have indirect cost implications due to the loss of productivity, without even mentioning the substantial negative effect on patient's quality of life.

Furthermore, as a result of undetected or unreported therapeutic non-compliance, physicians may change the regimen, which may increase the cost or complexity of the treatment, thus further increasing the burden on the healthcare system. The cost burden has been estimated at US\$100 billion each year in the USA alone (Vermeire et al 2001). Prescription drug cost is the fastest growing component of healthcare costs in the USA. National outpatient drug spending has increased by 13 to 16% per year during the past few years, and it is expected to continue to grow by 9%–13% per year

during the coming decade (Sokol et al 2005). In the era where cost-effectiveness is a buzz word in healthcare delivery, any factors that could contribute to increased drug use should be a concern for the healthcare providers.

Hence, from both the perspective of achieving desirable clinical and economic outcomes, the negative effect of therapeutic non-compliance needs to be minimized. However, in order to formulate effective strategies to contain the problem of non-compliance, there is a need to systematically review the factors that contribute to non-compliance. An understanding of the predictive value of these factors on non-compliance would also contribute positively to the overall planning of any disease management program.

Objectives

To conduct a systematic qualitative review to identify the most common factors causing therapeutic non-compliance from the patient's perspective.

Methods

Literature searches were undertaken through the Medline database from 1970 to 2005. The following MeSH (medical subject heading) terms were used: treatment refusal, patient compliance, and patient dropouts. MeSH terms provide a consistent way to retrieve information that may use different terminology for the same concepts. Besides MeSH terms, the following key words were also searched in the title or abstract: factors, predictors and determinants.

Only English-language journal articles with abstracts were included. The populations were adolescents aged 13–18 years and adults aged 19 years or older. Clinical trials were excluded since they were carried out under close monitoring and therefore the compliance rates reported would not be generalizable. Articles which were categorized by Medline

in subsets on AIDS, bioethics, history of medicine, space life sciences and toxicology were not included as well.

Abstracts of identified articles were retrieved manually to select original studies and reviews which mainly focused on the topics of interest. The topics of interest in the field of patient compliance were: factors that influence therapeutic non-compliance and the extent of non-compliance with treatment. Only non-compliance studies from the patient's perspective were selected. Original studies that included fewer than 50 patients were eliminated because of inadequate sample size. If the sample population of studies was very specific, such as involving only males or females, or recruiting patients from one specific class (homeless, prisoners or workers from one employer, etc), they were eliminated as well because results from these studies might not be generalizable to the general population. In addition, a number of articles were excluded if they mainly focused on strategies to enhance patient's compliance, methods to measure compliance, validating instruments to identify factors influencing non-compliance and the effect of non-compliance. When the abstracts were not clear enough to decide whether articles met the inclusion criteria, full articles were read to make the decision.

Results

A total of 2095 articles were retrieved in this process, and after the culling process, 102 articles met the inclusion criteria. The rest were excluded for the reasons such as small sample size, not focused on factors affecting compliance, not from patients' perspective, etc (Figure 1). The impact of these factors on therapeutic non-compliance would be discussed in details in the subsequent sections.

Factors identified

The factors identified from the studies and reviews may be grouped into several categories, namely, patient-centered factors, therapy-related factors, healthcare system factors, social and economic factors, and disease factors (Table 2).

Patient-centered factors

Demographic factors

Factors identified to be in this group include patient's age, ethnicity, gender, education, and marital status. A summary of the impact of these factors on therapeutic compliance is presented (Table 3).

Age

More than thirty retrieved articles were related to this factor. The majority of the studies showed that age was related to

compliance, although a few researchers found age not to be a factor causing non-compliance (Lorenc and Branthwaite 1993; Menzies et al 1993; Wild et al 2004; Wai et al 2005). From a review of the articles showing a correlation between age and non-compliance, it would appear that the effect of age could be divided into 3 major groups: the elderly group (over 55 years old), the middle-age group (40 to 54 years old) and the young group (under 40 years old).

For elderly people, the results from the various studies are not unidirectional. A large proportion of retrieved studies suggested that they might have higher compliance (Norman et al 1985; Didlake et al 1988; Schweizer et al 1990; Shea et al 1992; Frazier et al 1994; McLane et al 1995; Shaw et al 1995; Monane et al 1996; Buck et al 1997; Viller et al 1999; Sirey et al 2001; Kim et al 2002; Senior et al 2004; Hertz et al 2005). In a study carried out in UK, patients over 60 years old were more likely to be always compliant with their anti-epileptic tablets than patients under 60 years old (86% vs 66%, respectively) (Buck et al 1997). It was also suggested that patients' antidepressant drug compliance was positively related to age over 60 years (Sirey et al 2001). These results are consistent with the conclusion from another published review (Krousel-Wood et al 2004). In addition, four studies focusing on younger people (mean age 46–50 yr) indicated the same trend that compliance increased with the increasing age (Degoulet et al 1983; Christensen and Smith 1995; Caspard et al 2005; Lacasse et al 2005).

However, some studies found that advancing age affected compliance among elderly people in the opposite direction (Okuno et al 1999; Benner et al 2002; Balbay et al 2005). Nevertheless, there were confounding factors in these studies. The study by Balbay et al was carried out in a rural area of Turkey among patients with tuberculosis and found that younger patients were more compliant to treatment than older patients (mean age 42 yr vs 50 yr) (Balbay et al 2005). The researchers stated that this might be due to the low education level of older patients. Similarly, the study by Okuno et al suggested that home-care patients aged 80 and over were less likely to be compliant with their prescribed medication, but the participants in that particular study had physical disabilities which limit its generalizability (Okuno et al 1999).

Several studies also attempted to venture plausible reasons for poorer compliance among elderly patients. Elderly patients may have problems in vision, hearing and memory. In addition, they may have more difficulties in following therapy instructions due to cognitive impairment or other physical difficulties, such as having problems in swallowing tablets, opening drug containers, handling small tablets,

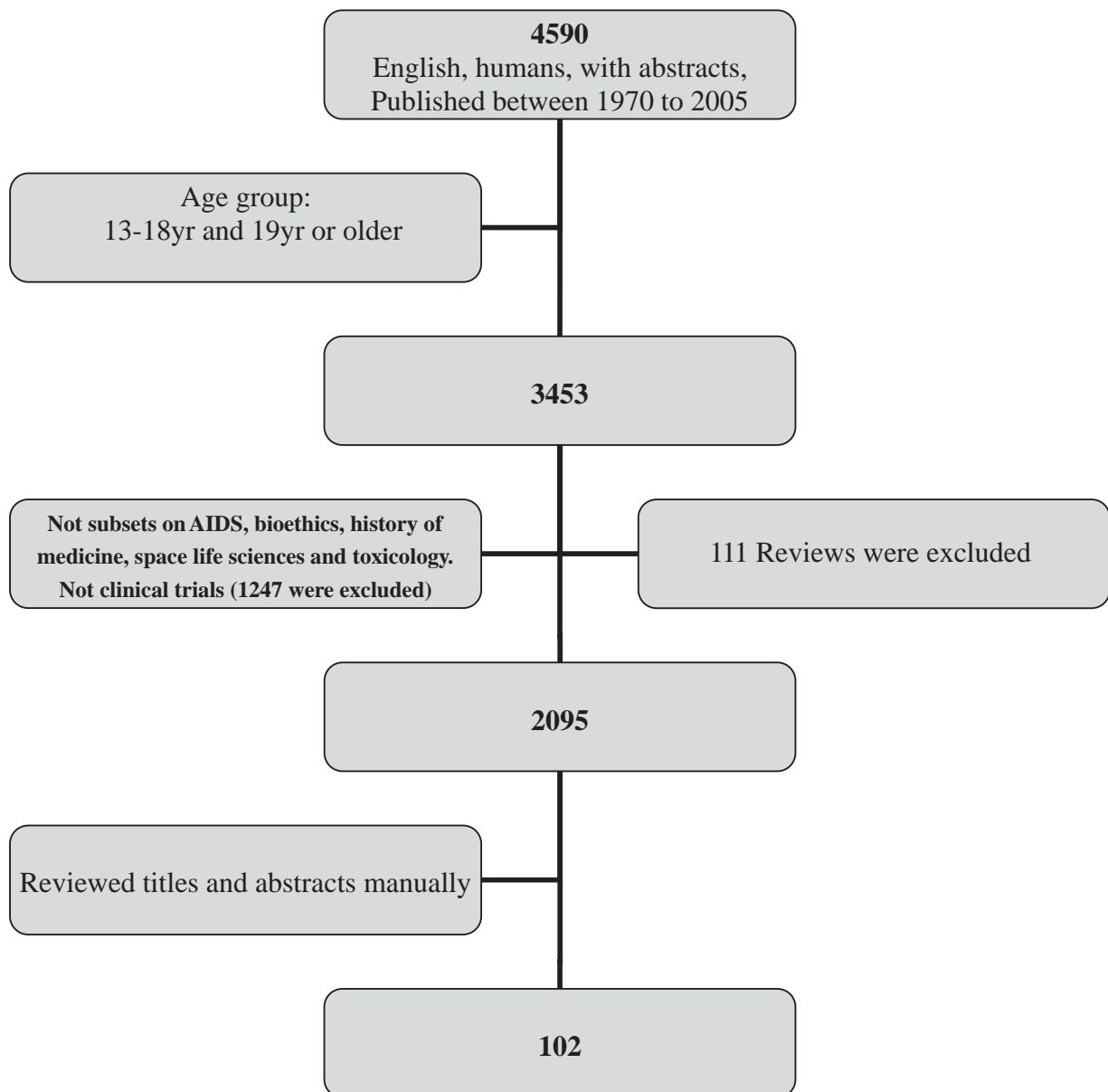


Figure 1 Retrieval and culling process of the articles in literature review process.

distinguishing colors or identifying markings on drugs. (Murray et al 1986; Stewart and Caranasos 1989; Chizzola et al 1996; Nikolaus et al 1996; Okuno et al 2001; Benner et al 2002; Jeste et al 2003; Cooper et al 2005). On the contrary, older people might also have more concern about their health than younger patients, so that older patients' non-compliance is non-intentional in most cases. As a result, if they can get the necessary help from healthcare providers or family members, they may be more likely to be compliant with therapies.

In comparison, the impact of younger age on compliance is much more congruent among the studies. Middle-aged patients were less likely to be compliant to therapy. In Japan,

patients in the prime of their life (40–59 years) were found less likely to be compliant to the medication (Iihara et al 2004). Similarly, young patients under 40 years also have a low compliance rate (Neeleman and Mikhail 1997; Leggat et al 1998; Loong 1999; Siegal and Greenstein 1999). In Singapore, patients less than 30 years old were found to be less likely to collect the medication prescribed at a polyclinic (Loong 1999). In a study about patients' compliance with hemodialysis, patients aged 20 to 39 years were poorly compliant (Leggat et al 1998). Patients in these two age ranges (middle-aged patients and young patients under 40 years old) always have other priorities in their daily life. Due to

Table 2 Categories of factors identified from the literature review

Category	Factors
Patient-centered factors	Demographic Factors: <i>Age, Ethnicity, Gender, Education, Marriage Status</i> Psychosocial factors: <i>Beliefs, Motivation, Attitude</i> Patient-prescriber relationship Health literacy Patient knowledge Physical difficulties Tobacco Smoking or alcohol intake Forgetfulness History of good compliance
Therapy-related factors	Route of administration Treatment complexity Duration of the treatment period Medication side effects Degree of behavioral change required Taste of the medication Requirements for drug storage
Healthcare system factors	Lack of accessibility Long waiting time Difficulty in getting prescriptions filled Unhappy clinic visits
Social and economic factors	Inability to take time off work Cost and Income Social support
Disease factors	Disease symptoms Severity of the disease

their work and other commitments, they may not be able to attend to treatment or spend a long time waiting for clinic appointments.

Likewise, low compliance also occurs in adolescents and children with chronic disease (Buck et al 1997; Kyngas 1999). Very young children need more help from their parents or guardians to implement treatment. Therefore, their poorer compliance may be due to a lack of understanding or other factors relating to their parents or guardians. For adolescents, this period is often marked by rebellious behavior and disagreement with parents and authorities (Tebbi 1993). They usually would prefer to live a normal life like their friends. This priority could therefore influence their compliance.

Ethnicity

Race as a factor causing non-compliance has been studied fairly widely in the USA and European countries and sixteen studies on this factor were retrieved. Caucasians are believed to have good compliance according to some studies (Didlake et al 1988; Sharkness and Snow 1992; Turner et al 1995; Raiz et al 1999; Thomas et al 2001; Yu et al 2005), while African-Americans, Hispanics and other minorities were found to have comparatively poor compliance (Schweizer

et al 1990; Monane et al 1996; Leggat et al 1998; Benner et al 2002; Apter et al 2003; Opolka et al 2003; Spikmans et al 2003; Butterworth et al 2004; Kaplan et al 2004; Dominick et al 2005). However, a plausible explanation for this may be due to patient's lower socio-economic status and language barriers of the minority races in the study countries. Hence, due to these confounding variables, ethnicity may not be a true predictive factor of poorer compliance.

Gender

In the twenty-two studies retrieved related to this factor, the results are contradictory. Female patients were found by some researchers to have better compliance (Degoulet et al 1983; Chuah 1991; Shea et al 1992; Kyngas and Lahdenpera 1999; Viller et al 1999; Kiortsis et al 2000; Lindberg et al 2001; Balbay et al 2005; Choi-Kwon 2005; Fodor et al 2005; Lertmaharit et al 2005), while some studies suggested otherwise (Frazier et al 1994; Sung et al 1998; Caspard et al 2005; Hertz et al 2005). In addition, some studies could not find a relationship between gender and compliance (Menziés et al 1993; Buck et al 1997; Horne and Weinman 1999; Ghods and Nasrollahzadeh 2003; Spikmans et al 2003; Senior et al 2004). This is consistent with another literature review on compliance in seniors

Table 3 The effect of demographic factors on compliance

Factor	Reference		
	Increased compliance	Decreased compliance	No effect
Age (elderly)	Norman et al 1985; Didlake et al 1988; Schweizer et al 1990; Shea et al 1992; Frazier et al 1994; McLane et al 1995; Shaw et al 1995; Monane et al 1996; Buck et al 1997; Viller et al 1999; Sirey et al 2001; Kim et al 2002; Senior et al 2004; Hertz et al 2005	Okuno et al 1999; Benner et al 2002; Balbay et al 2005	Lorenc and Branthwaite 1993; Menzies et al 1993; Wild et al 2004; Wai et al 2005
Age (middle-aged)		lihara et al 2004	
Age (young)		Buck et al 1997; Neeleman and Mikhail 1997; Leggat et al 1998; Kyngas 1999; Loong 1999; Siegal and Greenstein 1999	
Ethnicity Caucasian	Didlake et al 1988; Sharkness and Snow 1992; Turner et al 1995; Raiz et al 1999; Thomas et al 2001; Yu et al 2005		
Minorities			Schweizer et al 1990; Monane et al 1996; Leggat et al 1998; Benner et al 2002; Apter et al 2003; Opolka et al 2003; Spikmans et al 2003; Butterworth et al 2004; Kaplan et al 2004; Dominick et al 2005
Gender (female)	Degoulet et al 1983; Chuah 1991; Shea et al 1992; Kyngas and Lahdenpera 1999; Viller et al 1999; Kiortsis et al 2000; Lindberg et al 2001; Balbay et al 2005; Choi-Kwon 2005; Fodor et al 2005; Lertmaharit et al 2005	Frazier et al 1994; Sung et al 1998; Caspard et al 2005; Hertz et al 2005	Menzies et al 1993; Buck et al 1997; Horne and Weinman 1999; Ghods and Nasrollahzadeh 2003; Spikmans et al 2003; Senior et al 2004
Education level (higher)	Apter et al 1998; Okuno et al 2001; Ghods and Nasrollahzadeh 2003; Yavuz et al 2004	Kyngas and Lahdenpera 1999; Senior et al 2004	Norman et al 1985; Horne and Weinman 1999; Spikmans et al 2003; Kaona et al 2004; Stilley et al 2004; Wai et al 2005
Marital status (married)	Swett and Noones 1989; Frazier et al 1994; De Geest et al 1995; Turner et al 1995; Cooper et al 2005		Spikmans et al 2003; Ghods and Nasrollahzadeh 2003; Kaona et al 2004; Wild et al 2004; Yavuz et al 2004

that concluded that gender has not been found to influence compliance (Vic et al 2004). Gender may not be a good predictor of non-compliance because of the inconsistent conclusions.

Educational level

The effect of educational level on non-compliance was equivocal after reviewing thirteen articles which focused on the impact of educational level as they used different criteria for “higher” and “lower” education. Several studies found that patients with higher educational level might have higher compliance (Apter et al 1998; Okuno et al 2001; Ghods and Nasrollahzadeh 2003; Yavuz et al 2004), while some studies found no association (Norman et al 1985; Horne and Weinman 1999; Spikmans et al 2003; Kaona et al 2004; Stille et al 2004; Wai et al 2005). Intuitively, it may be expected that patients with higher educational level should have better knowledge about the disease and therapy and therefore be more compliant. However, DiMatteo found that even highly educated patients may not understand their conditions or believe in the benefits of being compliant to their medication regimen (DiMatteo 1995). Other researchers showed that patients with lower education level have better compliance (Kyngas and Lahdenpera 1999; Senior et al 2004). A UK study group found that patients without formal educational qualifications had better compliance with cholesterol-lowering medication (Senior et al 2004). Patients with lower educational level might have more trust in physicians’ advice. From these results, it seems that educational level may not be a good predictor of therapeutic compliance.

Marital status

Marital status might influence patients’ compliance with medication positively (Swett and Noones 1989; Frazier et al 1994; De Geest et al 1995; Turner et al 1995; Cooper et al 2005). The help and support from a spouse could be the reason why married patients were more compliant to medication than single patients. However, marital status was not found to be related to patient’s compliance in five recent studies (Ghods and Nasrollahzadeh 2003; Spikmans et al 2003; Kaona et al 2004; Wild et al 2004; Yavuz et al 2004). This disparity might be due to the fact that the recent studies investigated the effect of marital status in disease conditions which were different from those evaluated in the older studies, with the impact being masked by the disease factor.

Psychological factors

Patient’s beliefs, motivation and negative attitude towards therapy were identified as factors to be included in this category.

Patients’ beliefs and motivation about the therapy

Twenty-three articles were identified for this factor in the review process. From the results, patients’ beliefs about the causes and meaning of illness, and motivation to follow the therapy were strongly related to their compliance with healthcare (Lim and Ngah 1991; Buck et al 1997; Cochrane et al 1999; Kyngas 1999; Kyngas 2001; Kyngas and Rissanen 2001; Vincze et al 2004).

In summarizing the findings from the various studies, it would appear that compliance was better when the patient had the following beliefs:

- The patient feels susceptible to the illness or its complication (Haynes et al 1980; Abbott et al 1996; Spikmans et al 2003).
- The patient believes that the illness or its complications could pose severe consequences for his health (McLane et al 1995; Sirey et al 2001; Loffler et al 2003).
- The patient believes that the therapy will be effective or perceives benefits from the therapy (Lorenc and Branthwaite 1993; De Geest et al 1995; Cochrane et al 1999; Horne and Weinman 1999; Apter et al 2003; Spikmans et al 2003; Krousel-Wood et al 2004; Wild et al 2004; Gonzalez et al 2005; Seo and Min 2005).

On the contrary, misconceptions or erroneous beliefs held by patients would contribute to poor compliance. Patient’s worries about the treatment, believing that the disease is uncontrollable and religious belief might add to the likelihood that they are not compliant to therapy. In a review to identify patient’s barriers to asthma treatment compliance, it was suggested that if the patients were worried about diminishing effectiveness of medication over time, they were likely to have poor compliance with the therapy (Bender and Bender 2005). In patients with chronic disease, the fear of dependence on the long-term medication might be a negative contributing factor to compliance (Apter et al 2003; Bender and Bender 2005). This is sometimes augmented further by cultural beliefs. For example, in Malaysia, some hypertension patients believed long-term use of “Western” medication was “harmful”, and they were more confident in herbal or natural remedies (Lim and Ngah 1991). In a New Zealand study, Tongan patients may think disease is God’s will and uncontrollable; and as a consequence, they perceived less need for medication (Barnes et al 2004). Similarly, in Pakistan, inbred fears and supernatural beliefs were reported

to be two major factors affecting patients' compliance with treatment (Sloan and Sloan 1981).

Patients who had low motivation to change behaviors or take medication are believed to have poor compliance (Lim and Ngah 1991; Hernandez-Ronquillo et al 2003; Spikmans et al 2003). In a study done in Malaysia, 85% of hypertension patients cited lack of motivation as the reason for dropping out of treatment (Lim and Ngah 1991).

Negative attitude towards therapy

Fifteen studies showed an association between patients' negative attitude towards therapy (eg, depression, anxiety, fears or anger about the illness) and their compliance (Lorenc and Branthwaite 1993; Bosley et al 1995; Carney et al 1995; Milas et al 1995; Jette et al 1998; Clark et al 1999; Raiz et al 1999; Sirey et al 2001; Barnes et al 2004; Gascon et al 2004; Iihara et al 2004; Kaplan et al 2004; Stilley et al 2004; Kilbourne et al 2005; Yu et al 2005). In one study conducted in patients older than 65 years with coronary artery disease, depression affected compliance markedly (Carney et al 1995). There were other studies reporting that for children or adolescents, treatment may make them feel stigmatized (Bender and Bender 2005), or feel pressure because they are not as normal as their friends or classmates (Kyngas 1999). Therefore, negative attitude towards therapy should be viewed as a strong predictor of poor compliance.

Patient-prescriber relationship

Seventeen articles evaluated the effect of the patient-prescriber relationship to patient's compliance. From these articles it could be concluded that patient-prescriber relationship is another strong factor which affects patients' compliance (Buck et al 1997; Roter and Hall 1998; Stromberg et al 1999; Kiortsis et al 2000; Okuno et al 2001; Kim et al 2002; Loffler et al 2003; Moore et al 2004; Gonzalez et al 2005). A healthy relationship is based on patients' trust in prescribers and empathy from the prescribers. Studies have found that compliance is good when doctors are emotionally supportive, giving reassurance or respect, and treating patients as an equal partner (Moore et al 2004; Lawson et al 2005). Rubin mentioned some situations that may influence patients' trust in physicians (Rubin 2005). For example, physicians who asked few questions and seldom made eye contact with patients, and patients who found it difficult to understand the physician's language or writing. More importantly, too little time spent with patients was also likely to threaten patient's motivation for maintaining therapy (Lim and Ngah 1991; Gascon et al 2004; Moore et al 2004; Lawson et al 2005).

Poor communication with healthcare providers was also likely to cause a negative effect on patient's compliance (Bartlett et al 1984; Apter et al 1998). Lim and Ngah showed in their study that non-compliant hypertension patients felt the doctors were lacking concern for their problems (Lim and Ngah 1991). In addition, multiple physicians or healthcare providers prescribing medications might decrease patients' confidence in the prescribed treatment (Vlasnik et al 2005).

These findings demonstrate the need for cooperation between patients and healthcare providers and the importance of good communication. To build a good and healthy relationship between patients and providers, providers should have patients involved in designing their treatment plan (Gonzalez et al 2005; Vlasnik et al 2005), and give patients a detailed explanation about the disease and treatment (Butterworth et al 2004; Gascon et al 2004). Good communication is also very important to help patients understand their condition and therapy (Lorenc and Branthwaite 1993).

Health literacy

Health literacy means patients are able to read, understand, remember medication instructions, and act on health information (Vlasnik et al 2005). Patients with low health literacy were reported to be less compliant with their therapy (Nichols-English and Poirier 2000). On the contrary, patients who can read and understand drug labels were found to be more likely to have good compliance (Murray et al 1986; Lorenc and Branthwaite 1993; Butterworth et al 2004). Thus, using written instructions and pictograms on medicine labels has proven to be effective in improving patient's compliance (Dowse and Ehlers 2005; Segador et al 2005).

Patient knowledge

Patient's knowledge about their disease and treatment is not always adequate. Some patients lack understanding of the role their therapies play in the treatment (Ponnusankar et al 2004); others lack knowledge about the disease and consequences of poor compliance (Alm-Roijer et al 2004; Gascon et al 2004); or lack understanding of the value of clinic visits (Lawson et al 2005). Some patients thought the need for medication was intermittent, so they stopped the drug to see whether medication was still needed (Vic et al 2004; Bender and Bender 2005). For these reasons, patient education is very important to enhance compliance. Counseling about medications is very useful in improving patient's compliance (Ponnusankar et al 2004). Healthcare providers should give patients enough education about the

treatment and disease (Haynes et al 1980; Norman et al 1985; Stanton 1987; Olubodun et al 1990; Lorenc and Branthwaite 1993; Menzies et al 1993; Milas et al 1995; Chizzola et al 1996; Hungin 1999; Liam et al 1999; Okuno et al 1999; Viller et al 1999; Lindberg et al 2001; Thomas et al 2001; Gascon et al 2004; Iihara et al 2004; Kaona et al 2004; Ponnusankar et al 2004; Seo and Min 2005).

However, education is not always “the more the better”. An “inverted U” relationship between knowledge and compliance existed in adolescents. Adolescent patients who knew very little about their therapies and illness were poor compliers, while patients who were adequately educated about their disease and drug regimens were good compliers; but patients who knew the life-long consequences might show poor compliance (Hamburg and Inoff 1982). Nevertheless, there is no report of similar observations in other age groups. In addition, patients’ detailed knowledge of the disease was not always effective. In Hong Kong, researchers could not find any association between diabetes knowledge and compliance. They suggested that there was a gap between what the patients were taught and what they were actually doing (Chan and Molassiotis 1999).

In addition, the content of education is crucial. Rubin found that educating the patients about their disease state and general comprehension of medications would increase their active participation in treatment (Rubin 2005). Making sure patients understand the drug dosing regimen could also improve compliance (Olubodun et al 1990). To make sure patients remember what was taught, written instructions work better than verbal ones, as patients often forget physician’s advice and statements easily (Tebbi 1993).

Other factors

Smoking or alcohol intake

Several studies about compliance among asthma, hypertension and renal transplantation patients found that patients who smoked or drank alcohol were more likely to be non-compliant (Degoulet et al 1983; Shea et al 1992; Turner et al 1995; Leggat et al 1998; Kyngas 1999; Kyngas and Lahdenpera 1999; Kiortsis et al 2000; Kim et al 2002; Ghods and Nasrollahzadeh 2003; Yavuz et al 2004; Balbay et al 2005; Cooper et al 2005; Fodor et al 2005). In a study conducted in Finland in hypertension patients, non-smokers were more compliant to the diet restrictions (Kyngas and Lahdenpera 1999). Likewise, another study in renal transplantation patients in Turkey found that patients who were smoking or drinking were unlikely to be compliant to the therapy (Yavuz et al 2004). Only one single study about

obstructive sleep apnoea/hypopnoea syndrome (OSAHS) found no relationship between smoking or alcohol intake and patient’s compliance with continuous positive airway pressure treatment (Wild et al 2004).

Forgetfulness

Forgetfulness is a widely reported factor that causes non-compliance with medication or clinic appointments (Cummings et al 1982; Kelloway et al 1994; Okuno et al 2001; Hernandez-Ronquillo et al 2003; Ponnusankar et al 2004; Wai et al 2005). A Japanese study in elderly home-care recipients found an interesting association between meal frequency and compliance. Patients having less than 3 meals per day were less compliant than patients having 3 meals a day. It suggested that meal frequency was an effective tool to remind the patient to take drugs (Okuno et al 1999). As mentioned in a previous section, written instructions are better than oral advice for reminding patients to take medication.

Therapy-related factors

Therapy-related factors identified include: route of administration, treatment complexity, duration of treatment period, medication side effects, degree of behavioral change required, taste of medication and requirement for drug storage (Table 4).

Route of administration

Medications with a convenient way of administration (eg, oral medication) are likely to make patients compliant. Studies in asthma patients compared compliance between oral and inhaled asthma medications, and found patients had better compliance with oral medication (Kelloway et al 1994; Nichols-English and Poirier 2000). Likewise, difficulty in using inhalers contributes to non-compliance in patients with asthma (Bender and Bender 2005).

Treatment complexity

Complex treatment is believed to threaten the patient’s compliance. However, compliance does not seem to correlate with the number of drugs prescribed (Horne and Weinman 1999; Patal and Taylor 2002; Grant et al 2003; Iihara et al 2004), but the number of dosing times every day of all prescribed medications (Kass et al 1986; Cockburn et al 1987; Cramer et al 1989; Eisen et al 1990; Cramer 1998; Sung et al 1998; Claxton et al 2001; Iskedjian et al 2002). The rate of compliance decreased as the number of daily doses increased. This is illustrated by one study where compliance was assessed by pill counts and self-reports that showed that non-compliance increased with an increase in the frequency of prescribed dosing: 20% for once daily; 30%

Table 4 The effect of therapy-related factors on compliance

Factor	Reference		
	Increased compliance	Decreased compliance	No effect
Convenient route of medication administration	Kelloway et al 1994; Nichols-English and Poirier 2000		
Increasing number of medications taken	Buck et al 1997; Fodor et al 2005	Murray et al 1986; Kiortsis et al 2000	Horne and Weinman 1999; Patal and Taylor 2002; Grant et al 2003; Iihara et al 2004
Increasing number of dosing times		Kass et al 1986; Cockburn et al 1987; Cramer et al 1989; Eisen et al 1990; Cramer 1998; Sung et al 1998; Claxton et al 2001; Iskedjian et al 2002	
Long duration of treatment period	Sharkness and Snow 1992; Garay-Sevilla et al 1995	International Union Against Tuberculosis 1982; Combs et al 1987; Menzies et al 1993; Farmer et al 1994; Frazier et al 1994; Ghods and Nasrollahzadeh 2003; Gascon et al 2004; Dhanireddy et al 2005	
Medication side effect		Spagnoli et al 1989; Shaw et al 1995; Buck et al 1997; Dusing et al 1998; Hungin 1999; Kiortsis et al 2000; Linden et al 2000; Kim et al 2002; Dietrich et al 2003; Grant et al 2003; Loffler et al 2003; Sleath et al 2003; Iihara et al 2004; Kaplan et al 2004; Ponnusankar et al 2004; O'Donoghue 2004	
High degree of behavior changed required		Milas et al 1995; Hernandez-Ronquillo et al 2003; Vincze et al 2004	
Bad taste of the medication		O'Donoghue 2004	
Inconvenient requirement for drug storage		O'Donoghue 2004	

for twice daily; 60% for three times a day; and 70% for four times daily (Cramer et al 1989). Similarly, a meta-analysis found that there was a significant difference in compliance rate between patients taking antihypertensive medication once daily and twice daily (92.1% and 88.9%, respectively) (Iskedjian et al 2002). Thus, simplifying the medication dosing frequency could improve compliance markedly.

Duration of the treatment period

Acute illnesses are associated with higher compliance than chronic illnesses (Gascon et al 2004). In addition, longer duration of the disease may adversely affect compliance (Farmer et al 1994; Frazier et al 1994). Similarly, a longer duration of treatment period might also compromise patient's compliance (Menzies et al 1993; Ghods and Nasrollahzadeh

2003; Dhanireddy et al 2005). In one trial that compared 6-month and 9-month treatment of tuberculosis, compliance rates were 60% and 50% for the two regimens, respectively (Combs et al 1987). In another study comparing preventive regimens of 3, 6 and 12 months, compliance rates were 87%, 78% and 68% for the three regimens, respectively (International Union Against Tuberculosis 1982).

However, some studies about chronic diseases found that longer duration of the disease resulted in good compliance (Sharkness and Snow 1992; Garay-Sevilla et al 1995), and newly diagnosed patients had poor compliance (Caro et al 1999). This may indicate that compliance is improved because patient's attitude of denying the disease is reduced and they accepted treatment after years of suffering from the disease.

Medication side effects

All of the seventeen studies on side effects factor found that side effects threaten patient's compliance (Spagnoli et al 1989; Shaw et al 1995; Buck et al 1997; Dusing et al 1998; Hungin 1999; Kiortsis et al 2000; Linden et al 2000; Kim et al 2002; Dietrich et al 2003; Grant et al 2003; Loffler et al 2003; Sleath et al 2003; Iihara et al 2004; Kaplan et al 2004; Ponnusankar et al 2004; O'Donoghue 2004). In a German study, the second most common reason for non-compliance with antihypertensive therapy was adverse effects (Dusing et al 1998). The effect of side effects on compliance may be explained in terms of physical discomfort, skepticism about the efficacy of the medication, and decreasing the trust in physicians (Christensen 1978).

Degree of behavioral change required

The degree of required behavioral change is related to patients' motivation to be compliant with the therapy (Milas et al 1995; Hernandez-Ronquillo et al 2003; Vincze et al 2004). A study done in Mexico demonstrated that patients with type 2 diabetes could not follow the diet because of the difficulty of changing their dietary habits (Hernandez-Ronquillo et al 2003).

Social and economic factors

Social and economic factors include: time commitment, cost of therapy, income and social support.

Time commitment

Patients may not be able to take time off work for treatment; as a result, their rate of compliance could be threatened (Shaw et al 1995; Siegal and Greenstein 1999; Hernandez-Ronquillo et al 2003; Lawson et al 2005; Neal et al 2005). Therefore,

a shorter traveling time between residence and healthcare facilities could enhance patient's compliance (Gonzalez et al 2005). A study suggested that white collar patients have poor compliance because they have other priorities (Siegal and Greenstein 1999). Housewives with tuberculosis were more compliant to therapy in an observational study in Malaysia (Chuah 1991). This may be because housewives can adapt well to clinic appointment times and treatment.

Cost of therapy and income

Cost is a crucial issue in patient's compliance especially for patients with chronic disease as the treatment period could be life-long (Connelly 1984; Shaw et al 1995; Ellis et al 2004; Ponnusankar et al 2004). Healthcare expenditure could be a large portion of living expenses for patients suffering from chronic disease. Cost and income are two interrelated factors. Healthcare cost should not be a big burden if the patient has a relatively high income or health insurance. A number of studies found that patients who had no insurance cover (Swett and Noones 1989; Kaplan et al 2004; Choi-Kwon 2005), or who had low income (Degoulet et al 1983; Cockburn et al 1987; Shea et al 1992; Frazier et al 1994; Apter et al 1998; Berghofer et al 2002; Benner et al 2002; Ghods and Nasrollahzadeh 2003; Hernandez-Ronquillo et al 2003; Mishra et al 2005) were more likely to be non-compliant to treatment. However, even for patients with health insurance, health expenses could still be a problem. More than one in ten seniors in the USA reported using less of their required medications because of cost (Congressional Budget Office 2003). Nevertheless, in other cases, income was not related to compliance level (Norman et al 1985; Lim and Ngah 1991; Patal and Taylor 2002; Stilley et al 2004; Wai et al 2005). In Singapore, a study on chronic hepatitis B surveillance found that monthly income was not related to patient's compliance with regular surveillance (Wai et al 2005). This discrepancy might due to different healthcare systems in different countries. Healthcare personnel should be aware of patient's economic situation and help them use medication more cost-effectively.

Social support

The general findings from these articles showed that patients who had emotional support and help from family members, friends or healthcare providers were more likely to be compliant to the treatment (Stanton 1987; Lorenc and Branthwaite 1993; Garay-Sevilla et al 1995; Milas et al 1995; Kyngas 1999; Okuno et al 1999; Stromberg et al 1999; Kyngas 2001; Kyngas and Rissanen 2001; Thomas et al 2001; Loffler et al

2003; DiMatteo 2004; Feinstein et al 2005; Seo and Min 2005; Voils et al 2005). The social support helps patients in reducing negative attitudes to treatment, having motivation and remembering to implement the treatment as well.

Healthcare system factors

The main factor identified relating to healthcare systems include availability and accessibility. Lack of accessibility to healthcare (Ponnusankar et al 2004), long waiting time for clinic visits (Grunebaum et al 1996; Balkrishnan et al 2003; Moore et al 2004; Lawson et al 2005; Wai et al 2005), difficulty in getting prescriptions filled (Cummings et al 1982; Vlasnik et al 2005), and unhappy or unsatisfied clinic visits (Spikmans et al 2003; Gascon et al 2004; Lawson et al 2005) all contributed to poor compliance. The above observation is further supported by another study that showed patient's satisfaction with clinic visits is most likely to improve their compliance with the treatment (Haynes et al 1980).

Disease factor

Patients who are suffering from diseases with fluctuation or absence of symptoms (at least at the initial phase), such as asthma and hypertension, might have a poor compliance (Hungin 1999; Kyngas and Lahdenpera 1999; Vlasnik et al 2005). Kyngas and Lahdenpera demonstrated that there was a significant relationship between the presence of hypertension symptoms and reduction in the sodium consumption. Seventy-one percent of the patients who had symptoms reduced the use of sodium, as compared to only 7% of the patients who did not suffer from symptoms (Kyngas and Lahdenpera 1999). Patients who had marked improvement in symptoms with the help of treatment normally had better compliance (Lim et al 1992; Viller et al 1999; Grant et al 2003).

In addition, no consistent evidence shows that subjects with greater disease severity based on clinical evaluation comply better with medications than healthier ones (Matthews and Hingson 1977; Kyngas 1999; Wild et al 2004; Seo and Min 2005). A study in patients with OSAHS found that greater disease severity based on clinical variables predicted better compliance (Wild et al 2004). However, a study on compliance in adolescents with asthma showed that only patients with mild severity had good compliance (Kyngas 1999). Similarly, Matthews et al suggested that the actual severity of the illness (based on the physician's clinical evaluation) was not related to compliance (Matthews and Hingson 1977). Instead of actual disease severity, perceived health status may have more significant influence on compliance.

Patients expecting poor health status are more motivated to be compliant with treatment if they consider the medication to be effective (Rosenstock et al 1988). In a study conducted in the USA in patients on antihyperlipidemic medications, patients with a perception of poor health status were more compliant with treatment (Sung et al 1998). This supports the suggestion that how patients feel plays a crucial role in predicting compliance.

Discussion

From the literature review, it can be concluded that although several terms have been used, the terms are used more or less interchangeably in clinical practice and therefore, the definition of compliance is adequately defined in the practical context. However, one alarming observation is that non-compliance remains a major issue in enhancing healthcare outcomes in spite of the many studies highlighting the problem over the years.

In this review we attempted to identify factors related to compliance which would have wide generalizability, and we retrieved original studies investigating non-compliance from different diseases, population settings and different countries. In the process, we identified a wide array of influencing factors. Although some factors' effect on compliance is complex and not unequivocal, several factors with consistent impact on compliance have been identified through the review process.

Firstly, addressing therapy-related factors should contribute positively in improving patient's compliance. Prescribing medication with non-invasive route of administration (eg, oral medication) and simple dosing regimens might motivate patients to be compliant. Long duration of treatment period and medication side effects might compromise patient's beliefs about medication effectiveness. Therefore, healthcare providers should consider therapy-related problems when designing the therapy plan and involve the patients in the process to minimize the possible therapeutic barriers.

Besides therapy-related factors, healthcare system problems were found to be significantly related to compliance. Accessibility and satisfaction with the healthcare facilities are important contributors to compliance because patient's satisfaction with healthcare is crucial for their compliance. Long waiting time for clinic visits and unhappy experience during clinic visits was indicated by many studies. A healthcare system designed with convenient accessibility and patient satisfaction in mind would be a great help for compliance issue.

Thirdly, compliance is also related with disease characteristics. Non-compliance is usually not a prevalent issue in acute illness or illness of short duration. In contrast, patients who are suffering from chronic diseases, in particular those with fluctuation or absence of symptoms (eg, asthma and hypertension) are likely to be non-compliant. Special efforts and attention should be paid to address the issue of non-compliance in chronic disease patients.

Lastly, healthcare expenditure is a very important factor for patients with chronic diseases because the treatment could be life-long so the cost of therapy would constitute a large portion of their disposable income. If the patient feels that the cost of therapy is a financial burden, the compliance with therapy will definitely be threatened. Healthcare personnel should be aware of patient's economic situation during the planning of a treatment regimen, and a healthcare finance system that provides at least some financial assistance to low income patients would be helpful to boost compliance.

These factors discussed so far are directly and clearly related to patient's compliance. We can call them the "hard" factors. We are using this term as the impact of factors identified is more quantifiable. By and large, these "hard" factors are amendable to a certain extent by counseling and communication by healthcare providers. In addition, the society could also participate in minimizing the barriers for patients to follow the therapy.

In contrast with "hard" factors, some other factors might be classified as "soft" factors because their effects are much more difficult to measure and counter. In fact, a failure to address the "soft" factors may negate all efforts spent in countering the effects of the "hard" factors.

Psycho-social factors such as patient's beliefs, attitude towards therapy and their motivation to the therapy could be classified as "soft" factors. Since the 1990's, research has focused more on the patient-provider relationship and patients' beliefs about the therapies. For patients with chronic diseases, they would do their own cost-benefit analysis of therapy, either consciously or subconsciously. It means they weigh the benefits from compliance with therapy (ie, controlling symptoms and preventing medical complications) against constraints on their daily lives and perceived risks of therapy such as side effects, time and effort involved (Donovan and Blake 1992). Sometimes, they may have the wrong beliefs based on inadequate health knowledge or a negative relationship with the healthcare provider. Hence, patients should be given adequate knowledge about the purpose of the therapy and consequences

of non-compliance. In addition, a healthy relationship and effective communication between the patient and healthcare provider would enhance patient's compliance. In fact, the effects of patient's beliefs, health knowledge and relationship with the healthcare provider are very complex because these "soft" factors are inter-related with each other. The interaction is a bit like antibiotic combinations. Sometimes the effect would be additive or synergistic, while other times the effect would be antagonistic. However, due to the design of the studies performed so far, it is difficult, if not impossible, to differentiate precisely whether the interaction between these factors would be additive, synergistic or antagonistic. More robust and better designed studies would be needed in future to elucidate this effect.

Similar to the "soft" factors, the effect of demographic factors (eg, age, gender, ethnicity, educational level and marital status) on compliance is also rather complicated, because they may not be truly independent factors influencing compliance. Actually, demographic factors are related to patient's various cultural, socioeconomic and psychological backgrounds. Thus, future studies on compliance should not focus on demographic factors alone.

Definitely, there are some limitations in the current review. Firstly, only one electronic database, PubMed, was searched and only English articles were included. It might be possible that some informative studies in other literature databases or in other languages were omitted. Secondly, there is a shortcoming in the search strategy in that only articles with abstracts were retrieved. There are quite a number of studies published in 1970s and early 1980s without abstracts that were not screened. However, we do believe that the review so far has captured most of the key factors with potential influence on therapeutic compliance from the patient's perspective.

In conclusion, from the review of the literature starting from the 1970s to identify relevant factors relating to therapeutic compliance, the evidence indicates that non-compliance is still commonplace in healthcare and no substantial change occurred despite the large number of studies attempting to address and highlight the problem. In addition, too few studies are being done systematically to quantify the impact of non-compliance on health and financial outcomes. The magnitude of the impact of non-compliance needs to be studied in future compliance research due to the potential tremendous implication of poor compliance on clinical and economic outcomes. Finally, few studies on compliance have been performed in Asian and developing countries where most of the world's population resides. More studies on factors influencing

compliance in these countries or regions would be helpful to fill in the knowledge gap and contribute to formulating international strategies for countering non-compliance.

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The challenge of patient adherence

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Abstract: Quality healthcare outcomes depend upon patients' adherence to recommended treatment regimens. Patient nonadherence can be a pervasive threat to health and wellbeing and carry an appreciable economic burden as well. In some disease conditions, more than 40% of patients sustain significant risks by misunderstanding, forgetting, or ignoring healthcare advice. While no single intervention strategy can improve the adherence of all patients, decades of research studies agree that successful attempts to improve patient adherence depend upon a set of key factors. These include realistic assessment of patients' knowledge and understanding of the regimen, clear and effective communication between health professionals and their patients, and the nurturance of trust in the therapeutic relationship. Patients must be given the opportunity to tell the story of their unique illness experiences. Knowing the patient as a person allows the health professional to understand elements that are crucial to the patient's adherence: beliefs, attitudes, subjective norms, cultural context, social supports, and emotional health challenges, particularly depression. Physician-patient partnerships are essential when choosing amongst various therapeutic options to maximize adherence. Mutual collaboration fosters greater patient satisfaction, reduces the risks of nonadherence, and improves patients' healthcare outcomes.

Keywords: patient adherence, health outcomes, physician-patient relationship

Introduction

For most medical conditions, correct diagnosis and effective medical treatment are essential to a patient's survival and quality of life. A significant barrier to effective medical treatment, however, is the patient's failure to follow the recommendations of his or her physician or other healthcare provider. Patient nonadherence (sometimes called noncompliance) can take many forms; the advice given to patients by their healthcare professionals to cure or control disease is too often misunderstood, carried out incorrectly, forgotten, or even completely ignored. Nonadherence carries a huge economic burden. Yearly expenditures for the consequences of nonadherence have been estimated to be in the hundreds of billions of US dollars (DiMatteo 2004b). Estimates of hospitalization costs due to medication nonadherence are as high as \$13.35 billion annually in the US alone (Sullivan et al 1990). In addition to the most obvious direct costs, nonadherence is also a risk factor for a variety of subsequent poor health outcomes, including as many as 125 000 deaths each year (Smith 1989; Burman et al 1997; Christensen and Ehlers 2002; Kane et al 2003).

The corpus of literature on patient adherence is large, and there are many conceptual models that attempt to integrate a large number of complex factors that affect adherence (Bowen et al 2001). To manage the size and complexity of the empirical findings of this massive research enterprise, reliance on meta-analytic work is necessary to provide the building blocks for data-driven models of patient adherence. Currently, ongoing meta-analytic studies at the University of California, Riverside, USA, are beginning to identify a number of stable and consistent factors that affect patient adherence (DiMatteo 2004a, 2004c; DiMatteo et al 2000, 2002). Syntheses

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of the literature, along with new empirical advances, highlight the complexities inherent in understanding and effecting changes in patient adherence and suggest solutions to common problems in medication management. Much that has been learned from recent research on the communication between healthcare providers and their patients can lessen the economic burden of nonadherence and improve healthcare processes and outcomes for patients.

Overview

Research during the past several decades indicates that, depending upon their conditions and the complexity of the regimens required, as many as 40% of patients fail to adhere to treatment recommendations (DiMatteo and DiNicola 1982; DiMatteo 1994, 2004a, 2004c; Lin et al 1995; Rizzo and Simons 1997; Dunbar-Jacob et al 2000; Laederach-Hofmann and Bunzel 2000; Haddad et al 2004; Haynes et al 2004). When preventive or treatment regimens are very complex and/or require lifestyle changes and the modification of existing habits, nonadherence can be as high as 70% (Dishman 1982, 1994; Brownell and Cohen 1995; Katz et al 1998; Chesney 2000; Li et al 2000). Although patients with HIV/AIDS may be highly motivated to adhere, their medication regimens are particularly complex, often involving multiple drug “cocktails” (Catz et al 2000; Heckman et al 2004).

Studies exploring simple versus complex dosing schedules have found that adherence falls off appreciably when regimens become more complicated and affect patients’ lifestyles (Chesney 2003). For example, the number of medications to be taken per day can have a significant influence, with adherence rates dropping to as low as 20% among patients who must take thirteen or more pills each day (Graveley and Oseasohn 1991). In one study of patients with hypertension, adherence to a thrice-daily medication regimen was only 59% compared with about 84% for a once-daily regimen (Eisen et al 1990). In another study of patients with severe persistent asthma, only 32% adhered to a regimen that included multiple components such as inhaled and systemic corticosteroids and long-acting bronchodilators (Barr et al 2002).

Adherence to recommendations involving lifestyle changes such as exercise frequently poses significant difficulties for patients. For example, those with chronic illnesses in the Medical Outcomes Study had average adherence rates to exercise regimens of only 19% (Kravitz et al 1993). In another study involving a physical therapy exercise regimen, only 35% of patients adhered fully; 76%

followed their prescribed regimen partly but not wholly (Sluijs et al 1993). Such programs, of course, tend to be more successful in supervised rather than home-based programs (McKelvie et al 2002).

The health consequences of nonadherence can be quite severe. Nonadherence compromises patient outcomes in many different ways but is most obvious when patients fail to take medications that likely would cure or at least effectively manage their illnesses (Miller 1997; Chesney et al 2000; Weir et al 2000). For HIV patients who are not at least 90%–95% adherent, viral replication and consequent disease progression may result (Catz et al 2000; Hinkin et al 2002). For patients suffering from or those at risk of coronary heart disease, nonadherence to medication treatments can jeopardize survival (McDermott 1997). Among diabetic patients, adherence to medication for controlling hypertension is essential to preventing mortality from diabetes and myocardial infarction (Elliott et al 2000). Further, aside from direct biomedical benefits, studies show that health may depend partly upon the act of adhering to a regimen. Some research suggests that adherence, even to a placebo, is *itself* beneficial to health outcomes (McDermott 1997; Irvine et al 1999).

The clinical picture in a patient’s treatment can also be confused by nonadherence with patients’ risk profiles increased as a result. When physicians erroneously assume that their patients have taken prescribed medication(s), they may make inappropriate medication and/or dosage changes, which can then result in further complications and suboptimal health outcomes. Thus, not only do nonadherent patients fail to benefit from effective medication, they also risk being harmed by less than ideal medication and dosage choices (Joshi and Milfred 1995; Salzman 1995; Bedell et al 2000). Relatedly, the risk of new illness may increase in the context of nonadherence, such as when antibiotic-resistant bacterial infections develop because patients have not taken their full, prescribed doses of antibiotics (Harrison 1995; Lutfey et al 1996; Graham 1998; Rao 1998; Raviglione et al 2001). Thus, it is clear that nonadherence often results in a combination of wasted medical care dollars (Johnson and Bootman 1995; Rizzo and Simons 1997; DiMatteo 2004b), wasted time and energy for patients and healthcare providers alike (DiMatteo et al 1994), and frustration and dissatisfaction for all interactants.

Research on patient adherence

The research literature on patient adherence is extensive. Over the past 50 years, there have been 32 550 adherence-

related citations in PubMed and 10 087 in PsychLit. Of these citations, more than 2000 represent empirical research articles that involved the assessment of medical patients' adherence to a variety of physician-prescribed regimens (medication, diet, exercise, lifestyle changes, etc).

In this research, as in clinical practice, adherence is measured in a variety of ways including pill counts; self-reports or patient diaries; physician reports; reports by others (such as the patient's spouse); electronic measures (eg, metered dose inhalers or electronic recordings of dispensed eye drops); blood or urine assays; medical record/chart and pharmacy records; and biologic markers (Farmer 1999). These various methods are used in the context of a vast array of disease conditions both chronic and acute. Assessment methods differ in their degree of subjectivity and sophistication, ranging from simple self-reports to more technologically-oriented tools such as the Medication Event Monitoring System (MEMS)[™] – an innovative method for measuring adherence in which a hidden microchip mechanism records the time and date that a patient opens a pill box, removes a pill from a pack, actuates an inhaler, or dispenses an eye drop (Farmer 1999). With technologies such as these, every removed dose of medication sends an electronic signal to the physician with the date and time the bottle was opened (Eisen et al 1990), providing a very reliable indicator of medication access (despite the remaining possibility that the dose was removed but not actually taken as prescribed). Direct observation of a patient taking medication is another, albeit more energy-intensive, method for assessing adherence (Volmink et al 2000). In the treatment of latent tuberculosis infection, for example, measurement of adherence to isoniazid (INH) can be direct, using an assessment of INH metabolites in patients' urine (Perry et al 2002; Eidlitz-Markus et al 2003). Pharmacy records represent another resource for measuring adherence. Recent studies have analyzed pharmacy claims databases involving large numbers of patient records and indicating such data as when the medication was obtained and whether prescriptions were refilled on schedule (Tai-Seale et al 2000; Bieszk et al 2003).

Understanding adherence requires a multi-method approach to give a clear and accurate picture of whether and how medical recommendations are being followed. Adherence needs to be measured using multiple tools. For example, adherence to antidepressant medication might be assessed by pill count, patient self-report, and MEMS (Thompson et al 2000; Hamilton 2003). The combination and reconciling of various assessment techniques can be

quite valuable, as individual measures of adherence have been shown to differ from one another by as much as 37% (Milgrom et al 1996).

Just as studies of adherence vary greatly in the way they measure the construct, they also range widely in scope and application. Some studies focus on variations in rates of nonadherence (DiMatteo 2004c), some on particular types of nonadherence and their associations with patient outcomes (DiMatteo 2002), others on the correlates of adherence (DiMatteo 2000, 2004a), and still others on the ways clinicians can improve adherence rates for their patients (Roter et al 1998; Atreya et al 2005). Meta-analytic techniques are now being used as well (Macharia et al 1992; DiMatteo et al 2000, 2002; McDonald et al 2002; Peterson 2003; Ismail 2004). Their goal is to synthesize and summarize what we currently know about adherence and to develop *data-driven models* for understanding the phenomenon and initiating interventions. Such an approach requires careful organization and assessment of the research findings on adherence, seeking evidence for convergence, and stability in research findings. It is clear from the research to date that as we compile and analyze the *empirical evidence* on patient adherence, we approach an enhanced understanding of this complex and important issue. In this article, we review some of the most robust findings on patient adherence, identifying what we currently know about how to manage and reduce its associated clinical risks in the context of medical practice, as well as what we have yet to determine.

Factors that affect adherence

Cognitive factors

It goes without saying, perhaps, that patients must understand what they are supposed to do before they can follow medical recommendations. Thus, patients' health literacy is central to their ability to adhere. According to Healthy People 2010, health literacy involves the "degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (US DHHS 2000, p 20). Studies show that the risk of nonadherence is very high when patients cannot read and understand basic written medical instructions. Misunderstanding of this type is not as uncommon as one might imagine. One large study of over 2500 patients found that nearly one third had marginal or inadequate health literacy. Of these, 42% misunderstood directions for taking medications on an empty stomach, 25% misunderstood the scheduling of their next

appointment, and nearly 60% were unable to read and understand a typical informed consent document (Williams et al 1995). Language barriers contributed somewhat to these limitations, but even when patients could understand the language of their medical instructions, many could not comprehend the medical information. Further, older patients in this study had significantly more problems understanding their medical regimens than did younger patients. Other studies confirm these trends and indicate that our current interventions aimed at increasing health literacy to improve patient adherence have, so far, been disturbingly ineffective (Williams et al 1998; Gazmararian et al 1999; Schillinger et al 2003).

Patients' health beliefs are affected by their health literacy, and these beliefs are also contributors to (non)adherence. In a study of asthmatic patients who were given extensive, high-quality information on the use of daily inhaled corticosteroids, only 38% adhered to their medication regimen, whereas the other 62% continued to mistakenly believe that their medication should only be taken when they were symptomatic (Anarella et al 2004). In practice, patients' low health literacy has been linked to ineffective physician-patient communication and, in particular, physicians' failure to assess recall and comprehension of new concepts with their patients (Schillinger et al 2003). Low health literacy has been associated with patient depression (Kalichman 1999) and consequently with the manner in which patients communicate with their doctors. Patient health literacy issues may also be tied to ethnic disparities in screening, such as mammography, probably because of reduced access to and understanding of written cancer prevention materials (Peek and Han 2004).

Another important factor influencing nonadherence is patients' ability to remember the details of the recommendations made to them. Studies have repeatedly shown that forgetting to take (or how to take) medications is a major contributor to nonadherence (Kravitz et al 1993; Cline et al 1999; Brekke et al 2004; Shemesh et al 2004; Zaghoul and Goodfield 2004). Even when information is communicated effectively and comprehension is initially high, much of what is conveyed during the medical visit is forgotten within moments of leaving the doctor's office. One study found that patients forgot 56% of their instructions shortly after leaving the clinic (Ley and Spelman 1965). Optimal verbal communication often does not exist, and the verbal communication between physicians and patients is often

filled with technical terms and "medical jargon" that impedes patients' comprehension and retention of information (Jackson 1992). In the interest of time efficiency, details of the prescribed treatment may not be thoroughly explained and/or rehearsed with patients (Stanton 1987), but such clarification is necessary. Healthcare providers need to explain the specific steps of the regimen, review the most important details, use written instructions, and encourage their patients to ask questions about the regimen for adherence to occur (Becker and Maiman 1980; Carter et al 1982; Wolf 1988; Frank et al 1997).

Not surprisingly, when patients are presented with a very large amount of information, they tend to forget a large proportion of it (Ley 1979; Rost et al 1990). High anxiety also contributes to patients' lower levels of recall, and increases the risk of nonadherence (Ley 1979; Shapiro et al 1992; Montgomery 1999). On the other hand, research suggests that the risk of nonadherence is reduced when patients know their doctors well and are in more familiar, and less anxiety-provoking, physician-patient relationships (Rost et al 1990; Heffer et al 1997). Finally, it has been shown that when patients are more satisfied with their medical visits, they tend to experience better recall of information (Falvo and Tippy 1988). Empathic communication involving a thorough understanding of the patient's perspective, improves adherence. Patients who are informed and affectively motivated are also more likely to adhere to their treatment recommendations (Squier 1990). These findings illustrate the importance of the "psychosocial elements" in the medical encounter and their contribution to improving patient adherence to treatment.

Interpersonal factors

The interpersonal dynamics of the physician-patient relationship play an important role in determining a variety of patient outcomes including patient adherence to their treatment recommendations. Patients who feel that their physicians communicate well with them and actively encourage them to be involved in their own care tend to be more motivated to adhere (Frankel 1995; Safran et al 1998; Martin et al 2001; O'Malley et al 2002). Additionally, when physicians and patients agree on how involved patients should be in their care, adherence is improved (Jahng et al 2005). Cohesive partnerships and effective interpersonal communication make it possible for patients and physicians to work together to help patients follow mutually agreed-upon recommendations (Jahng et al 2005). Successful

communication between physicians and patients promotes greater patient satisfaction with medical care, which in turn fosters higher levels of adherence.

Patients' trust in their physicians is essential to their emotional disclosure and is therefore a crucial component of the patient–physician relationship. Patients must believe that their physician is someone who can understand their unique experience of being a patient, and someone who can provide them with reliable and honest advice (Branch 2000). Trusting relationships between physicians and patients can greatly affect patient outcomes. For example, it has been shown that physicians who promote trust in the therapeutic relationship, who have effective communication and “bedside manner”, and who express compassion for their patients succeed in fostering cooperation and patient adherence with a variety of preventive and treatment recommendations (O'Malley et al 2002). Adherence rates have been found to be nearly 3 times higher in primary care relationships characterized by very high levels of trust coupled with physicians' knowledge of the patient as a whole person. In fact, patients' trust in their physician has been found to far exceed many other variables when it comes to promoting patients' satisfaction with their care (Safran et al 1998).

Patient involvement and participatory decision making

Studies have found that both patient satisfaction and patient adherence are enhanced by patients' involvement and participation in their care (Martin et al 2001, 2003). The behavior of physicians and patients tends to be reciprocal when they strive toward partnership. Patients who want to be more involved tend to ask more questions and display more confidence, and physicians who are willing to sustain collaborative relationships with their patients tend to act in ways that prompt their patients to be involved and active (Street et al 2003). Research has also shown that patients who participate in discussions of behavioral strategies with their doctor are more likely to adhere to antidepressant medication (Lin et al 1995). Physician–patient partnership and social support from health professionals, as well as from members of the patient's social network, are essential to patients' adherence to recommended treatments (DiMatteo et al 1994; DiMatteo 2004a, 2004c).

This reciprocity and mutuality between patients and their physicians is sometimes termed *concordance* and is key to greater patient involvement in decision making. When health

professional–patient relationships are concordant, patients understand the costs and benefits of their recommended regimens, and through a process of negotiation with their physicians they arrive at a better understanding of treatment. When physicians and patients work together and strive for mutual agreement, they both achieve higher levels of satisfaction with the treatment encounter (Elwyn et al 2003). This reciprocal exchange of information is vital to the decision making process that actively involves the patient (eg, Ong et al 1995). Patients tend to be more satisfied with such exchanges and take more responsibility for and adhere better to treatment choices that are made jointly. Even when dealing with a serious illness such as cancer, most patients have been found to desire all possible information regarding their condition and treatment, even if that information is initially emotionally disturbing to them (Hogbin and Fallowfield 1989; Chaitchik et al 1992). The health professional's willingness to enter this discussion and process of negotiation with patients is critical to subsequent outcomes.

Patients' attitudes

Patients' understanding of their recommendations and good physician–patient relationships are, of course, not sufficient to eliminate the risk of nonadherence. Patients' attitudes, beliefs, and group norms all influence adherence in meaningful and sometimes complex ways. Various cognitive and behavioral models, such as the Theory of Reasoned Action (Ajzen and Fishbein 1980), the Theory of Planned Behavior (Ajzen 1985), and the Transtheoretical Model of Change (Prochaska and DiClemente 1984) demonstrate that people's intentions to carry out a behavior, such as to follow medication treatment, are the immediate precursors to the behavior itself. In other words, *intending* to adhere, whether this is labeled an intention, a readiness, or a stage of change, is essential to following treatment advice (McCusker et al 1994; Prochaska and Velicer 1997; Willey et al 2000; Hannover et al 2002; Blanchard et al 2003; Anatchkova et al 2005). Intentions, in turn, depend upon what people think and believe, what attitudes they hold, and how other people influence them. Thus, if patients hold beliefs that are incongruent with what their physicians prescribe for them, or if their family or social group members hold divergent views about their illnesses and treatments, patients may have difficulty even forming a willingness or intention to adhere (Greenfield et al 1987; Myers et al 1999; Soliday and Hoeksel 2000; Straughan and Seow 2000). The social

environment and the social support available to patients also affect their willingness to adhere, especially when dealing with such conditions as depression, anxiety, HIV, and other illnesses that carry a potential stigma (Roter and Hall 1992; Bensing et al 1995; Kadam et al 2001; Sirey et al 2001).

Cultural variations

Of course, the best way for physicians to facilitate their patients' involvement in care varies across cultures (Calderón and Martin 2003). Preliminary results from our ongoing studies with several ethnic groups in Indonesia demonstrate that interventions aimed at increasing adherence require a multifaceted approach and sophisticated understanding of the complexity of issues involved. Guidelines for improving patient adherence must be tailored to the cultural backgrounds of the individual patients. Although some research has shown positive correlates and outcomes of partnerships when patients and physicians are of the same ethnic background (Cooper-Patrick et al 1999; Saha et al 1999; Cooper et al 2003) other studies have failed to demonstrate this effect and suggest that matching physicians and patients according to their ethnicity is not necessary (eg, Jahng et al 2005). Certainly constructs such as ethnicity, age, and gender are not unimportant, but they interact in very complex ways and may not be as important as communication factors. Recent evidence suggests that physician-patient congruence on their preferences for patient involvement in care is more important than congruence on demographic variables such as ethnicity, age, or gender (Jahng et al 2005). This study evaluated each of these demographic characteristics and found that congruence in preferences for patient involvement was the only significant predictor of self-reported patient adherence, accounting for approximately one fourth of the variance; similarity in age or being of the same ethnicity or gender were unrelated to adherence. These findings illustrate the importance of discussing the physician-patient partnership and together negotiating the patient's role, and suggest that communication (both verbal and nonverbal), partnership and participation, behavior modification strategies, and the prompts and reminders that encourage adherence should be developed uniquely for each individual patient.

In addition to attitudes and sociocultural norms, patients' perceptions of their physicians are also very good predictors of patients' intentions to adhere. In a study we are currently conducting in conjunction with the Bayer Institute for Health Care Communication, our preliminary findings suggest that

(in a US sample) patients' intentions to adhere to their recommended treatments are significantly correlated with having choices regarding medical treatments; having the opportunity to discuss their care with their physicians; having their preferences taken into account; and having a doctor who communicates well (all significant at $p < 0.001$). In addition, preliminary data confirm and extend previous research showing that the amount of trust patients have in their physicians is a strong predictor of whether they plan to carry out treatment recommendations.

Depression

In meta-analytic work, findings suggest that one of the strongest predictors of patient nonadherence to medical treatment is patient depression (DiMatteo et al 2000). The risk of patient nonadherence is 27% higher if a medical patient is depressed than if he or she is not (it is 30% higher if that patient has end-stage renal disease). Depression has long been known to predict poor health outcomes, a fact that may be explained partly by the adherence problems caused by depression. Depressed patients experience pessimism, cognitive impairments, and withdrawal from social support, all of which can diminish both the willingness and ability to follow treatment regimens.

Depression is a prevalent and powerful factor in health and illness, and one that cannot be ignored. It is associated with impairment equal to or greater than that of chronic recurrent disorders such as diabetes, hypertension, arthritis, and emphysema (Wells et al 1988, 1989). Depression is currently the most prevalent mental illness and a cause of immense disability in industrialized countries. Major depression is second only to coronary heart disease in functional limitations and serious role impairment (Murray and Lopez 1997; Frasure-Smith and Lespérance 2005). Depression has been cited as the most common clinical problem that primary care physicians are called upon to diagnose and treat. In a given year, in primary care settings, up to 20% of adults present with depression (and often comorbid anxiety) (Greenburg et al 1993; Kirmayer et al 1993).

Psychological disorders are often comorbid with chronic illnesses, increasing their associated morbidity and mortality rates (Brody et al 1995; Waldron 1999; Frasure-Smith and Lespérance 2005). These conditions, however, often go untreated (Young et al 2001). Primary care physicians fail to diagnose as many as 50%–70% of persons who present with current depressive disorder (Higgins 1994; Coyne et

al 1995; Lecrubrier 1998; Williams et al 1999; Ballenger et al 2001) despite the potential harm to patients' adherence and health. Even when depression is recognized, it is diagnosed and treated accurately only 30%–40% of the time (Farmer and Griffiths 1992; Kirmayer et al 1993; Rost et al 1994). In the Medical Outcomes Study, 60% of patients with major depression received no medication at all (Wells et al 1994; Sturm et al 1995). Thus, the opportunity to manage major risk factors for nonadherence and for serious patient morbidity and mortality is often missed in primary care.

Why does such a serious risk factor for nonadherence (and other poor healthcare outcomes) so often go unrecognized in the primary care medical interaction? Research suggests that both patients and their physicians contribute jointly to this problem in the medical interaction. Patient factors that prevent recognition of depression in primary care include lack of awareness and understanding of depression symptoms, complaints of physical symptoms that take precedence or confuse the clinical picture, and failure to admit to psychological symptoms because they fear a stigma of mental illness (Docherty 1997). Patients may be reluctant to talk about non-medical matters because they expect physician disinterest or the risk of embarrassment, or because of anxiety about the possible significance of their psychological symptoms (Roter and Hall 1992).

Physician factors can also interfere with the recognition of depression in primary care settings. These include lack of knowledge about the disease, lack of training in the management of depression, reluctance to inquire about their patients' emotional states, and limited time available for patients (Docherty 1997; Carney et al 1999). Indeed, patients' health status can influence the degree of interest and responsiveness they receive. Physicians have been found to convey greater negativity toward physically or mentally less healthy patients and to act more positively toward healthier ones (Hall et al 1996).

Despite many barriers to recognition and treatment, depression continues to play a central role in nonadherence. Appreciation of the importance of patients' mental health in the care of their acute and chronic medical conditions can help to reduce the risks of nonadherence and contribute to more positive health outcomes (Ballenger et al 2001). New and developing models of depression management in primary care show great promise for improving patient commitment to and ultimately the success of medical treatments.

Improving patient adherence

The first step toward improving patient adherence involves accurately assessing whether or not patients have followed the treatments recommended to them. The precise estimation of patient adherence is not easy, and a full understanding of whether and why any given patient chooses and is able to adhere is often elusive. Physicians are typically not well informed about their patients' adherence, and reliance upon their own intuition or upon attempts to "catch" their patients in nonadherence can be quite problematic. Patients tend to be truthful in their adherence reports only when they feel free to admit adherence difficulties without the risk of criticism and in the context of true partnership with their physicians (Haug and Lavin 1981; Hays and DiMatteo 1987). The accurate assessment of adherence depends, to a large degree, on the development of a trusting and accepting relationship between the patient and the healthcare team. Adherence assessments that are simple (presenting as little burden to the respondent as possible) and nonthreatening will also likely yield the most honest and accurate responses.

Realistic assessment of patients' knowledge and understanding of the regimen, and their belief in it, will enable a more effective targeting of the potential for adherence problems. Many of the factors necessary to carry out such assessment are the very elements that foster communication and partnership in the medical visit. Patients need to be given the opportunity to tell their story (Mishler 1984; Smith and Hoppe 1991; Roter and Hall 1992; Roter 2000; Haidet and Paterniti 2003) and to present their point of view to the physician. From this, much information about patients' beliefs, attitudes, subjective norms, cultural contexts, social supports, and emotional health challenges (particularly depression) can be learned. These elements are central to the establishment of adherence intentions, and must be explored and discussed in the therapeutic relationship. Perfect agreement will not always be reached, and in fact may not be desirable. Some degree of conflict between the views of physician and patient may be necessary if truly adult collaboration is to take place and a variety of therapeutic options, and ways to adhere to them, jointly considered (Katz 1984; Wolf 1988). The acknowledgment of differences is an important part of building respectful and trusting relationships between physicians and their patients.

No single intervention strategy can improve the adherence of all patients (Hamilton et al 1993; Cheng et al 1997; Roter et al 1998). Success depends upon tailoring

interventions to the unique characteristics of patients, disease conditions, and treatment regimens (McDonald et al 2002). For example, some patients may be unable to maintain a complicated regimen without a strong system of social support and many prompts to remind them of what needs to be done. Other patients may have problems keeping appointments because they do not have access to reliable transportation or because family emergencies arise. Still others may find that side effects of medications are prohibitive or they may simply be unmotivated. The healthcare provider must be attuned to the individual, picking up on subtle hints (verbal and nonverbal) that the patient may express. A flexible mindset in which the physician thinks creatively about treatment options is always an asset. The physician-patient partnership itself, however, remains at the core of all successful attempts to improve adherence behaviors. Participation, engagement, collaboration, negotiation, and sometimes compromise enhance opportunities for optimal therapy in which patients take responsibility for their part of the adherence equation. These partnerships foster greater patient satisfaction, improved patient adherence, and ultimately optimal healthcare outcomes.

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Health Policy Snapshot

Workforce

www.rwjf.org/healthpolicy**ISSUE BRIEF**

September 2011

What can be done to encourage more interprofessional collaboration in health care?

Takeaways:

- Collaboration between doctors, nurses and other health care providers—known as interprofessional collaboration—is not the norm in health care today.
- Interprofessional collaboration holds promise for reducing medical errors, improving the quality of care and meeting the needs of diverse populations.
- We can increase interprofessional collaboration by educating doctors, nurses and other health professionals together, and by retraining providers to work together.

Overview

Most health care providers today were educated in silos with only those from their own profession. Few were trained to work as part of integrated teams. But when providing patient care, they must interact with providers from other professions to share information, execute quality and safety checks and help patients understand and comply with treatment plans.

Research has long suggested that collaboration improves coordination, communication and, ultimately, the quality and safety of patient care. It utilizes both the individual and collective skills and

experience of team members, allowing them to function more effectively and deliver a higher level of services than each would working alone. To date, this kind of care has not been widely implemented outside of discrete settings such as intensive care units, trauma and transplant teams.

THE CURRENT LACK OF COLLABORATION

Our health care system today is fraught with errors. Both the human and financial costs are enormous. In 2011, the U.S. Department of Health and Human Services reported that, at any given time, about one in every 20 patients has an infection related to their hospital care. On average, one in seven Medicare beneficiaries is harmed in the course of their care, costing the government an estimated \$4.4 billion every year¹.

In part, this is because providers do not function in teams. Doctors and specialists do not confer, tests are repeated and test results are not shared, and care is not coordinated in ways that protect patients during transitions between different settings of care, such as hospital to nursing home or home. There is increasing evidence that coordinating care by assigning teams of providers can help reduce medical errors² and improve quality³, as well as help providers provide patient-centered, higher quality care to an increasingly diverse patient population⁴.

COLLABORATION IN EDUCATION

Effective collaboration begins early, as providers are being educated. The Institute of Medicine in 2010

recommended that nurses should be educated with doctors and other health professionals both as students and later.⁵

In 2011, partnership of health professional education associations known as the Interprofessional Education Collaborative recommended that all future health professionals should be taught to:

- **assert values and ethics of interprofessional practice** by placing the interests, dignity, and respect of patients at the center of health care delivery, and embracing the cultural diversity and differences within health care teams
- **leverage the unique roles and responsibilities of interprofessional partners** to appropriately assess and address the health care needs of patients and populations served
- **communicate with patients, families, communities and other health professionals**
- **perform effectively in various team roles** to deliver patient- or population-centered care that is safe, timely, efficient, effective and equitable

Currently only about a quarter of residency programs in family medicine also include nurse practitioners. Some of these programs also offer training for physician assistants, pharmacists, podiatrists, social workers and other professions.⁶

COLLABORATION IN PATIENT CARE

To target health care professionals after they have completed their training, hospitals, primary care providers and other health care organizations should reeducate providers. In 2006, the U.S. Department of Defense and the Agency for Healthcare Research and Quality within the Department of Health and Human Services teamed up to provide a tool to do this: Team Strategies and Tools to Enhance Performance and Patient Safety (TEAMSTEPPS). This evidence-based program aims to improve communication and teamwork skills.⁷ The American Institutes for Research and several partners are expanding the

system with a national training and support network called the National Implementation of TEAMSTEPPS Project. It includes five resource centers that conduct master trainer training courses for health care agencies.

The Affordable Care Act advances the concept of interprofessional collaboration. It promotes a variety of models that depend on integrated teams of providers to deliver superior care, such as accountable care organizations, Medicare Independence at Home demonstration projects and Medicaid Health Homes.

WANT TO KNOW MORE?

- [*Team-Based Competencies: Building a Shared Foundation for Education and Clinical Practice \(Josiah Macy Jr. Foundation, ABIM Foundation and RWJF\)*](#)
- [*Core Competencies for Interprofessional Collaborative Practice \(IPEC\)*](#)
- [*The Future of Nursing: Leading Change, Advancing Health \(IOM\)*](#)
- [*Educating Interprofessional Learners for Quality, Safety and Systems Improvements \(Journal of Interprofessional Care\)*](#)

¹ <http://www.healthcare.gov/center/programs/partnership>

² <http://archinte.ama-assn.org/cgi/content/abstract/171/7/678>

³ <http://www.sciencedirect.com/science/article/pii/S0899588505000043>

⁴ <http://www.ingentaconnect.com/content/springer/nmeas/2003/00000011/00000001/art00004>

⁵ <http://www.thefutureofnursing.org/IOM-Report>

⁶ <http://www.ama-assn.org/resources/doc/medical-schools/sms-a09-interprof-coll.pdf>

⁷ <http://teamstepps.ahrq.gov/index.htm>

EXHIBIT B
CONSTRUCTION TIMELINE

Yale New Haven Hospital Dental Services Consolidation Timeline

ID	Task Name	Duration	Start	Finish	May '17	Jun '17	Jul '17	Aug '17	Sep '17	Oct '17	Nov '17	Dec '17	Jan '18	Feb '18	Mar '18	Apr '18	May '18	Jun '18	Jul '18	Aug '18	Sep '18	Oct '18	Nov '18	Dec '18
1	YNHH-DENTAL SERVICES CONSOLIDATION	330 days	8/21/2017	11/23/2018																				
2	Planning and Regulatory Approval with OHCA	180 days	7/29/2017	2/18/2018																				
4	Drawings	120 days	5/10/2017	8/25/2017																				
6	Permit Drawings, CO's	40 days	8/28/2017	Fri 10/20/17																				
7	DPH Submission & Review	30 days	10/3/2017	Fri 11/17/17																				
8	Procure Building Permits	15 days	10/23/2017	Fri 11/10/17																				
9	CONSTRUCTION	260 days	11/10/2017	Fri 11/9/18																				
10	Construction - Adult Dental Oral Surgery (phase 1)	85 days	1/26/2018	18-May																				
11	Relocation of Hamden Dental Clinic Patients to Adult Dental Clinic New Haven	115 days	7/9/2018	11/1/2017																				
12	CONSTRUCTION (phase 2)	70 days	5/28/2018	Fri 8/31/18																				
13	CONSTRUCTION (phase 3)	50 days	9/3/2018	Fri 11/9/18																				
14	OWNER FF&E	10 days	11/12/2018	Fri 11/23/18																				
15	DPH INSPECTIONS	5 days	11/12/2018	Fri 11/16/18																				
16	DPH CLINICAL INSPECTIONS	5 days	11/19/2018	Fri 11/23/18																				
17	Relocation of Adult Dental Clinic Patients New Haven to 1 Long Wharf	1 Day	TBD	TBD																				
18	Relocation of Oral Maxillofacial Surgery Orchard Street to 1 Long Wharf Drive	1 Day	TBD	TBD																				
19	GO LIVE	0 days	TBD	TBD																				

User, OHCA

From: Riggott, Kaila
Sent: Friday, September 08, 2017 7:24 AM
To: Patel, Shraddha
Cc: User, OHCA; Lazarus, Steven; Rival, Jessica
Subject: RE: 17-32181-CON Yale Dental Services Completeness Letter

Good Morning Shraddha,

Confirming receipt of your completeness responses for Docket #17-32181.

Regards,

Kaila

Kaila Riggott, MPA

Planning Specialist
State of Connecticut
Department of Public Health
Office of Health Care Access
410 Capitol Avenue, MS#13-HCA
Hartford, CT 06134
phone: 860.418.7037
fax: 860.418.7053
<http://www.ct.gov/ohca>



From: Patel, Shraddha [mailto:SHRADDHA.PATEL@YNHH.ORG]
Sent: Thursday, September 7, 2017 2:52 PM
To: User, OHCA <OHCA@ct.gov>; Riggott, Kaila <Kaila.Riggott@ct.gov>
Subject: RE: 17-32181-CON Yale Dental Services Completeness Letter

Good afternoon,

Attached please find YNHH's response to OHCA's completeness letter regarding Docket 17-32181-CON.

Please contact us if you have any questions.

Thank you,
Shraddha

Shraddha Patel, FACHE

Director of Strategy and Regulatory Planning & Reporting

2 Howe 3rd Floor
New Haven, CT 06519
Phone: 860-912-5324
Email: shraddha.patel@ynhh.org

YaleNewHavenHealth

From: Rival, Jessica [<mailto:Jessica.Rival@ct.gov>]
Sent: Friday, August 18, 2017 9:16 AM
To: Smith, Diane <DIANE.SMITH2@YNHH.ORG>
Cc: Lazarus, Steven <Steven.Lazarus@ct.gov>; Riggott, Kaila <Kaila.Riggott@ct.gov>; Olejarz, Barbara <Barbara.Olejarz@ct.gov>
Subject: 17-32181-CON Yale Dental Services Completeness Letter

Good morning Ms. Smith,

Please see the attached completeness letter in the above referenced matter. Please confirm receipt of this email and provide your written responses to OHCA no later than **October 17, 2017**.

Sincerely,

Jessica Rival

CCT Health Care Analyst
Office of Health Care Access
Connecticut Department of Public Health
410 Capitol Avenue MS#13HCA
Hartford, CT 06134
Phone: 860-418-7035
Fax: 860-418-7053
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This message originates from the Yale New Haven Health System. The information contained in this message may be privileged and confidential. If you are the intended recipient you must maintain this message in a secure and confidential manner. If you are not the intended recipient, please notify the sender immediately and destroy this message. Thank you.

Olejarz, Barbara

From: Smith, Diane <DIANE.SMITH2@YNHH.ORG>
Sent: Tuesday, September 26, 2017 1:44 PM
To: Rival, Jessica
Cc: Olejarz, Barbara; Riggott, Kaila; Lazarus, Steven
Subject: RE: application deemed complete

Hi Jessica,

I am confirming the receipt of this email that confirms OHCA deemed complete Yale New Haven Hospital's application seeking authorization to terminate, relocate, and consolidate outpatient dental services; Docket Number: 17-32181-CON. Thank you, Diane

Diane L. Smith

Diane L. Smith, Regulatory Planner
Strategy and Regulatory Planning & Reporting
2 Howe 3rd Floor
New Haven, CT 06519
Phone: 203-688-9987
Email: Diane.Smith2@ynhh.org

YaleNewHavenHealth

From: Rival, Jessica [mailto:Jessica.Rival@ct.gov]
Sent: Tuesday, September 26, 2017 1:39 PM
To: Smith, Diane <DIANE.SMITH2@YNHH.ORG>
Cc: Olejarz, Barbara <Barbara.Olejarz@ct.gov>; Riggott, Kaila <Kaila.Riggott@ct.gov>; Lazarus, Steven <Steven.Lazarus@ct.gov>
Subject: application deemed complete

Good afternoon Ms. Smith,

On September 26, 2017, OHCA deemed complete Yale New Haven Hospital's application seeking authorization to terminate, relocate, and consolidate outpatient dental services; Docket Number: 17-32181-CON. Attached you will find a Word document and a PDF of your letter of notification. Please confirm your receipt of this e-mail at your earliest convenience.

Thank you,

Jessica Rival

CCT Health Care Analyst
Office of Health Care Access
Connecticut Department of Public Health
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STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Raul Pino, M.D., M.P.H.
Commissioner



Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

Office of Health Care Access

Certificate of Need Final Decision

Applicant: Yale New Haven Hospital
789 Howard Avenue,
New Haven, CT 06519

Docket Number: 17-32181-CON

Project Title: Termination of adult and pediatric dental services and oral surgery services at Howard Avenue, New Haven; Dixwell Avenue, Hamden; and Orchard Street, New Haven

Project Description: Yale New Haven Hospital (the "Hospital" or "Applicant") seeks authorization to terminate dental services at 789 Howard Avenue, New Haven, and 2560 Dixwell Avenue, Hamden, and oral surgery services at 330 Orchard Street, New Haven and relocate these services to one consolidated location at 1 Long Wharf, New Haven, which currently houses outpatient pediatric dental services.

Procedural History: The Applicant published notice of its intent to file a Certificate of Need ("CON") application in *The New Haven Register* (New Haven) on May 23, 24, and 25, 2017. On, July 25, 2017, the Office of Health Care Access ("OHCA") received the CON application from the Applicant for the above-referenced project and deemed the application complete on September 27, 2017. OHCA received no responses from the public concerning the proposal and no hearing requests were received from the public per Connecticut General Statutes ("Conn. Gen. Stat.") § 19a-639a(e). Deputy Commissioner Addo considered the entire record in this matter.



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Findings of Fact and Conclusions of Law

1. Yale New Haven Hospital is a 1,541 bed not-for-profit acute care hospital located in New Haven, Connecticut and a member of the Yale New Haven Health Services Corporation. Ex. A, pp. 10, 12
2. The Applicant currently offers dental treatment and oral surgery for adult and pediatric patients in four dental clinics in New Haven and Hamden.

**TABLE 1
APPLICANT'S EXISTING SERVICE LOCATIONS**

Service	Street Address, Town
Outpatient Adult Dental Services	789 Howard Avenue, New Haven
	2560 Dixwell Avenue, Hamden
Outpatient Oral Surgery Services	330 Orchard Street, New Haven
Outpatient Pediatric Dental Services	1 Long Wharf Drive, New Haven

Ex. A, p.11

3. The Applicant is proposing to terminate its four adult outpatient and oral surgery locations and consolidate them into one centralized location at 1 Long Wharf Dr. New Haven, which currently houses pediatric dental services. Ex. A, pp.11, 12
4. The same services currently offered at each site will continue to be offered at the centralized location, which the Applicant plans to renovate to accommodate all patients. Ex. A, pp. 11, 12
5. The Hospital anticipates the consolidation will be completed in early FY 2019.¹ Ex. A, pp. 34-36
6. There will be no cessation or reduction of any dental services during the construction, relocation or final consolidation of the dental services. The transition will be phased and timed so all services will be available to the same extent they are available now. Ex. A pp.109-111, 144-145
7. Patients will be notified of the relocation plan and timeline through a direct mailing from the Applicant. Ex. A, p. 107
8. The proposed centralized location is within 8.2 miles of the three current locations. Travel distance from towns served by the consolidated program will vary. On average, 73% of patients will travel a shorter distance, by approximately 2.3 miles. The number of patients and distance between service area towns and the 1 Long Wharf location are shown below:

¹ Fiscal year for the Applicant begins October 1st and ends September 30th.

TABLE 2
SERVICE AREA TOWNS FOR EACH EXISTING DENTAL LOCATION

Service Area Town		1 Long Wharf	YNHH Main Campus (1.8 miles from 1 Long Wharf)	YNHH St. Raphael Campus (2.6 miles from 1 Long Wharf)	Hamden Professional Building (8.2 miles from 1 Long Wharf)
		Pediatric Svc.	Adult Svc.	Oral Surgery	Adult Svc.
Ansonia	Number of Patients	258		146	
	Distance	12.8 miles		9.8 miles	
Branford	Number of Patients	209	161	127	83
	Distance	7.6 miles	7.7 miles	8.1 miles	15.5 miles
Bridgeport	Number of Patients	508	129	1,068	
	Distance	18.5 miles	20.2 miles	18.4 miles	
Cheshire	Number of Patients				121
	Distance	18.1 miles			9.5 miles
Derby	Number of Patients			95	
	Distance	11.6 miles		8.8 miles	
East Haven	Number of Patients	682	186	259	133
	Distance	4.6 miles	4.7 miles	5.1 miles	12.5 miles
Guilford	Number of Patients		55		
	Distance	14.9 miles	15 miles		
Hamden	Number of Patients	1,120	313	380	1,198
	Distance	13 miles	9.6 miles	10 miles	0.7 miles
Milford	Number of Patients	327	100	181	100
	Distance	9.3 miles	11 miles	11.5 miles	15.3 miles
New Haven	Number of Patients	10,607	1,749	2,441	929
	Distance	0 miles	0.8 miles	0.8 miles	9.7 miles
North Haven	Number of Patients	182	98		198
	Distance	9.7 miles	9.7 miles		3.5 miles
Shelton	Number of Patients	97	59		
	Distance	10.4 miles	9.9 miles		
Stratford	Number of Patients	204	81	223	
	Distance	15.4 miles	17.1 miles	17.5 miles	
Trumbull	Number of Patients			137	
	Distance	17.8 miles		16.7 miles	
Wallingford	Number of Patients	203		94	
	Distance	15.1 miles		15.6 miles	
West Haven	Number of Patients	2,274	389	511	308
	Distance	3.4 miles	2.9 miles	5.5 miles	3.6 miles

Ex. A, pp.13-14

9. Currently patients and families must seek care at multiple sites. Families with children cannot coordinate visits at the same location and day, so additional trips are necessary. In addition, adult or pediatric patients requiring a surgical consult cannot receive this care in the same visit as their regular dental appointment. A new patient surgical visit must be scheduled on a separate date, creating multiple trips for patients. Ex. A p.13

10. The proposal is intended to:

- increase efficiency of scheduling appointments by providing care for all family members at one location;
- enhance care management by allowing for same day surgical consults and real time coordination between dental and surgical providers;
- enhance accessibility for patients, as 1 Long Wharf is on a bus route, has free parking and is closer to major highways;
- provide patient access to state-of-the-art equipment and facilities, including specialty panorex and cone-beam x-rays; and
- reduce inefficiencies related to staffing, redundant supplies, equipment and multiple leases.

Ex. A, pp. 13-14, 20

11. Historical utilization volumes are shown in the table below:

**TABLE 3
HISTORICAL UTILIZATION BY SERVICE**

Service	Actual Volume (Last 3 Completed FYs)			CFY Volume
	FY 2014	FY 2015	FY 2016	FY 2017*
Adult Dental Services (New Haven)	4,881	4,788	4,412	4,004
<u>Adult Dental Services (Hamden)</u>	<u>3,612</u>	<u>3,804</u>	<u>4,062</u>	<u>3,976</u>
Adult Dental Services	8,493	8,592	8,474	7,980
Pediatric Dental Services (New Haven)	14,881	20,698	19,065	16,902
Oral Surgery Services (New Haven)	6,996	6,662	7,720	8,302
Total	30,370	35,952	35,259	33,184

*Annualized based on 6 months of data (from Oct 1, 2016 – March 31, 2017).

NOTE: Adult and pediatric volume has fluctuated in recent years due to the program's reliance on dental residents, elevated "no show" rates in the Medicaid/indigent population and increased competition for pediatric Medicaid patients from for-profit dental practices, as pediatric dental services are reimbursed by Medicaid at a higher rate than adult dental services.

Ex. A, p. 26, 33

12. The Applicant anticipates future adult and pediatric dental service volume to remain flat due to new program leadership, which is expected to stabilize the program. Ex. A, p. 26

**TABLE 4
PROJECTED UTILIZATION BY SERVICE FOR 1 LONG WHARF**

Service	Projected Volume			
	FY 2018	FY 2019	FY 2020	FY 2021
Adult Dental Services	7,980	7,980	7,980	7,980
Pediatric Dental Services	16,902	16,902	16,902	16,902
Oral Surgery Services	8,583 ¹	8,865	8,865	8,865
Total	33,465	33,747	33,747	33,747

¹The Applicant anticipates that oral surgery visits will initially increase in FY 18, and then remain relatively flat going forward, due to a new Tricare contract.

Ex. A, p. 33

13. Currently, Medicaid and uninsured patients (which includes self-pay and free care patients) constitute an average of 90% of the payer mix for the four dental locations. In 2016, Medicaid accounted for between 39%-76% of patients, and the uninsured accounted for 15%-51% of patients, depending on the location of the dental services. Ex. A pp. 18, 20, 23

14. There are no anticipated changes to the patient population or payer mix. Medicaid accounts for 74% of the current payer mix at 1 Long Wharf and is projected to be 58% after the consolidation. The uninsured account for 51% of the current payer mix at 1 Long Wharf and is projected to be 32% after the consolidation. This is not a reduction of service to Medicaid or uninsured patients, but rather a reflection of the consolidated location. Ex. A p.14

**TABLE 5
APPLICANT'S CURRENT AND PROJECTED PAYER MIX – 789 HOWARD AVENUE, NEW HAVEN LOCATION**

Payer	Actual FY 2016		Annualized CFY 2017*		Projected FY 2018	
	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0
Medicaid*	1,704	39	1,638	41	1,638	41
CHAMPUS & TriCare	0	0	0	0	0	0
Total Government	1,704	39	1,638	41	1,638	41
Commercial Insurers	480	11	406	10	406	10
Uninsured	2,228	51	1,960	49	1,960	49
Workers Compensation	0	0	0	0	0	0
Total Non-Government	2,708	61	2,366	59	2,366	59
Total Payer Mix	4,412	100	4,004	100	4,004	100

*Annualized based on 6 months of data (from Oct 1, 2016 – March 31, 2017).

Totals may not add up to 100% due to rounding.

The uninsured category includes self-pay and free care patients.

Ex. A, pp. 34-36

TABLE 6
APPLICANT'S CURRENT AND PROJECTED PAYER MIX – 2560 DIXWELL AVENUE, HAMDEN LOCATION

Payer	Actual FY 2016		Annualized CFY 2017*		Projected FY 2018	
	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0
Medicaid*	1,743	43	1,730	44	1,730	44
CHAMPUS & TriCare	0	0	0	0	0	0
Total Government	1,743	43	1,730	44	1,730	44
Commercial Insurers	471	12	476	12	476	12
Uninsured	1,848	45	1,770	45	1,770	45
Workers Compensation	0	0	0	0	0	0
Total Non-Government	2,319	57	2,246	57	2,246	57
Total Payer Mix	4,062	100	3,976	100	3,976	100

*Annualized based on 6 months of data (from Oct 1, 2016 – March 31, 2017).

Totals may not add up to 100% due to rounding.

The uninsured category includes self-pay and free care patients.

Ex. A, pp. 34-36

TABLE 7
APPLICANT'S CURRENT AND PROJECTED PAYER MIX – 1 LONG WHARF, NEW HAVEN LOCATION

Payer	Actual FY 2016		Annualized CFY 2017*		Projected FY 2018	
	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0
Medicaid*	14,438	76	12,448	74	12,448	74
CHAMPUS & TriCare	0	0	0	0	0	0
Total Government	14,438	76	12,448	74	12,448	74
Commercial Insurers	1,797	9	1,560	9	1,560	9
Uninsured	2,830	15	2,894	17	2,894	17
Workers Compensation	0	0	0	0	0	0
Total Non-Government	4,627	24	4,454	26	4,454	26
Total Payer Mix	19,065	100	16,902	100	16,902	100

*Annualized based on 6 months of data (from Oct 1, 2016 – March 31, 2017).

Totals may not add up to 100% due to rounding.

The uninsured category includes self-pay and free care patients.

Ex. A, pp. 34-36

TABLE 8
APPLICANT'S CURRENT AND PROJECTED PAYER MIX – 330 ORCHARD STREET, NEW HAVEN LOCATION

Payer	Actual FY 2016		Annualized CFY 2017*		Projected FY 2018	
	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0
Medicaid*	3,479	45	3,628	44	3,628	42
CHAMPUS & TriCare	0	0	0	0	281	3
Total Government	3,479	45	3,628	44	3,909	45
Commercial Insurers	737	10	430	5	430	6
Uninsured	3,504	45	4,244	51	4,244	49
Workers Compensation	0	0	0	0	0	0
Total Non-Government	4,241	55	4,674	56	4,674	55
Total Payer Mix	7,720	100	8,302	100	8,583	100

*Annualized based on 6 months of data (from Oct 1, 2016 – March 31, 2017).

Totals may not add up to 100% due to rounding.

The uninsured category includes self-pay and free care patients.

Ex. A, pp. 34-36

TABLE 9
APPLICANT'S PROJECTED PAYER MIX (POST CONSOLIDATION) – 1 LONG WHARF, NEW HAVEN LOCATION

Payer	Projected					
	FY 2019**		FY 2020**		FY 2021**	
	Vol.	%	Vol.	%	Vol.	%
Medicare*	0	0	0	0	0	0
Medicaid*	19,444	58	19,444	58	19,444	58
CHAMPUS & TriCare	563	2	563	2	563	2
Total Government	20,007	59	20,007	59	20,007	59
Commercial Insurers	2,872	9	2,872	9	2,872	9
Uninsured	10,868	32	10,868	32	10,868	32
Workers Compensation	0	0	0	0	0	0
Total Non-Government	13,740	41	13,740	41	13,740	41
Total Payer Mix	33,747	100	33,747	100	33,747	100

Totals may not add up to 100% due to rounding.

The uninsured category includes self-pay and free care patients.

Ex. A, pp. 34-36

15. There will be no adverse effect on patient healthcare costs. No facility fees will be imposed, and no changes to the current charity care policy or sliding fee schedule will occur. Ex. A p. 22, Ex. E pp. 87-95

16. The total capital expenditure for the project is expected to be \$2,788,152 and will be funded entirely through cash on hand. The applicant expects to spend approximately \$2,000,000 on renovations and approximately \$500,000 on new equipment to provide a state-of-the-art facility. Ex. A pp. 24, 32

17. The Applicant’s current dental program, including all locations, operates at a financial loss.

**TABLE 10
HISTORICAL INCREMENTAL REVENUES AND EXPENSES**

	FY 2015	FY 2016	FY 2017 ¹
Revenue from Operations	\$4,794,005	\$4,952,773	\$4,404,982
Total Operating Expenses	\$6,763,159	\$6,857,970	\$7,205,121
Gain/Loss from Operations	(\$1,969,154)	(\$1,905,197)	(\$2,800,139)

¹ Annualized based on 10 months of data (from Oct. 1, 2016 – July 31, 2017)
Ex. A. p. 108

18. This financial loss is projected to continue with the CON, but at a reduced rate compared to 2017.

**TABLE 11
PROJECTED INCREMENTAL REVENUES AND EXPENSES**

	FY 2018	FY 2019	FY 2020	FY 2021
Revenue from Operations	\$4,442,482	\$4,479,982	\$4,479,982	\$4,479,982
Total Operating Expenses	\$7,239,395	\$6,958,056	\$6,884,489	\$6,884,489
Gain/Loss from Operations	(\$2,796,913) ¹	(\$2,478,074) ²	(\$2,404,507) ³	(\$2,404,507) ⁴

¹ FY 2018 – dental program losses will be reduced by \$3,226 compared to FY 2017.

² FY 2019 – dental program losses will be reduced by \$322,065 compared to FY 2017.

³ FY 2020 – dental program losses will be reduced by \$395,632 compared to FY 2017.

⁴ FY 2021 – dental program losses will be reduced by \$395,632 compared to FY 2017.

Ex. A, p. 109

**TABLE 12
PROJECTED OVERALL GAINS WITH CON**

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Revenue from Operations	\$2,817,900,000	\$2,840,600,000	\$2,935,539,936	\$3,024,284,209	\$3,113,104,524
Total Operating Expenses	\$2,710,600,000	\$2,763,900,000	\$2,846,817,000	\$2,932,221,510	\$3,020,188,155
Gain/Loss from Operations	\$107,300,000	\$76,700,000	\$88,722,936	\$92,062,699	\$92,916,369

Ex. A, p. 23, Financial Worksheet A

19. 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 not yet adopted by OHCA. (Conn. Gen. Stat. § 19a-639(a)(1))

20. This CON application is consistent with the Statewide Health Care Facilities and Service Plan. (Conn. Gen. Stat. § 19a-639(a)(2)) (Ex. A. p.17)

21. The Applicant has established that there is a clear public need for the proposal. (Conn. Gen. Stat. § 19a-639(a)(3)) (Ex. A pp. 17-19)

22. The Applicant has demonstrated that the proposal is financially feasible. (Conn. Gen. Stat. § 19a-639(a)(4)) (Ex. A pp. 23-25)

23. The Applicant has satisfactorily demonstrated that the proposal will improve quality and accessibility and maintain cost effectiveness of health care delivery in the region. (Conn. Gen. Stat. § 19a-639(a)(5)) (Ex. A pp. 20-21)
24. The Applicant has shown that there would be no change in the provision of health care services to the relevant populations and payer mix, including access to services by Medicaid recipients. (Conn. Gen. Stat. § 19a-639(a)(6)) (Ex A pp. 21-22)
25. The Applicant has satisfactorily identified the population to be affected by this proposal. (Conn. Gen. Stat. § 19a-639(a)(7)) (Ex. A pp.27)
26. The Applicant's historical provision of treatment in the service area supports this proposal. (Conn. Gen. Stat. § 19a-639(a)(8)) (Ex. A pp. 12, 17-19)
27. The Applicant has satisfactorily demonstrated that the proposal would not result in an unnecessary duplication of existing services in the area. (Conn. Gen. Stat. § 19a-639(a)(9)) (Ex. A p. 28)
28. The Applicant has demonstrated that there will be no reduction in access to services by Medicaid recipients or indigent persons. (Conn. Gen. Stat. § 19a-639(a)(10)) (Ex. A pp. 21-22)
29. The Applicant has demonstrated that the proposal will not negatively impact the diversity of health care providers and patient choice in the region. (Conn. Gen. Stat. § 19a-639(a)(11)) (Ex. A pp. 27-29)
30. The Applicant has satisfactorily demonstrated that the proposal will not result in any consolidation that would affect health care costs or access to care. (Conn. Gen. Stat. § 19a-639(a)(12)) (Ex. A pp. 17, 22, 28)

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 § 19a-639(a) of the Statutes. The Applicant bears the burden of proof in this matter by a preponderance of the evidence. *Jones v. Connecticut Medical Examining Board*, 309 Conn. 727 (2013).

The Applicant, Yale New Haven Hospital, currently offers dental treatment and oral surgery for adult and pediatric patients at four dental clinics in New Haven and Hamden. The Applicant is proposing to consolidate its adult outpatient and oral surgery locations into one centralized location at 1 Long Wharf Drive New Haven. The same services currently offered at each site will continue to be offered at the proposed centralized location. There will be no cessation or reduction of any of the dental services during the construction, relocation or final consolidation of the dental services. *FF1-FF6*

Quality of care will be enhanced as the proposal brings together medical and surgical dental disciplines and promotes collaboration among providers and coordination of care. Currently patients and families must seek care at multiple sites. Families with children cannot coordinate visits at the same location and day, so additional trips are necessary. In addition, adult or pediatric patients requiring a surgical consult cannot receive this care in the same visit as their regular dental appointment. A new patient surgical visit must be scheduled on a separate date, creating multiple trips for patients. With the proposed consolidation, additional trips will no longer be necessary. Families with children and patients needing surgical consults can be seen the same day. In addition, the consolidated location is on a bus route and has free parking. None of the other dental locations have both of these attributes. It is physically more accessible, close to major highways and will give patients access to state-of-the-art equipment and facilities. *FF9-11*

The Applicant will continue to provide dental services that primarily serve Medicaid patients and the indigent population, with no change in cost to patients. While the dental program operates at a financial loss, the Applicant's strong financial position of profitability enables it to absorb these losses. Although this loss is projected to continue, it will be at a reduced rate with CON approval. The project is cost effective, as it reduces redundancies and unnecessary ancillary costs, and is financially feasible for the Applicant. *FF13-FF20*

Based on the foregoing factors, the Applicant has satisfactorily demonstrated that access to and quality of dental care services will be improved for all relevant patient populations, including Medicaid and indigent persons and there will be no change to patient healthcare costs. These benefits are consistent with the Statewide Health Care Facilities and Services Plan.

Order

Based upon the foregoing Findings and Discussion, the Certificate of Need application requesting authorization to terminate dental services at 789 Howard Avenue, New Haven, and 2560 Dixwell Avenue, Hamden, and oral surgery services at 330 Orchard Street, New Haven and relocate these services to one consolidated location at 1 Long Wharf, New Haven, which currently houses outpatient pediatric dental services is hereby **APPROVED**.

All of the foregoing constitutes the final order of the Office of Health Care Access in this matter.

By Order of the
Department of Public Health
Office of Health Care Access



12/18/2017

Date

Yvonne T. Addo, MBA
Deputy Commissioner

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