

DATABOOK

Preventable Hospitalizations in Connecticut:

*A Reassessment of
Access to
Community Health Services*

2008 - 2012



September 2014



Preventable Hospitalizations in Connecticut: A Reassessment of Access to Community Health Services, 2008-2012

“Preventable hospitalizations” are instances of inpatient hospital care for health conditions or illnesses typically treated or managed outside of the hospital.¹ These include chronic conditions such as diabetes and asthma, or acute episodes of illnesses like bacterial pneumonia or urinary tract infections. These conditions are considered “preventable” because timely and effective primary care and medical management of these conditions have been clinically demonstrated to reduce the need for hospitalization.²

Although preventable hospitalizations are instances of inpatient care, they provide insight into the quality of the health care system *outside* the hospital because timely primary care generally “prevents” most people with these conditions from becoming so severely ill that they require hospital care. Of course, general health status, adherence to treatment recommendations and environmental conditions can predispose individual patients to hospitalization. At the community and state level, however, preventable hospitalizations provide a valid starting point for assessing the quality of primary health care services in the community.

As a screening tool, preventable hospitalizations help identify possible gaps in the primary health care system, disparities in access to primary care and community health resource needs. They also suggest areas of potential cost savings by identifying instances of inpatient acute care that may be reduced through primary care, case management and outreach.

Preventable hospitalizations methodology

For this publication, the Department of Public Health Office of Health Care Access (OHCA) utilized the Quality Indicators (QI) software tool developed under the auspices of the U.S. Department of Health and Human Services Agency for Healthcare Research and Quality (AHRQ).³ As part of the QI project, an AHRQ-sponsored team of clinical researchers identified and statistically validated a set of health conditions for which effective primary care significantly

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Prevention Quality Indicators (PQIs)

AHRQ's preventive care Quality Indicators include five Pediatric area-level Quality Indicators and 14 Adult Prevention Quality Indicators. Hospitalizations for these conditions have been shown to significantly decrease with access to high-quality primary care and proper disease management.

Pediatric Quality Indicators

- Asthma
- Diabetes, short-term complications
- Gastroenteritis
- Perforated appendix
- Urinary tract infection

Adult Quality Indicators

- Angina without an in-hospital therapeutic procedure
- Asthma
- Bacterial pneumonia
- Chronic obstructive pulmonary disease
- Congestive heart failure
- Dehydration
- Diabetes, long-term complications
- Diabetes, short-term complications
- Diabetes-related lower extremity amputation
- Diabetes, uncontrolled
- Hypertension
- Low birth weight newborns
- Perforated appendix
- Urinary tract infection

reduced the incidence of hospitalization. These conditions are referred to as Ambulatory Care Sensitive Conditions (ACSCs). Two QI modules, Prevention Quality Indicators for adults and Pediatric Quality Indicators for children, identify instances of ACSC (preventable) hospitalizations. The modules also generate per capita population rates of the incidence of preventable hospitalizations among all residents and for selected subgroups. Use of the QI tool provides researchers with a standardized approach for studying preventable hospitalizations, which facilitates comparisons across communities, as well as over time.

For the purposes of this publication, PQI refers to both adult and pediatric preventable hospitalizations. The reference year is calendar year. Previous hospitalization refers to a prior hospitalization at the same hospital.

Since the publication of OHCA's 2010 preventable hospitalizations databook, the tool has undergone a number of revisions.⁴ In order to report consistent results over the last five years to reflect these most recent changes, this databook includes data from 2008 through 2012 and utilized the most recent Windows version of the QI tool, WinQI Version 4.5.

Structure of the Preventable Hospitalization Databook

This databook is intended as a reference document providing extensive, though not exhaustive, information. It is organized to allow the reader to quickly find relevant information. The first section presents overall trends in preventable hospitalization volume and patient days. The next section focuses on preventable hospitalization charges and insurers. The third section examines PQI hospitalization characteristics such as volume by hospital, previous admission, admission source, discharge status and multiple hospitalizations for the same PQI condition. Demographic characteristics of PQI patients are presented in the fourth section. The final section presents PQI data for subpopulations based on age, race and type of insurance.

Significant findings

- In 2012, there were approximately 44,700 “preventable hospitalizations” of Connecticut residents that accounted for nearly 227,000 total patient days and \$1.3 billion in total charges.
- Preventable hospitalizations accounted for 11% of hospital discharges, patient days and charges.
- Between 2008 and 2012, the number of preventable hospitalizations declined by 7%.
- In 2012, low birth weight newborns had the highest average charge (\$83,170) of any PQI condition. By comparison, the average charge for a healthy newborn was \$5,540.
- Compared with the United States on a per capita basis, Connecticut residents were less likely to be hospitalized for a preventable condition.
- Connecticut had lower PQI hospitalization rates for 14 of 19 PQI conditions, as well as the overall pediatric and adult rates.
- In 2012, New Haven County had the highest per capita rates for 11 PQI conditions, as well as the highest overall pediatric and adult rates.
- Most PQI patients had a previous admission (68%), were admitted through the emergency department (89%) and required additional health care (50%) following discharge.
- 10% of all PQI patients had multiple same-condition hospitalizations in 2012.
- Senior citizens accounted for 58% of preventable hospitalizations, nearly all were Medicare covered.
- Black non-Hispanics were at greater risk for preventable hospitalization; overall pediatric and adult per capita rates were the highest of any race/ethnicity.

Connecticut's incidence of preventable hospitalizations was lower than the U.S.

Compared to the U.S., Connecticut residents were less likely to be hospitalized for a preventable condition. Connecticut's PQI rates⁵ were lower than national rates in 14 of 19 quality indicators, however, PQI rates for adult asthma, dehydration, urinary tract infection and low birth weight newborns were all higher than the U.S. average.

From 2008 to 2012, the number of Connecticut residents hospitalized for a PQI condition decreased by 7% (or 3,425). The largest reductions occurred for pediatric gastroenteritis (-78%), urinary tract infections (-46%), perforated appendix (-34%), adult dehydration (-31%) and low birth weight newborns (-25%). In contrast, hospitalizations increased for adult hypertension (+17%), diabetes with short-term complications (+15%), and urinary tract infections (+6%).

Table 1: PQI hospitalizations and rates, 2012

| Quality Indicator | Hospitalizations | Change in hospitalizations 2008 - 2012 | CT 2008 Rate (per 100,000 people) ³ | CT 2012 Rate (per 100,000 people) ³ | CT 2010 rates compared to U.S. 2010 rates ⁴ |
|---|------------------|--|--|--|--|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | | |
| Asthma | 935 | -3% | 136 | 138 | -14% |
| Diabetes (short-term complications) | 84 | -20% | 18 | 15 | -55% |
| Gastroenteritis | 332 | -78% | 79 | 45 | -35% |
| Perforated appendix ¹ | 174 | -34% | 25 | 26 | -24% |
| Urinary tract infection | 166 | -46% | 31 | 22 | -43% |
| Overall pediatric PQI rate | --- | --- | 153 | 132 | -28% |
| Adult Quality Indicators (Ages 18+) | | | | | |
| Angina without a procedure ² | 391 | -13% | 16 | 14 | -17% |
| Asthma | 609 | -16% | 74 | 66 | 24% |
| Bacterial pneumonia | 7,576 | -10% | 295 | 255 | -6% |
| Chronic obstructive pulmonary disease (COPD) | 7,356 | -3% | 447 | 414 | -18% |
| Congestive heart failure (CHF) | 9,011 | -10% | 341 | 295 | <1% |
| Dehydration | 3,514 | -31% | 163 | 120 | 19% |
| Diabetes (long-term complications) | 2,957 | -1% | 109 | 103 | -8% |
| Diabetes (short-term complications) | 1,557 | 15% | 51 | 59 | -19% |
| Diabetes (lower extremity amputation) | 327 | -3% | 12 | 11 | -17% |
| Diabetes (uncontrolled) | 265 | -9% | 10 | 9 | -45% |
| Hypertension | 1,301 | 17% | 39 | 45 | -28% |
| Low birth weight newborns ¹ | 2,084 | -25% | 7 | 6 | 5% |
| Perforated appendix ¹ | 703 | -8% | 24 | 29 | -24% |
| Urinary tract infection | 5,569 | 6% | 180 | 184 | 6% |
| Overall adult PQI rate | --- | --- | 1,513 | 1,365 | -5% |
| Totals² | 44,737 | -7% | --- | --- | --- |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of Connecticut residents admitted to Connecticut acute care hospitals with a PQI condition.

¹Condition-specific rates — Populations are those who had appendicitis and all births. These rates are per 100 appendicitis hospitalizations or 100 births. Low birth weight newborns are grouped with the adult PQI conditions because low birth weight is related to the mother's prenatal care.

²Reported total 2012 hospitalizations are not the summed hospitalizations for all of the individual PQI conditions. Several patients had more than one PQI condition during a hospital stay, therefore, their hospitalizations are counted in the individual totals of multiple PQI conditions. Overall total hospitalizations are presented here without any double counting of patients.

³Rates calculated by dividing the number of PQI hospitalizations by the appropriate population and multiplying by 100,000. The exceptions are pediatric and adult perforated appendix and low birth weight newborn rates, which are per 100 appendicitis, hospitalizations or births. These observed rates were then risk-adjusted by age and gender.

⁴Percent difference between 2010 observed Connecticut and U.S. rates, the most recent rates available (*AHRQ Quality Indicators, Prevention Quality Indicator v4.5 Benchmark Data Tables*, May 2013 and *Pediatric Quality Indicator v4.5 Benchmark Data Tables*, May 2013).

Total PQI patient days and average hospital stays declined

Between 2008 and 2012, PQI days fell by 12%, but still accounted for nearly 227,000 hospital days.

Pediatric PQI indicators all showed improvement with fewer hospital days in 2012. However, asthma continues to account for a large number (1,611 days) of pediatric hospital days.

The majority of adult PQI indicators also had fewer hospital days in 2012; dehydration (-31%) and low birth weight newborns (-29%) had the largest declines. Diabetes with short-term complications, in contrast, had the largest increase (+25%) of any PQI indicator. Congestive heart failure (49,637 days), bacterial pneumonia (39,138) and chronic obstructive pulmonary disease (32,877) account for more than half of adult PQI hospital days.

The average hospital stay for a PQI hospitalization was 5.1 days.

Table 2: PQI patient days, 2012

| Quality Indicator | Total hospital days | Change in total hospital days, 2008 - 2012 | Average hospital stay | Change in average hospital stay, 2008 - 2012 |
|---|---------------------|--|-----------------------|--|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | |
| Asthma | 1,611 | -11% | 1.7 | -8% |
| Diabetes (short-term complications) | 154 | -14% | 1.8 | 3% |
| Gastroenteritis | 643 | -36% | 1.9 | 14% |
| Perforated appendix | 903 | -31% | 5.2 | -8% |
| Urinary tract infection | 383 | -36% | 2.3 | -6% |
| Adult Quality Indicators (Ages 18+) | | | | |
| Angina without a procedure | 707 | -11% | 2.0 | 1% |
| Asthma | 1,810 | -8% | 4.1 | 6% |
| Bacterial pneumonia | 39,138 | -14% | 6.0 | -4% |
| Chronic obstructive pulmonary disease (COPD) | 32,877 | -9% | 5.2 | -5% |
| Congestive heart failure (CHF) | 49,637 | -7% | 5.4 | 2% |
| Dehydration | 13,283 | -31% | 4.6 | -10% |
| Diabetes (long-term complications) | 17,623 | -8% | 7.5 | -7% |
| Diabetes (short-term complications) | 6,175 | 25% | 3.9 | 7% |
| Diabetes (lower extremity amputation) | 3,657 | -8% | 12.6 | -5% |
| Diabetes (uncontrolled) | 872 | -12% | 3.6 | -4% |
| Hypertension | 3,881 | 19% | 2.9 | -2% |
| Low birth weight newborns ¹ | 27,626 | -29% | 15.0 | -12% |
| Perforated appendix | 3,766 | -9% | 5.8 | -1% |
| Urinary tract infection | 24,080 | 3% | 4.7 | -3% |
| Totals² | 226,734 | -12% | 5.1 | -5% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospital days of Connecticut residents admitted to Connecticut acute care hospitals with a PQI condition.

¹Low birth weight newborns are grouped with the adult PQI conditions because low birth weight is related to the mother's prenatal care.

²Reported total 2012 patient days are not the summed total patient days of all individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their total patient days are counted in the individual totals of multiple PQI conditions. Overall total patient days (column 2) are presented without any double counting of total patient days.

Charges for nearly all PQI hospitalizations increased

Despite declines in both PQI hospitalizations and patient days in 2012, hospital charges increased by 15% and totaled \$1.3 billion dollars.

Together, congestive heart failure, bacterial pneumonia and chronic obstructive pulmonary disease (COPD) accounted for half of the total PQI hospitalization charges.

The average charge (\$30,078) for a PQI hospitalization also increased (+24%) in 2012. Low birth weight newborns had the highest average charge (\$83,170) of any PQI condition. By comparison, the average charge for a healthy newborn in 2012 was \$5,540.

Table 3: PQI total and average charges, 2012

| Quality Indicator | Total charges | Change in total charges, 2008 - 2012 | Average charge | Change in average charge 2008 -2012 |
|---|------------------------|--------------------------------------|-----------------|-------------------------------------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | |
| Asthma | \$13,460,095 | 46% | \$14,396 | 51% |
| Diabetes (short-term complications) | \$1,353,161 | 14% | \$16,109 | 37% |
| Gastroenteritis | \$4,398,102 | 3% | \$13,247 | 83% |
| Perforated appendix | \$7,668,462 | -2% | \$44,072 | 31% |
| Urinary tract infection | \$2,297,009 | -1% | \$13,837 | 44% |
| Adult Quality Indicators (Ages 18+) | | | | |
| Angina without a procedure | \$6,717,945 | 12% | \$17,181 | 26% |
| Asthma | \$11,568,819 | 24% | \$18,996 | 44% |
| Bacterial pneumonia | \$219,723,729 | 12% | \$29,006 | 23% |
| Chronic obstructive pulmonary disease (COPD) | \$183,941,712 | 24% | \$25,006 | 28% |
| Congestive heart failure (CHF) | \$295,936,920 | 21% | \$32,853 | 32% |
| Dehydration | \$75,606,850 | -9% | \$21,522 | 19% |
| Diabetes (long-term complications) | \$112,150,754 | 22% | \$37,927 | 23% |
| Diabetes (short-term complications) | \$40,812,375 | 63% | \$26,212 | 39% |
| Diabetes (lower extremity amputation) | \$25,561,124 | 36% | \$78,169 | 41% |
| Diabetes (uncontrolled) | \$4,793,678 | 5% | \$18,089 | 14% |
| Hypertension | \$27,651,253 | 55% | \$21,270 | 28% |
| Low birth weight newborns ¹ | \$173,243,255 | -7% | \$83,170 | 16% |
| Perforated appendix | \$28,236,702 | 15% | \$40,166 | 24% |
| Urinary tract infection | \$124,906,429 | 34% | \$22,429 | 26% |
| Totals² | \$1,345,382,820 | 15% | \$30,078 | 24% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospital charges of Connecticut residents admitted to Connecticut acute care hospitals with a PQI condition.

Due to discounts and other factors, payments differ from charges. In 2008, the ratio of charges to payments was 40%, meaning that total payments were 40 cents for every dollar of charges.

¹Low birth weight newborns are grouped with the adult PQI conditions because low birth weight is related to the mother's prenatal care.

²In 2012, the statewide ratio of cost to charges was .36, meaning that total costs were 36 cents for every dollar of charges. Reported total 2012 charges are not the summed total charges of all of the individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their total charges are counted in the individual totals of multiple PQI conditions. Overall total charges are presented without any double counting of total charges.

Medicare was the primary insurer of PQI hospitalizations

Table 4: Primary insurer's PQI total charges and hospitalizations, 2012

| Payer | Total charges | Change in total charges, 2008-2012 | PQI Hospitalizations | PQI % of all hospitalizations |
|------------------------|------------------------|------------------------------------|----------------------|-------------------------------|
| Medicare/other federal | \$810,414,699 | 14% | 28,180 | 17% |
| Medicaid | \$260,130,521 | 26% | 8,032 | 9% |
| Private | \$258,579,213 | 1% | 7,740 | 6% |
| Uninsured ¹ | \$16,258,387 | -14% | 785 | 10% |
| Total | \$1,345,382,820 | 13% | 44,737 | 11% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database
 Reporting hospital charges of Connecticut residents admitted to Connecticut acute care hospitals with a PQI condition.
 Due to discounts and other factors, actual payments are significantly lower than charges. In 2012, the ratio of charges to payments was 36 percent, meaning that payments were 36 cents for every dollar of charges.
¹Uninsured hospitalizations include all those for which no third party payer was responsible for charges.

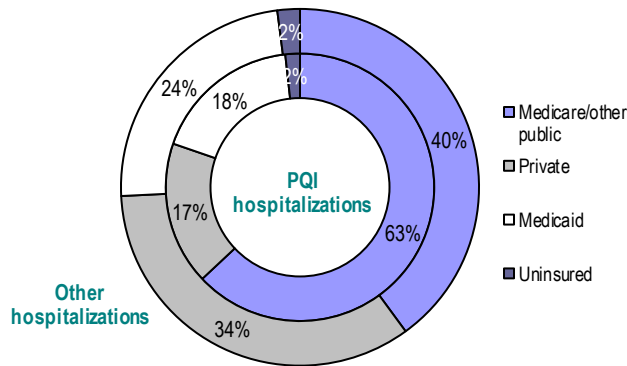
Eleven percent of all hospitalizations were PQI-related.

Medicare was the primary insurer for PQI hospitalizations.

Approximately one out of six Medicare hospitalizations were PQI-related.

The uninsured comprise only 2% of PQI hospitalizations.

Figure 1: Primary insurer's share of PQI and other patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

PQI hospitalizations were disproportionately Medicare patients (63% versus 40% for all hospitalizations).

Private coverage patients were significantly under-represented among PQI hospitalizations (17% versus 34%).

The skewed PQI payer mix is primarily due to the large number of elderly PQI patients.

Primary insurers' share of hospitalizations varied by PQI

Medicare was the primary insurer for 10 of 14 adult PQI conditions and accounted for at least two-thirds of hospitalizations for bacterial pneumonia, COPD, CHF, dehydration, diabetes (lower extremity amputation) and urinary tract infections.

Medicaid was the predominant coverage type for pediatric PQI conditions and accounted for at least half of the hospitalizations for asthma, diabetes (short-term complications), gastroenteritis and urinary tract infections. Private insurers provided coverage for more than half of the pediatric and adult perforated appendix hospitalizations.

The uninsured represented 2% of PQI hospitalizations, however, adult asthma (5%), diabetes (short-term complications (5%), hypertension (6%) and perforated appendix (6%) conditions all had a higher percentage of uninsured hospitalizations compared to the overall rate.

Table 5: Primary insurer's share of hospitalizations by PQI, 2012

| Quality Indicator | Medicare/ other federal | Private | Medicaid | Uninsured ² | Total |
|---|----------------------------|------------|------------|------------------------|-------------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | | |
| Asthma | 0% | 33% | 66% | 1% | 100% |
| Diabetes (short-term complications) | 4% | 44% | 50% | 2% | 100% |
| Gastroenteritis | 0% | 39% | 60% | 0% | 100% |
| Perforated appendix | 1% | 55% | 42% | 2% | 100% |
| Urinary tract infection | 1% | 36% | 61% | 2% | 100% |
| Adult Quality Indicators (Ages 18+) | | | | | |
| Angina without a procedure | 52% | 30% | 15% | 3% | 100% |
| Asthma | 10% | 26% | 59% | 5% | 100% |
| Bacterial pneumonia | 73% | 15% | 11% | 1% | 100% |
| Chronic obstructive pulmonary disease (COPD) | 67% | 14% | 18% | 1% | 100% |
| Congestive heart failure (CHF) | 83% | 8% | 7% | 1% | 100% |
| Dehydration | 68% | 19% | 11% | 1% | 100% |
| Diabetes (long-term complications) | 57% | 20% | 21% | 2% | 100% |
| Diabetes (short-term complications) | 29% | 25% | 41% | 5% | 100% |
| Diabetes (lower extremity amputation) | 66% | 17% | 16% | 1% | 100% |
| Diabetes (uncontrolled) | 52% | 15% | 28% | 4% | 100% |
| Hypertension | 47% | 22% | 25% | 6% | 100% |
| Low birth weight newborns ¹ | 1% | 49% | 49% | 1% | 100% |
| Perforated appendix | 26% | 53% | 15% | 6% | 100% |
| Urinary tract infection | 78% | 10% | 11% | 1% | 100% |
| Totals | 63% | 17% | 18% | 2% | 100% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Bold blue numbers indicate the largest payer for each PQI.

Reporting primary payer's share of Connecticut residents admitted to Connecticut acute care hospitals with a PQI condition.

¹Low birth weight newborns are grouped with the adult PQIs because low birth weight is related to the mother's prenatal care.

²Uninsured hospitalizations include all those for which no third party payer is responsible for charges.

Proportion of PQI patients' varied among hospitals

Rockville General Hospital (19%) and Johnson Memorial Hospital (18%) had the highest PQI rate of any Connecticut hospital. Statewide PQI rates were 11%, overall.

Table 6: Prevention Quality Indicator (PQI) hospitalizations by hospital, 2012

| Hospital | PQI Hospitalizations | % of Statewide PQI Hospitalizations | Change in PQI volume, 2008 - 2012 | PQIs as a % of hospital volume |
|------------------------------|----------------------|-------------------------------------|-----------------------------------|--------------------------------|
| Bridgeport | 2,163 | 5% | -6% | 11% |
| Bristol | 958 | 2% | -23% | 13% |
| Central Connecticut | 2,348 | 5% | -26% | 13% |
| Charlotte Hungerford | 836 | 2% | 26% | 13% |
| CT Children's Medical Center | 494 | 1% | 24% | 7% |
| Danbury | 1,918 | 4% | -8% | 10% |
| Day Kimball | 529 | 1% | -31% | 11% |
| Greenwich | 1,223 | 3% | 60% | 10% |
| Griffin | 810 | 2% | -17% | 12% |
| Hartford | 3,800 | 8% | 3% | 9% |
| John Dempsey | 873 | 2% | -19% | 10% |
| Johnson | 574 | 1% | -26% | 18% |
| Lawrence and Memorial | 1,706 | 4% | -7% | 12% |
| Manchester | 838 | 2% | -5% | 10% |
| Middlesex | 2,071 | 4% | 20% | 14% |
| MidState | 1,468 | 3% | -11% | 14% |
| Milford | 525 | 1% | -19% | 15% |
| New Milford | 339 | 1% | 3% | 15% |
| Norwalk | 1,785 | 4% | 5% | 12% |
| Rockville | 467 | 1% | -5% | 19% |
| Saint Francis | 3,088 | 7% | 9% | 10% |
| Saint Mary's | 1,454 | 3% | -11% | 12% |
| Saint Raphael* | 2,037 | 4% | -37% | 14% |
| Saint Vincent's | 2,586 | 6% | 1% | 12% |
| Sharon | 362 | 1% | 96% | 13% |
| Stamford | 1,396 | 3% | 3% | 10% |
| Waterbury | 1,368 | 3% | -4% | 11% |
| William W. Backus | 1,648 | 4% | 2% | 14% |
| Windham | 626 | 1% | -26% | 14% |
| Yale-New Haven* | 5,961 | 13% | 12% | 9% |
| Total | 46,251 | 100% | -4% | 11% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Table includes both Connecticut and out of state residents admitted to Connecticut hospitals with a PQI condition.

*In September 2012, Yale-New Haven Hospital acquired the assets of Saint Raphael and became a single hospital with two main campuses which reduced the number of acute care hospitals in the state to 29.

PQI hospitalizations varied by hospital size

Hospitals with over 350 staffed beds accounted for 43% of all PQI hospitalizations. These hospitals treated the majority of pediatric, minority and Medicaid PQI hospitalizations.

Hospitals with fewer than 100 staffed beds had a higher proportion of PQI hospitalizations (14%) compared to hospitals staffing more than 350 beds (10%) and likely resulted from treating a greater number of older patients (average PQI age was 69 compared to 61 at hospitals with >350 staffed beds).

Table 7: PQI hospitalization characteristics by hospital size, 2012

| PQI Characteristic | Hospital Size (# of Staffed Beds) | | | | All Hospitals |
|--|--------------------------------------|----------------------|----------------------|--------------------|---------------|
| | < 100 ¹ | 101-200 ² | 201-350 ³ | > 350 ⁴ | |
| Number of Hospitals | 9 | 8 | 7 | 6* | 30* |
| PQIs as a share of all hospitalizations | 14% | 12% | 11% | 10% | 11% |
| PQI volume change ('08-'12) | -12% | -2% | -1% | -5% | -4% |
| <i>Share of:</i> | | | | | |
| All hospitalizations | 9% | 21% | 24% | 47% | 100% |
| All PQI hospitalizations | 11% | 23% | 24% | 43% | 100% |
| All Pediatric PQI hospitalizations | 3% | 25% | 20% | 52% | 100% |
| Minority PQI hospitalizations | 2% | 16% | 20% | 61% | 100% |
| Medicaid PQI hospitalizations | 6% | 21% | 21% | 52% | 100% |
| <i>Share of PQI hospitalizations that are:</i> | | | | | |
| Senior Citizens | 65% | 59% | 60% | 54% | 58% |
| Medicare | 71% | 64% | 63% | 59% | 63% |
| Medicaid | 9% | 16% | 16% | 21% | 18% |
| Uninsured | 3% | 2% | 2% | 2% | 2% |
| White non-Hispanic | 94% | 77% | 76% | 62% | 72% |
| Average age of PQI patients | 69 | 64 | 65 | 61 | 64 |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database
Table figures derived from all volume of Connecticut and out of state residents admitted to Connecticut hospitals with a PQI condition.

* Number now reduced by one because in September 2012, Yale-New Haven Hospital acquired the assets of Saint Raphael and became a single hospital with two main campuses.

Hospital grouping based on the October 2013 Connecticut Hospital Association Quarterly Reporting to CT DPH Office of Health Care Access.

¹ Includes Charlotte Hungerford, Day Kimball, Griffin, Johnson Memorial, Milford, New Milford, Rockville, Sharon and Windham Hospitals.

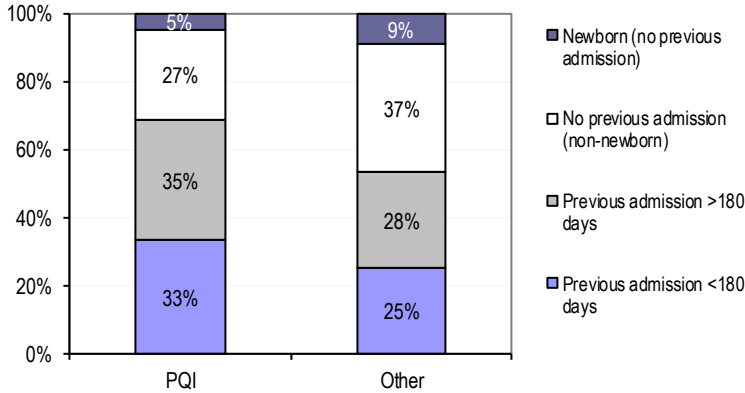
² Includes Bristol, CT Children's, Manchester, Middlesex, MidState, Norwalk, Saint Mary's and Waterbury Hospitals.

³ Includes William Backus, Bridgeport, Danbury, Greenwich, John Dempsey, Lawrence & Memorial and Stamford Hospitals.

⁴ Includes Hartford, Hospital of Central CT, St. Francis, St. Vincent and Yale New-Haven Hospitals.

PQI patients were more likely to have a previous admission

Figure 2: Previous hospitalization of PQI and other patients, 2012



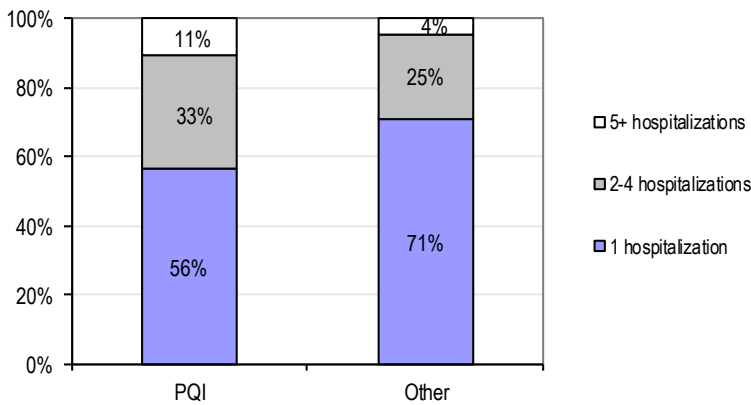
Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

PQI patients were more likely to have been previously admitted (same hospital), but not necessarily for a PQI condition.

Thirty-three percent of PQI patients had a previous admission within six months of their last hospitalization.

Thirty-five percent had a previous admission more than six months from their last hospitalization.

Figure 3: Number of hospitalizations of PQI and other patients, 2008 - 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

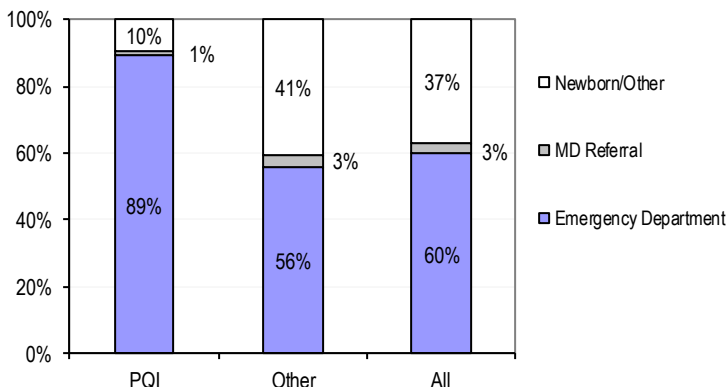
Over the five year period, 44% of PQI patients had multiple hospitalizations (same hospital), 11% had five or more.

All other patients had fewer hospitalizations by comparison (29%, 4% respectively).

On average, PQI patients were readmitted 1.4 times more often than all other patients.

Most PQI patients utilized the emergency department prior to hospitalization

Figure 4: Admission source of PQI, other and all patients, 2012

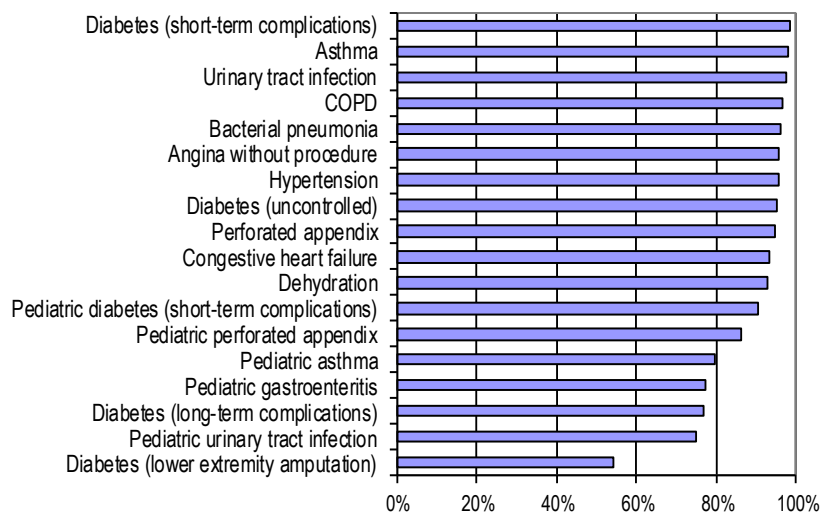


Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Nearly nine out of ten (89%) PQI patients were admitted directly from the ED, compared to 56% for other patient types.

PQI conditions accounted for 17% of hospital admissions originating from the ED.

Figure 5: Share of PQI patients with emergency department charges, 2012



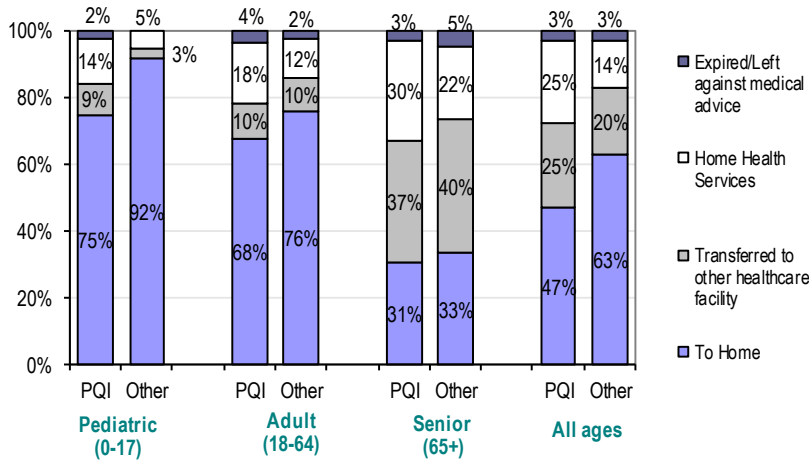
Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Among PQI hospitalizations, adults with short-term diabetic complications, (99%), asthma (98%) and urinary tract infections (98%) were the most likely to have originated in the ED.

With the exception of diabetes lower extremity amputation (54%), all other PQI conditions had high rates of admission from the ED.

After leaving the hospital, many PQI patients required additional health care services

Figure 6: Discharge status of PQI and other patients by Age (in years), 2012

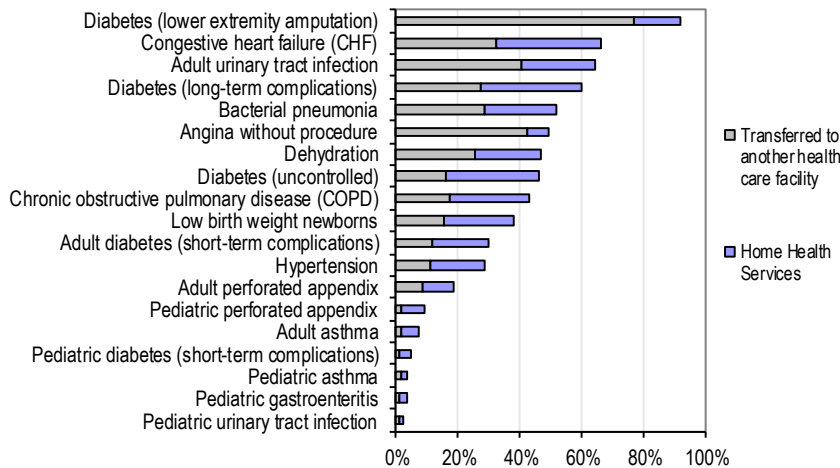


Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

PQI patients were more likely to require additional health care services after discharge from an acute care hospital. Half (50%) of PQI patients (34% for all other patients) required additional health care.

Of the three age groups examined, seniors required the most post-discharge care. In fact, two out of three senior PQI hospitalizations required additional care: 37% were transferred to other facilities (e.g., short-term rehab, intermediate or skilled nursing), while 30% received home health services.

Figure 7: Share of PQI patients that required further services after discharge, 2012



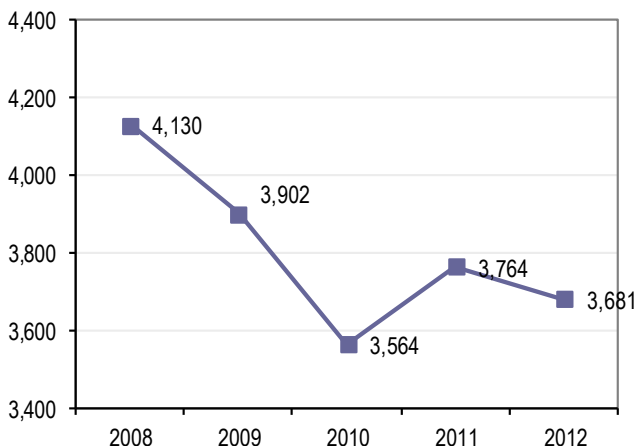
Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

PQI conditions with the highest use of health care services following discharge included: diabetic lower extremity amputations (92%), CHF (66%) and adult urinary tract infections (64%).

Pediatric PQI hospitalizations were the least likely to require care following discharge from the hospital.

Readmission for the same PQI condition declined

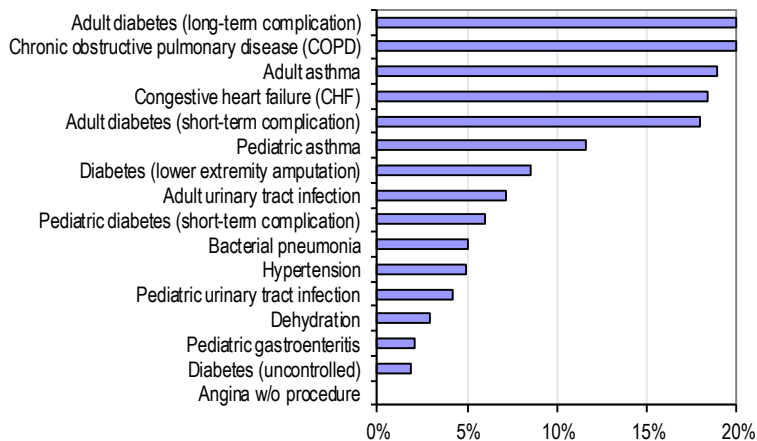
Figure 8: Patients with multiple admissions for the same PQI condition in a year, 2008 - 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Between 2008 and 2012, the number of patients who had multiple hospitalizations for the same PQI condition decreased from 4,130 to 3,681 (-11%).

Figure 9: Share of PQI patients with multiple admissions for the same PQI condition in the year, 2012



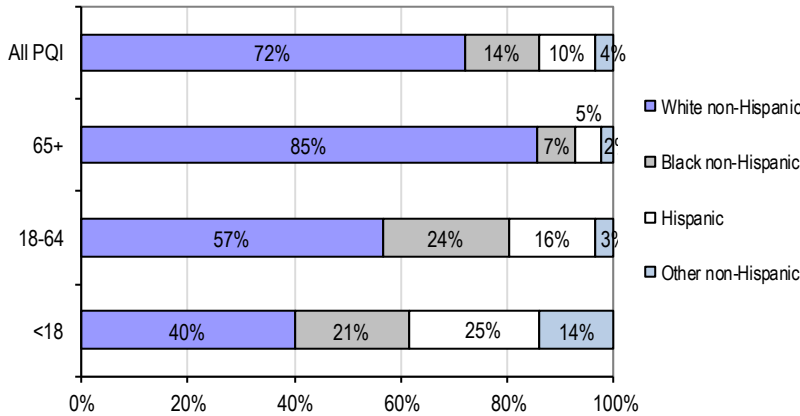
Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Ten percent of PQI patients had multiple same-condition hospitalizations in 2012. Adult diabetes with long-term complications (20%), COPD (20%), asthma (19%) and CHF (18%) were PQI conditions most likely to require multiple hospitalizations.

PQI patients with angina (0%), uncontrolled diabetes (2%) and pediatric gastroenteritis (2%) had the lowest incidence of multiple hospitalizations.

Majority of PQI patients were White non-Hispanic

Figure 10: Race and age of PQI patients, 2012



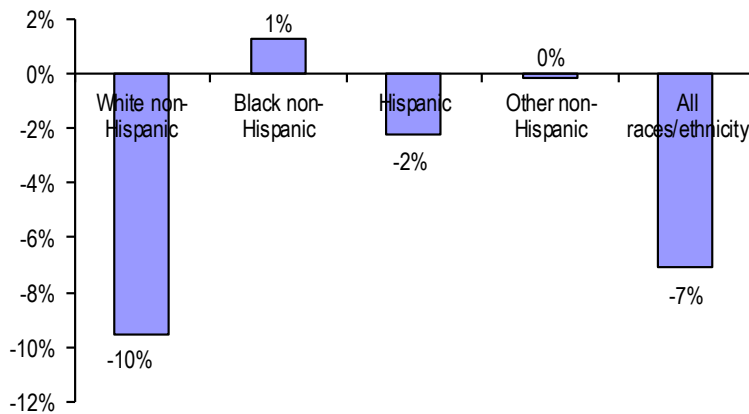
Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Nearly three-quarters of PQI patients were White non-Hispanic. However, race/ethnicity varies significantly by age group.

Eighty-five percent (85%) of PQI patients 65 and older were White non-Hispanics, closely matching Connecticut's 65+ population.⁶

Minorities accounted for a larger percentage of younger PQI patients; 43% of adults between ages 18 and 64 years old and 60% of all children (<18).

Figure 11: PQI hospitalizations growth by patient race/ethnicity, between 2008 and 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

PQI hospitalizations dropped by 7% between 2008 and 2012.

White non-Hispanic PQI patients had the largest drop (3,400, -10%).⁷

Overall Hispanic PQI patients declined (-2%), primarily the result of fewer pediatric hospitalizations.

In contrast, Black non-Hispanic PQI hospitalizations increased by 1%.

Black non-Hispanics had the highest PQI rates

Black non-Hispanics had the highest overall rate of pediatric and adult PQI hospitalizations (per 100,000 population), and lead 12 individual PQI conditions.

Hispanics were at particularly high risk for pediatric conditions, as well as adult asthma, COPD, diabetes and low birth weight newborns. Hispanic adults were less likely than other race/ethnicities to be hospitalized for a PQI condition.

White non-Hispanics had an overall adult PQI rate that was higher than the statewide rate. White non-Hispanics were more likely to be hospitalized for angina, dehydration, perforated appendix and conditions more common among the elderly, such as bacterial pneumonia, CHF and urinary tract infections.

Table 8: PQI rates by race, 2012 (per 100,000 population)

| Quality Indicator | Black non-Hispanic | Hispanic | White non-Hispanic | All Races/Ethnicities |
|---|--------------------|--------------|--------------------|-----------------------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | |
| Asthma | 410 | 182 | 56 | 138 |
| Diabetes short-term complications | 26 | 16 | 11 | 15 |
| Gastroenteritis | 46 | 66 | 28 | 45 |
| Perforated appendix ¹ | 23 | 25 | 22 | 26 |
| Urinary tract infection | 22 | 30 | 17 | 22 |
| Overall pediatric PQI rate | 328 | 175 | 73 | 132 |
| Adult Quality Indicators (Ages 18+) | | | | |
| Angina without a procedure | 14 | 10 | 16 | 14 |
| Asthma | 168 | 98 | 39 | 66 |
| Bacterial pneumonia | 252 | 144 | 318 | 255 |
| Chronic obstructive pulmonary disease (COPD) | 687 | 519 | 384 | 414 |
| Congestive heart failure (CHF) | 399 | 184 | 360 | 295 |
| Dehydration | 160 | 71 | 142 | 120 |
| Diabetes (long-term complications) | 287 | 118 | 89 | 103 |
| Diabetes (short-term complications) | 185 | 77 | 40 | 59 |
| Diabetes (lower extremity amputation) | 33 | 12 | 10 | 11 |
| Diabetes (uncontrolled) | 28 | 15 | 7 | 9 |
| Hypertension | 157 | 46 | 36 | 45 |
| Low birth weight newborns ¹ | 9 | 7 | 5 | 6 |
| Perforated appendix ¹ | 30 | 20 | 32 | 29 |
| Urinary tract infection | 183 | 132 | 227 | 184 |
| Overall adult PQI rate | 2,146 | 1,091 | 1,525 | 1,365 |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Bold blue numbers indicate rates above state averages presented in the last column.

Rate (per 100,000 people): Rate calculation according to AHRQ guidelines. For each PQI, the number of hospital discharges was divided by the appropriate population figure and then multiplied by 100,000. Changes to version 4.5 of the WinQI tool does not enable reliable calculation of risk adjusted rates by race and ethnicity.

¹Condition specific rates – populations were those who had appendicitis and all births. These rates are per 100 appendicitis hospitalizations and 100 births.

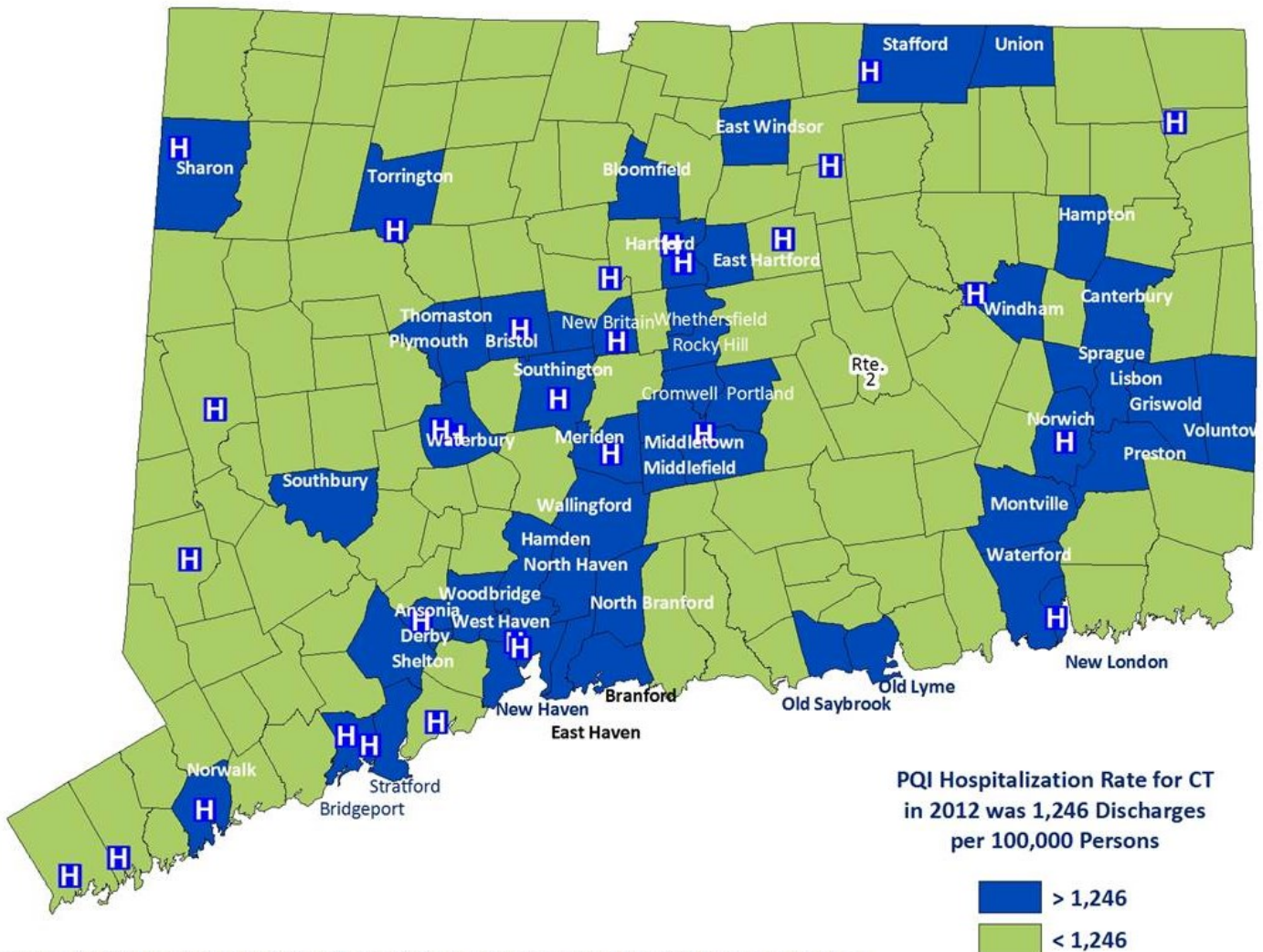
Low birth weight newborns are grouped with the adult PQIs because low birth weight is related to the mother's prenatal care.

Rates for other racial groups are not presented because their small number of PQIs hospitalizations affects the reliability of their rates.

PQI hospitalization rates varied by town

In 2012, the PQI hospitalization rate for Connecticut was 1,246 discharges per 100,000 persons. Those towns with PQI hospitalization rates greater than the state rate had a hospital located within the town or in close proximity.

Map 1: PQI hospitalization rates by town of residence, 2012



Sources for PQI Hospitalization Rates: CT DPH OHCA Acute Care Hospital Inpatient Discharge Database and HCQSAR Town-level Population Estimates for Connecticut.

Source for Hospital Information: DPH Licensure Division

Prepared May 2014, DPH OHCA

PQI rates were highest for New Haven County

New Haven County had the highest overall adult and pediatric rates, and the highest rate in 10 individual PQI conditions. There was a particularly high incidence of hospitalization for pediatric and adult asthma, pediatric gastroenteritis and diabetes.

Hartford County's overall adult and pediatric PQI rates largely mirrored state averages, but 9 individual adult PQI rates were higher than the state average.

New London (5), Middlesex (4), Fairfield (4), Litchfield (3) and Tolland (3), Windham (3) Counties had few PQI indicator rates above the state average.

Table 9: PQI rates by county, 2012 (rates per 100,000 population)

| Quality Indicator | Fairfield | Hartford | Litchfield | Middlesex | New Haven | New London | Tolland | Windham | CT |
|---|------------|------------|------------|------------|--------------|------------|------------|------------|-------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | | | | | | |
| Asthma | 116 | 136 | 42 | 44 | 231 | 73 | 41 | 65 | 138 |
| Diabetes (short-term complications) | 14 | 19 | 10 | 16 | 16 | 2 | 0 | 15 | 15 |
| Gastroenteritis | 65 | 40 | 11 | 16 | 46 | 34 | 14 | 24 | 45 |
| Perforated appendix ¹ | 19 | 26 | 34 | 37 | 29 | 38 | 39 | 0 | 26 |
| Urinary tract infection | 32 | 18 | 14 | 9 | 24 | 11 | 16 | 0 | 22 |
| Overall pediatric PQI rate | 116 | 144 | 57 | 72 | 195 | 74 | 28 | 85 | 132 |
| Adult Quality Indicators (Ages 18+) | | | | | | | | | |
| Angina without a procedure | 12 | 15 | 20 | 14 | 9 | 16 | 13 | 22 | 14 |
| Asthma | 55 | 61 | 34 | 55 | 92 | 65 | 23 | 48 | 66 |
| Bacterial pneumonia | 226 | 238 | 233 | 220 | 263 | 288 | 259 | 274 | 255 |
| Chronic obstructive pulmonary disease (COPD) | 360 | 362 | 356 | 369 | 471 | 523 | 254 | 484 | 414 |
| Congestive heart failure (CHF) | 272 | 315 | 227 | 276 | 317 | 243 | 218 | 245 | 295 |
| Dehydration | 125 | 108 | 94 | 127 | 131 | 101 | 58 | 93 | 120 |
| Diabetes (long-term complications) | 92 | 109 | 60 | 80 | 126 | 89 | 72 | 82 | 103 |
| Diabetes (short-term complications) | 53 | 61 | 42 | 53 | 75 | 43 | 21 | 29 | 59 |
| Diabetes (lower extremity amputation) | 9 | 13 | 4 | 7 | 16 | 8 | 8 | 6 | 11 |
| Diabetes (uncontrolled) | 9 | 9 | 6 | 4 | 12 | 11 | 5 | 6 | 9 |
| Hypertension | 54 | 47 | 20 | 25 | 48 | 29 | 20 | 29 | 45 |
| Low birth weight newborns ¹ | 6 | 7 | 5 | 4 | 7 | 6 | 6 | 4 | 6 |
| Perforated appendix ¹ | 27 | 31 | 32 | 31 | 32 | 25 | 38 | 21 | 29 |
| Urinary tract infection | 156 | 201 | 117 | 181 | 209 | 161 | 156 | 102 | 184 |
| Overall adult PQI rate | 1,242 | 1,354 | 1,053 | 1,229 | 1,518 | 1,327 | 987 | 1,197 | 1,365 |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

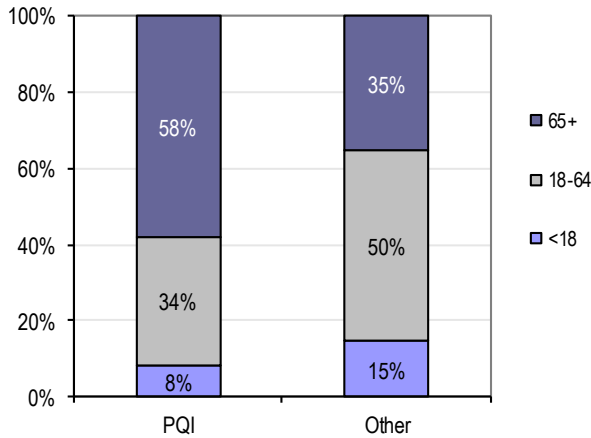
Bold blue numbers indicate rates above state averages presented in the last column.

¹Condition specific rates – populations were all births and those who had appendicitis. These rates are per 100 births and 100 appendicitis discharges. Low birth weight newborns are grouped with the adult PQIs because as a quality indicator low birth weight is related to the mother's prenatal care.

Due to their lower volume of hospitalizations, some caution should be taken in interpreting the rates from the less populated counties. Additional caution is also necessary for low volume PQIs.

PQI patients were most often elderly

Figure 12: Age (in years) of PQI and other patients, 2012

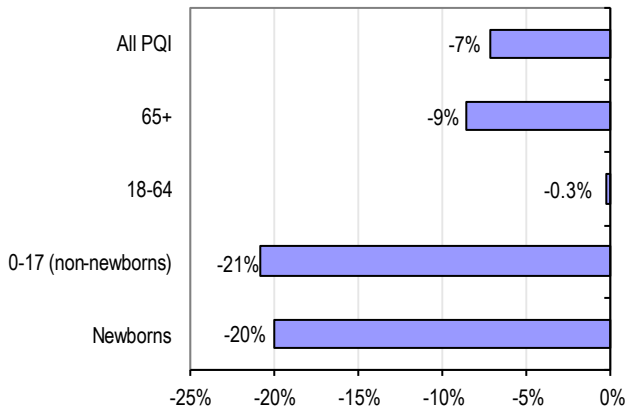


Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Senior citizens accounted for 58% of PQI hospitalizations.

Compared to all other patient types, PQI patients had a higher percentage of seniors (58% versus 35%) and a lower percentage of adults between ages 18 and 64 (34% versus 50%) and children (8% versus 15%).

Figure 13: Change in PQI hospitalizations by patient age (in years), 2008 and 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Between 2008 and 2012, PQI hospitalizations declined in every age category.

The reduction in PQI hospitalizations for adults between ages 18 and 64, however, was negligible.

Children's PQI hospitalizations declined the most (-21%).

Number of low birth weight newborns declined

In 2012, there were nearly 2,100 low birth weight newborns (less than 2,500 grams or 5 lb. 8 oz.) accounting for over \$173 million in total charges and 27,600 patient days. About 7% of all newborns were low birth weight.

From 2008 to 2012, the number of low birth weight newborns decreased 20%; in part, due to an overall decline in hospital births. The average charge for a low birth weight newborn hospital stay was \$83,170 with an average stay of 13.3 days, well above the charge and length of stay for a normal weight newborn (\$5,553, 2.5 days).

After leaving the hospital, more than half (58%) of low birth weight newborns were discharged home; 23% required home health care services and 16% were transferred to other health care facilities.

Private insurers and Medicaid were the primary payers for nearly all low birth weight newborns. Minorities accounted for more than half (55%) of low birth weight newborns.

Table 10: Low birth weight and normal newborn volumes, 2012

| Statistic | Low birth weight newborns ¹ | | Normal newborn ² | |
|--|--|--------------------|-----------------------------|--------------------|
| | Statistics | Change 2008 & 2012 | Statistics | Change 2008 & 2012 |
| Volume | | | | |
| Hospitalizations | 2,084 | -20% | 24,862 | -10% |
| Total charges ³ | \$173,243,255 | -7% | \$138,064,717 | 33% |
| Average charge | \$83,170 | 16% | \$5,553 | 48% |
| Total patient days | 27,626 | -29% | 59,722 | -13% |
| Average hospital stay (days) | 13.3 | -12% | 2.4 | -13% |
| Disposition after hospitalization | | | | |
| To home | 58% | -24% | 97% | -10% |
| Transferred to other facility | 16% | -19% | 0% | -24% |
| Home health services | 23% | -5% | 3% | -20% |
| Expired | 4% | -28% | 0% | 0% |
| Primary insurer | | | | |
| Private | 49% | -8% | 55% | -20% |
| Medicaid | 49% | -30% | 41% | 5% |
| Uninsured | 2% | 6% | 2% | -18% |
| Medicare/other federal | 0% | 0% | 2% | 46% |
| Race/Ethnicity | | | | |
| White non-Hispanic | 45% | -24% | 56% | -11% |
| Black non-Hispanic | 19% | -29% | 12% | -10% |
| Hispanic | 22% | -14% | 18% | -14% |
| Other non-Hispanic | 14% | 1% | 14% | -3% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

¹Reporting CT resident newborns with birth weight less than 2500 grams.

²CT resident newborns assigned Medicare Severity Diagnosis Related Group (MS-DRG 795) during a hospitalization, that is, a full-term newborn without major or significant problems.

³In 2012, the statewide ratio of cost to charges was .36, meaning that total costs were 36 cents for every dollar of charges. Due to discounts and other factors, payments differ from charges. The ratio of payment to charges was 0.34.

More than half of pediatric PQI hospitalizations were asthma-related

In 2012, pediatric (under age 18 years old) PQI patients accounted for 1,690 hospitalizations and almost 3,700 patient days. More than half of these hospitalizations were asthma-related. One in ten children treated for an asthma-related PQI had multiple hospitalizations in 2012.

Only 4% of pediatric PQI patients required additional health care services at another facility or at home following discharge. Overall, 7% of pediatric PQI patients had multiple hospitalizations for the same condition in 2012.

Table 11: Pediatric PQI volume, 2012

| Quality Indicator | Hospitalizations | Patient Days | Charges ² | Percent with emergency department charges | Transferred to other institution/or discharged to home healthcare | Multiple admissions for same PQI |
|-------------------------------------|------------------|--------------|----------------------|---|---|----------------------------------|
| Asthma | 935 | 1,611 | \$13,460,095 | 80% | 4% | 10% |
| Diabetes (short-term complications) | 84 | 154 | \$1,353,161 | 90% | 5% | 6% |
| Gastroenteritis | 332 | 643 | \$4,398,102 | 77% | 3% | 2% |
| Perforated appendix | 174 | 903 | \$7,668,462 | 86% | 9% | -- |
| Urinary tract infection | 166 | 383 | \$2,297,009 | 75% | 2% | 4% |
| Totals¹ | 1,690 | 3,687 | \$29,121,568 | 80% | 4% | 7% |

Source: CT Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of Connecticut non-newborn children ages 0 to 17 admitted to Connecticut acute care hospitals with a PQI condition.

Emergency Department charges: Share of hospitalizations for a PQI condition that were admitted to the hospital through the emergency department.

Transferred to other institution/or discharged to home health care: Share of hospitalizations for a PQI condition who were transferred to another health care facility for additional treatment or those discharged to home health care services.

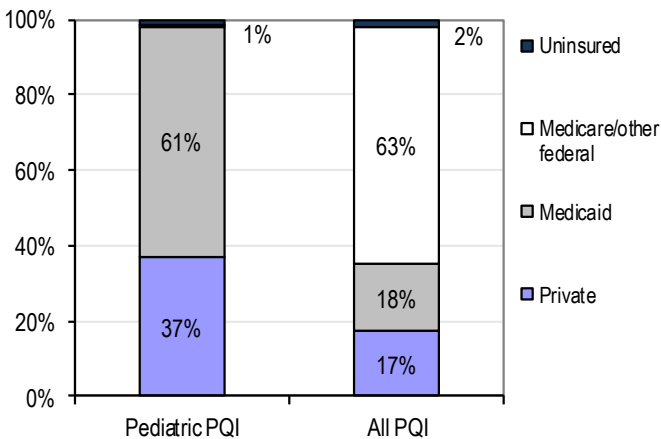
Multiple admissions for same PQI: Share of PQI patients with multiple admissions for the same PQI in 2012.

¹Reported total hospitalizations, charges, and patient days are not the summed total for all individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their hospitalizations, charges and patient days are counted in the individual totals of multiple PQI conditions. Overall totals are presented without any double counting of these patients.

²In 2012, the statewide ratio of cost to charges was .36, meaning that total costs were 36 cents for every dollar of charges. Due to discounts and other factors, payments differ from charges. The statewide ratio of payment to charges was 0.34.

Majority of pediatric PQI patients were Medicaid-covered and racial minorities

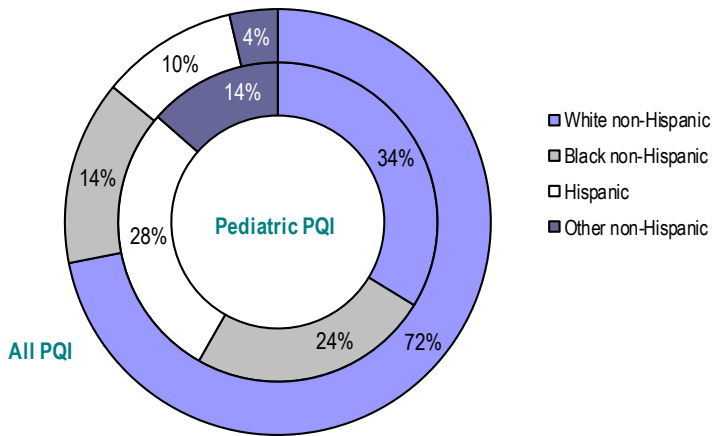
Figure 14: Primary insurer for pediatric and all PQI patients, 2012



Source: CT Department of Public Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

In contrast to the overall PQI population (predominantly Medicare covered seniors), pediatric PQI hospitalizations were covered primarily by Medicaid (61%) or private insurance (37%).

Figure 15: Race of pediatric and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Pediatric PQI patients were more than twice as likely to be minorities, compared to the overall PQI patient population (66% versus 28%).

Most adult PQI patients received ED care prior to hospitalization

In 2012, there were approximately 15,000 PQI hospitalizations for adults between ages 18 to 64 years old, accounting for nearly \$410 million in total charges and 65,000 patients days. COPD, bacterial pneumonia, and diabetic conditions accounted for more than half of the PQI hospitalizations.

Nine out of ten (93%) PQI hospitalizations of adults between ages 18 and 64 originated in the emergency department. Nearly three out of ten (28%) required additional care at another facility or at home following discharge, and 11% had multiple admissions for the same PQI condition.

Table 12: Adult PQI volume, 2012

| Quality Indicator | Hospitalizations | Patient Days | Charges ² | Percent with emergency department charges | Transferred to other institution/or discharged to home healthcare | Multiple admissions for same PQI |
|--|------------------|---------------|----------------------|---|---|----------------------------------|
| Angina without a procedure | 198 | 306 | \$3,378,742 | 95% | 43% | 0% |
| Asthma | 609 | 1,810 | \$11,568,819 | 98% | 7% | 13% |
| Bacterial pneumonia | 2,292 | 10,436 | \$62,801,263 | 95% | 24% | 4% |
| Chronic obstructive pulmonary disease (COPD) | 3,124 | 12,448 | \$73,654,921 | 97% | 24% | 18% |
| Congestive heart failure (CHF) | 1,647 | 9,061 | \$60,990,826 | 91% | 45% | 17% |
| Dehydration | 1,220 | 4,007 | \$24,298,599 | 90% | 23% | 3% |
| Diabetes (long-term complications) | 1,775 | 10,967 | \$68,999,642 | 78% | 50% | 18% |
| Diabetes (short-term complications) | 1,336 | 4,988 | \$33,526,948 | 99% | 23% | 12% |
| Diabetes (lower extremity amputation) | 172 | 2,080 | \$15,004,412 | 58% | 92% | 9% |
| Diabetes (uncontrolled) | 166 | 463 | \$2,822,586 | 94% | 30% | 3% |
| Hypertension | 715 | 1,993 | \$14,885,907 | 95% | 13% | 6% |
| Perforated appendix | 537 | 2,532 | \$19,195,459 | 95% | 11% | --- |
| Urinary tract infection | 1,353 | 4,972 | \$27,902,661 | 96% | 27% | 5% |
| Totals¹ | 15,043 | 64,719 | \$409,548,979 | 93% | 28% | 11% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of Connecticut residents ages 18 to 64 admitted to Connecticut acute care hospitals with a PQI condition.

Emergency Department charges: Share of hospitalizations for a PQI condition treated in the emergency department and then admitted for inpatient care.

Transferred to other institution/or discharged to home health care: Share of hospitalizations for a PQI condition who were transferred to another health care facility for additional treatment or those discharged to home health care services.

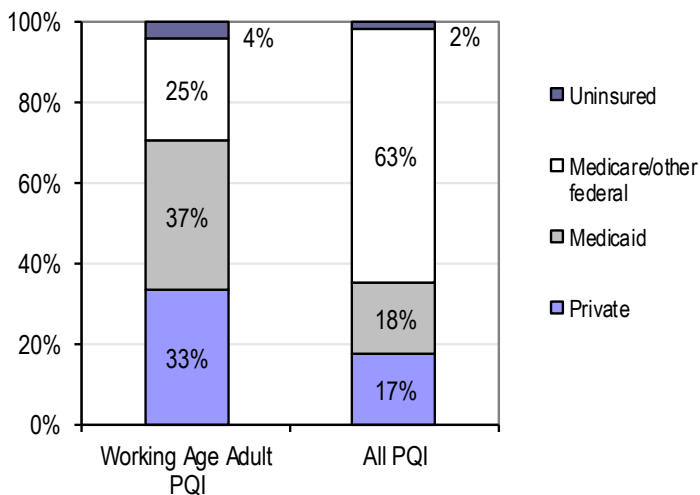
Multiple admissions for same PQI: Share of PQI patients with multiple admissions for the same PQI in 2012.

¹Reported total hospitalizations, charges, and patient days are not the summed total for all individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their hospitalizations, charges and patient days are counted in the individual totals of multiple PQI conditions. Overall totals are presented without any double counting of these patients.

²In 2012, the statewide ratio of cost to charges was .36, meaning that total costs were 36 cents for every dollar of charges. Due to discounts and other factors, payments differ from charges. The ratio of payment to charges was 0.34 and varied by primary insurer.

Most PQI adults were insured

Figure 16: Primary insurer for working age adult and all PQI patients, 2012

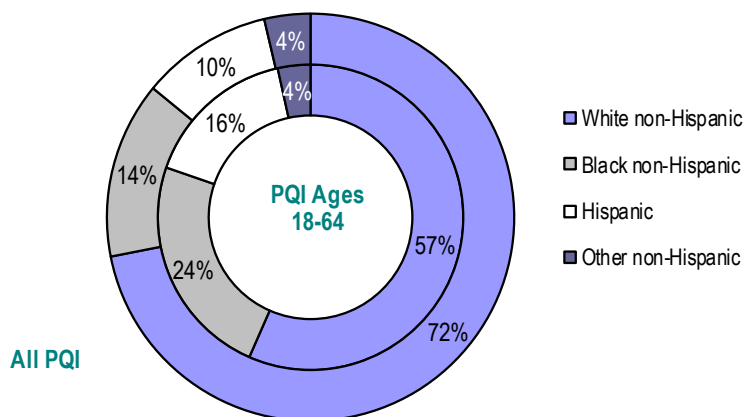


Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

The vast majority of PQI patients had some form of health care coverage. Overall, most PQI patients were covered by Medicare (63%). In contrast, adult PQI patients between ages 18 and 64 years old were more likely to be covered by Medicaid (37%) or private insurance (33%).

Adult PQI patients between ages 18 and 64 years old had a slightly higher uninsured rate (4%) than the overall PQI patient population (2%).

Figure 17: Race of working age adult and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Minorities represented a larger percentage (43%) of adult PQI patients between ages 18 and 64 years old than the overall PQI patient population (28%).

Congestive heart failure, bacterial pneumonia and COPD were the leading PQI conditions for seniors

Approximately 26,000 seniors were hospitalized in 2012 for a PQI condition, accounting for 131,000 patient days and \$733 million in charges. Congestive heart failure (CHF), bacterial pneumonia, COPD and urinary tract infections accounted for over 80% of the hospitalizations, patient days and charges.

Ninety-five percent of PQI hospitalizations for the 65 years and older age group originated in the emergency department. One in ten seniors had multiple hospitalizations for the same PQI condition.

CHF (16%), COPD (14%) and diabetes with long-term complications (10%) were the PQI conditions with the highest percentage of multiple hospitalizations for seniors.

Following discharge, two-thirds of senior citizen PQI patients required additional care at another health care facility (21%) or at home (45%).

Table 13: Senior Citizen PQI volume, 2012

| Quality Indicator | Hospitalizations | Patient Days | Charges ² | Percent with emergency department charges | Transferred to other institution/or discharged to home healthcare | Multiple admissions for same PQI |
|--|------------------|----------------|----------------------|---|---|----------------------------------|
| Angina without a procedure | 193 | 401 | \$3,339,203 | 0% | 55% | 0% |
| Asthma | 0 | 0 | \$0 | --- | --- | --- |
| Bacterial pneumonia | 5,284 | 28,702 | \$156,922,466 | 96% | 63% | 5% |
| Chronic obstructive pulmonary disease (COPD) | 4,232 | 20,429 | \$110,286,791 | 96% | 57% | 14% |
| Congestive heart failure (CHF) | 7,364 | 40,576 | \$234,946,094 | 94% | 71% | 16% |
| Dehydration | 2,294 | 9,276 | \$51,308,251 | 95% | 60% | 3% |
| Diabetes (long-term complications) | 1,182 | 6,656 | \$43,151,112 | 74% | 74% | 10% |
| Diabetes (short-term complications) | 221 | 1,187 | \$7,285,427 | 99% | 71% | 5% |
| Diabetes (lower extremity amputation) | 155 | 1,577 | \$10,556,712 | 50% | 92% | 7% |
| Diabetes (uncontrolled) | 99 | 409 | \$1,971,092 | 97% | 73% | 0% |
| Hypertension | 586 | 1,888 | \$12,765,346 | 96% | 47% | 3% |
| Perforated appendix | 166 | 1,234 | \$9,041,243 | 93% | 44% | --- |
| Urinary tract infection | 4,216 | 19,108 | \$97,003,768 | 98% | 76% | 7% |
| Totals¹ | 25,920 | 130,702 | \$733,469,018 | 95% | 66% | 10% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of Connecticut residents ages 65+ admitted to Connecticut acute care hospitals with a PQI condition.

Emergency Department charges: Share of hospitalizations for a PQI condition treated in the emergency department and then admitted for inpatient care.

Transferred to other institution/or discharged to home health care: Share of hospitalizations for a PQI condition who were transferred to another health care facility for additional treatment or those discharged to home health care services.

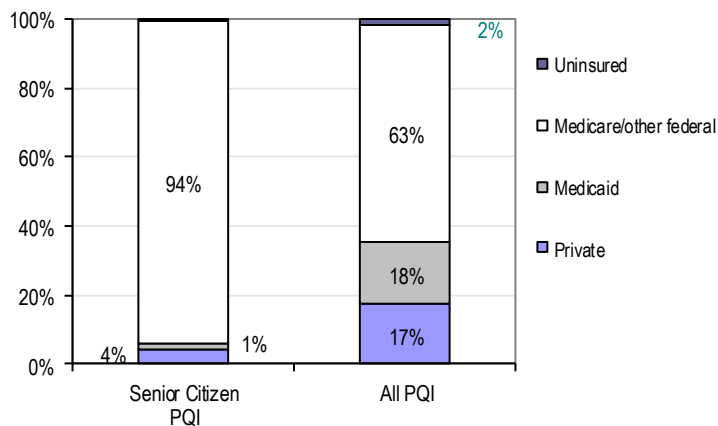
Multiple admissions for same PQI: Share of PQI patients with multiple admissions for the same PQI in 2012.

¹Reported total hospitalizations, charges, and patient days are not the summed total for all individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their hospitalizations, charges and patient days are counted in the individual totals of multiple PQI conditions. Overall totals are presented without any double counting of these patients.

²In 2012, the statewide ratio of cost to charges was .36, meaning that total costs were 36 cents for every dollar of charges. Due to discounts and other factors, payments differ from charges. The statewide Medicare ratio of payment to charges was 0.30.

Most senior PQI patients were Medicare-insured and White non-Hispanic

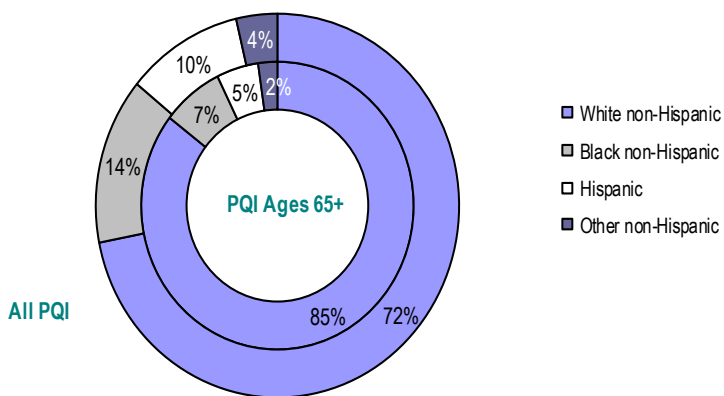
Figure 18: Primary insurer for seniors and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Ninety-four percent of PQI hospitalizations, for patients 65 years and older were covered by Medicare.

Figure 19: Race of seniors and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Most seniors hospitalized for PQI conditions were White non-Hispanic (85%), closely reflecting Connecticut's 65+ population.

Fewer privately insured PQI patients were admitted through ED compared to all PQI patients

In 2012, privately insured Connecticut residents accounted for about 7,700 PQI hospitalizations, 40,600 patient days and nearly \$259 million in charges. The most common conditions for privately insured PQI-related hospitalizations were bacterial pneumonia, COPD and low weight birth newborns.

Compared to the overall PQI patient population, fewer privately insured PQI patients originated in the emergency department (77% *versus* 89%) or required additional health care services following discharge (23% *versus* 50%).

In addition, privately insured PQI patients had a slightly lower percent of multiple admissions for the same PQI (7% *versus* 10%). Multiple admissions were most common for patients with diabetes (long-term complications and lower extremity amputations) and CHF.

Table 14: Private coverage PQI volume, 2012

| Quality Indicator | Hospitalizations | Patient Days | Charges ³ | Percent with emergency department charges | Transferred to other institution/or discharged to home healthcare | Multiple admissions for same PQI |
|---|------------------|---------------|----------------------|---|---|----------------------------------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | | | |
| Asthma | 306 | 494 | \$4,210,559 | 83% | 1% | 5% |
| Diabetes (short-term complications) | 37 | 64 | \$579,024 | 89% | 3% | 3% |
| Gastroenteritis | 130 | 237 | \$1,722,244 | 79% | 2% | 3% |
| Perforated appendix | 96 | 448 | \$3,887,696 | 90% | 7% | --- |
| Urinary tract infection | 60 | 144 | \$815,685 | 77% | 2% | 3% |
| Adult Quality Indicators (Ages 18+) | | | | | | |
| Angina without a procedure | 117 | 170 | \$1,817,358 | 95% | 50% | 0% |
| Asthma | 157 | 475 | \$2,881,592 | 98% | 4% | 11% |
| Bacterial pneumonia | 1,153 | 5,079 | \$29,494,309 | 91% | 19% | 3% |
| Chronic obstructive pulmonary disease (COPD) | 1,009 | 4,148 | \$22,746,915 | 93% | 16% | 11% |
| Congestive heart failure (CHF) | 733 | 3,963 | \$26,536,491 | 84% | 39% | 12% |
| Dehydration | 672 | 2,239 | \$13,029,616 | 86% | 22% | 3% |
| Diabetes (long-term complications) | 584 | 3,242 | \$21,370,847 | 67% | 47% | 14% |
| Diabetes (short-term complications) | 394 | 1,367 | \$9,049,485 | 98% | 16% | 6% |
| Diabetes (lower extremity amputation) | 56 | 696 | \$4,929,634 | 52% | 86% | 13% |
| Diabetes (uncontrolled) | 41 | 110 | \$724,754 | 93% | 20% | 2% |
| Hypertension | 284 | 743 | \$6,008,108 | 94% | 10% | 4% |
| Low birth weight newborns ¹ | 1,015 | 13,872 | \$88,039,049 | --- | 36% | --- |
| Perforated appendix | 375 | 1,645 | \$12,814,640 | 94% | 9% | --- |
| Urinary tract infection | 554 | 1,946 | \$11,099,541 | 95% | 25% | 5% |
| Totals² | 7,740 | 40,632 | \$258,579,213 | 77% | 23% | 7% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of Connecticut residents with private coverage admitted to Connecticut acute care hospitals with a PQI condition.

Emergency Department charges: Share of hospitalizations for a PQI condition treated in the emergency department and then admitted for inpatient care.

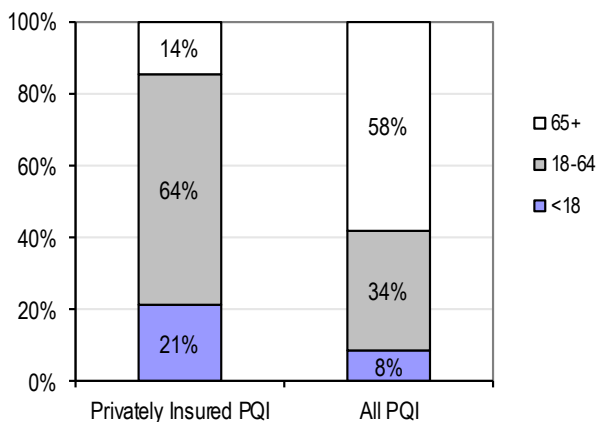
¹Low birth weight newborns are grouped with the adult PQI conditions because low birth weight is related to the mother's prenatal care.

²Reported total hospitalizations, charges, and patient days are not the summed total for all individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their hospitalizations, charges and patient days are counted in the individual totals of multiple PQI conditions. Overall totals are presented here without any double counting of these patients.

³In 2012, the statewide ratio of cost to charges was .36, meaning that total costs were 36 cents for every dollar of charges. Due to discounts and other factors, payments differ from charges. The statewide non-government (excluding uninsured) ratio of payment to charges was 0.46.

More than half of privately insured PQI patients were adults

Figure 20: Age (in years) of privately insured and all PQI patients, 2012



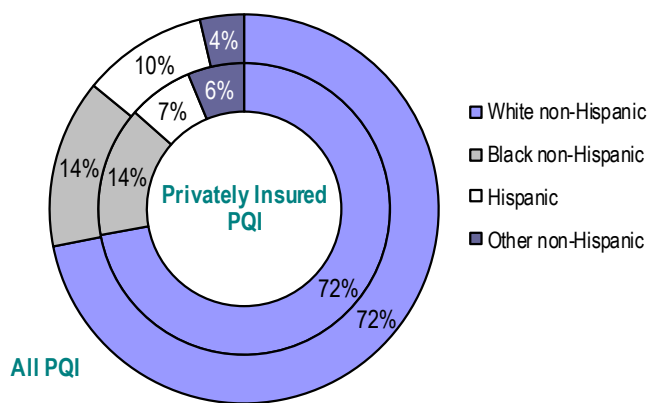
Source: CT Department of Public Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Nearly two-thirds of privately insured PQI patients were adults between ages 18 and 64.

The average age of privately insured PQI patients was 43 years old, compared to 64 for all PQI patients.

Between 2008 and 2012, the number of privately insured PQI patients decreased: pediatric (-36%), adults between ages 18 and 64 (-18%) and seniors (-2%).

Figure 21: Race of privately insured and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

The composition of race/ethnicity for privately insured PQI patients was nearly identical to the overall PQI patient population.

Low birth weight newborns accounted for nearly one third of Medicaid PQI charges

In 2012, there were approximately 8,000 Medicaid PQI hospitalizations, 40,700 patient days and \$260 million in charges. COPD, low birth weight newborns, and bacterial pneumonia were the most common reasons for Medicaid PQI-related admissions. Low birth weight newborns, COPD and diabetes with long-term complications accounted for about 55% and 53% of patient days and charges, respectively.

Table 15: Medicaid PQI Volume, 2012

| Quality Indicator | Hospitalizations | Patient Days | Charges ³ | Percent with emergency department charges | Transferred to other institution/or discharged to home healthcare | Multiple admissions for same PQI |
|---|------------------|---------------|----------------------|---|---|----------------------------------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | | | |
| Asthma | 617 | 1,095 | \$9,134,649 | 78% | 5% | 12% |
| Diabetes (short-term complications) | 42 | 76 | \$675,128 | 93% | 5% | 11% |
| Gastroenteritis | 200 | 404 | \$2,659,159 | 77% | 4% | 3% |
| Perforated appendix | 73 | 431 | \$3,547,480 | 82% | 12% | --- |
| Urinary tract infection | 102 | 230 | \$1,443,247 | 75% | 3% | 5% |
| Adult Quality Indicators (Ages 18+) | | | | | | |
| Angina without a procedure | 57 | 94 | \$1,062,314 | 95% | 37% | 0% |
| Asthma | 360 | 1,059 | \$7,056,551 | 98% | 7% | 12% |
| Bacterial pneumonia | 809 | 3,608 | \$23,158,297 | 98% | 25% | 5% |
| Chronic obstructive pulmonary disease (COPD) | 1,321 | 4,941 | \$31,011,437 | 98% | 25% | 21% |
| Congestive heart failure (CHF) | 656 | 3,754 | \$24,499,330 | 94% | 51% | 22% |
| Dehydration | 390 | 1,276 | \$7,557,317 | 93% | 24% | 2% |
| Diabetes (long-term complications) | 627 | 3,983 | \$23,744,210 | 86% | 47% | 22% |
| Diabetes (short-term complications) | 635 | 2,269 | \$15,727,287 | 99% | 22% | 15% |
| Diabetes (lower extremity amputation) | 53 | 712 | \$4,386,950 | 62% | 96% | 12% |
| Diabetes (uncontrolled) | 74 | 208 | \$1,241,645 | 96% | 34% | 3% |
| Hypertension | 327 | 951 | \$6,710,830 | 96% | 17% | 8% |
| Low birth weight newborns ¹ | 1,017 | 13,288 | \$82,449,236 | 0% | 40% | --- |
| Perforated appendix | 106 | 612 | \$4,504,535 | 98% | 18% | --- |
| Urinary tract infection | 596 | 2,176 | \$12,406,274 | 98% | 27% | 5% |
| Totals² | 8,032 | 40,739 | \$260,130,521 | 81% | 27% | 12% |

Source: CT Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of Connecticut residents with Medicaid coverage admitted to Connecticut acute care hospitals with a PQI condition.

Emergency Department charges: Share of hospitalizations for a PQI condition treated in the emergency department and then admitted for inpatient care.

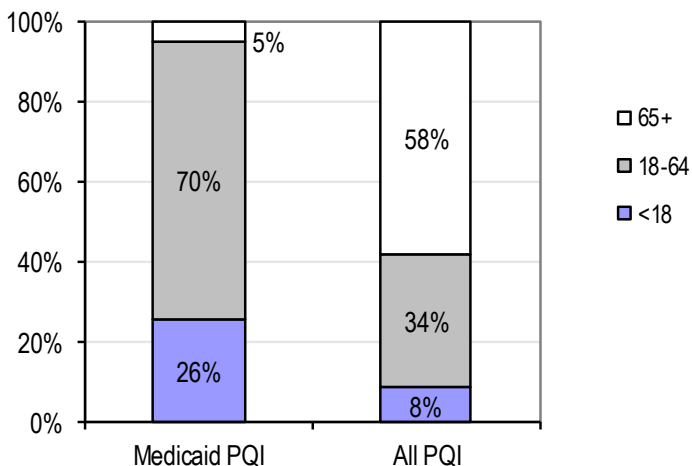
¹Low birth weight newborns are grouped with the adult PQI conditions because low birth weight is related to the mother's prenatal care.

²Reported total hospitalizations, charges, and patient days are not the summed total for all individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their hospitalizations, charges and patient days are counted in the individual totals of multiple PQIs conditions. Overall totals are presented here without any double counting of these patients.

³Due to discounts and other factors, payments differ from charges. In 2012, the ratio of Medicaid payment to charges was 24%, meaning that total payments were 24 cents for every dollar of charges. The statewide ratio of cost to charges was 0.36.

Most Medicaid PQI patients were minority adults

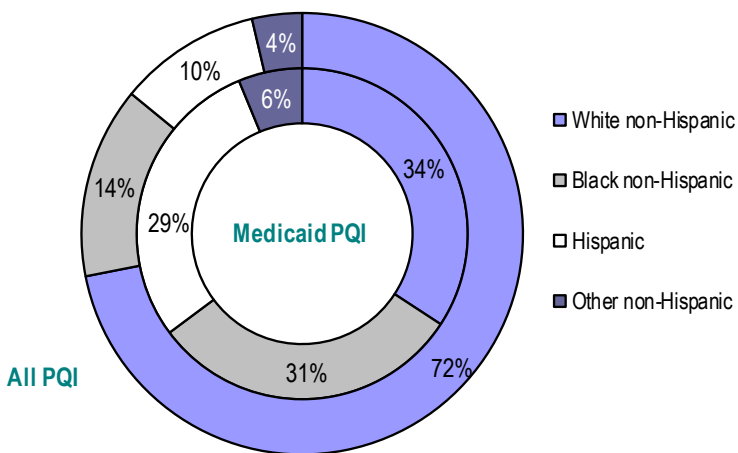
Figure 22: Age (in years) of Medicaid and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Medicaid PQI patients were primarily adults between ages 18 and 64 (70%) and children (26%).

Figure 23: Race of Medicaid and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Nearly two thirds (66%) of Medicaid PQI patients were racial/ethnic minorities, compared to 28% for all PQI patients.

Most uninsured PQI patients required ED treatment prior to a hospitalization

In 2012, there were about 800 uninsured PQI hospitalizations totaling 3,000 patient days and over \$16 million in charges. Most (93%) of the uninsured PQI hospitalizations originated in the ED. The top 3 conditions accounting for uninsured PQI hospitalizations were bacterial pneumonia, CHF and COPD.

Only 11% of uninsured PQI patients received additional care following discharge. Patients with adult asthma had the highest rate (18%) of multiple admissions for the same PQI.

Table 16: Uninsured PQI Volume, 2012

| Quality Indicator | Hospitalizations | Patient Days | Charges ³ | Percent with emergency department charges | Transferred to other institution/or discharged to home healthcare | Multiple admissions for same PQI |
|---|------------------|--------------|----------------------|---|---|----------------------------------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | | | |
| Asthma | 8 | 17 | \$83,051 | 88% | 0% | 0% |
| Diabetes (short-term complications) | <6 | 7 | \$45,203 | 50% | 50% | <6 |
| Gastroenteritis | <6 | <6 | \$6,276 | 0% | <6 | <6 |
| Perforated appendix | <6 | 21 | \$206,853 | 75% | --- | --- |
| Urinary tract infection | <6 | 8 | \$27,575 | 33% | <6 | <6 |
| Adult Quality Indicators (Ages 18+) | | | | | | |
| Angina without a procedure | 12 | 16 | \$205,473 | 92% | 58% | 0% |
| Asthma | 33 | 69 | \$311,264 | 100% | 0% | 18% |
| Bacterial pneumonia | 111 | 429 | \$2,355,310 | 98% | 12% | 2% |
| Chronic obstructive pulmonary disease (COPD) | 98 | 307 | \$1,582,024 | 95% | 6% | 5% |
| Congestive heart failure (CHF) | 98 | 511 | \$2,837,643 | 96% | 29% | 11% |
| Dehydration | 51 | 119 | \$712,381 | 98% | 6% | 0% |
| Diabetes (long-term complications) | 69 | 431 | \$1,911,828 | 90% | 19% | 11% |
| Diabetes (short-term complications) | 75 | 231 | \$1,420,031 | 99% | 8% | 10% |
| Diabetes (lower extremity amputation) | 3 | 33 | \$182,533 | 67% | 67% | 0% |
| Diabetes (uncontrolled) | 11 | 25 | \$117,027 | 100% | 0% | 0% |
| Hypertension | 75 | 186 | \$1,402,845 | 100% | 5% | 5% |
| Low birth weight newborns ¹ | 23 | 131 | \$574,987 | 0% | 17% | --- |
| Perforated appendix | 42 | 177 | \$1,285,606 | 100% | 2% | --- |
| Urinary tract infection | 69 | 220 | \$1,173,010 | 97% | 6% | 4% |
| Totals² | 785 | 2,905 | \$16,258,387 | 93% | 11% | 6% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of Connecticut residents admitted to Connecticut acute care hospitals with a PQI condition and for whom no third party payer was responsible for hospital charges.

Emergency Department charges: Share of hospitalizations for a PQI condition treated in the emergency department and then admitted for inpatient care.

Fewer than six observations cannot be released, per OHCA regulations.

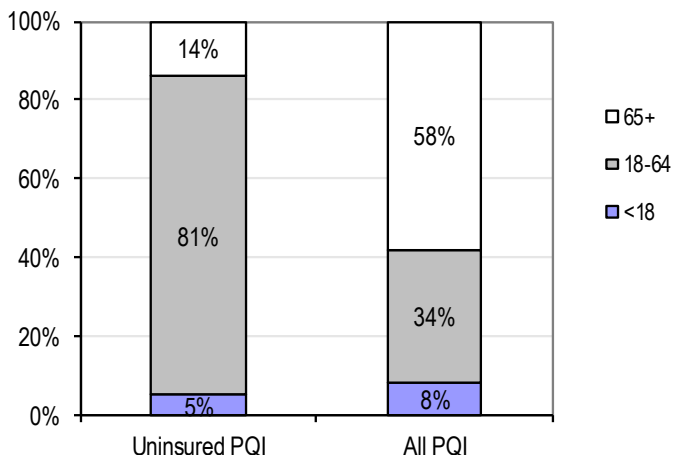
¹Low birth weight newborns are grouped with the adult PQI conditions because low birth weight is related to the mother's prenatal care.

²Reported total hospitalizations, charges, and patient days are not the summed total for all individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their hospitalizations, charges and patient days are counted in the individual totals of multiple PQI conditions. Overall totals are presented here without any double counting of these patients.

³In 2012, the statewide ratio of cost to charges was 0.36, meaning that total costs were 36 cents for every dollar of charges. The statewide uninsured ratio of payment to charges was .11.

Most uninsured PQI patients were adult racial/ethnic minorities

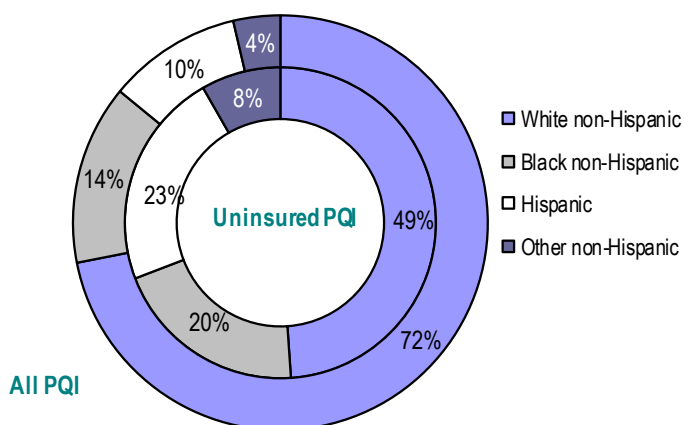
Figure 24: Age (in years) of uninsured and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

The majority (81%) of uninsured PQI patients were adults between ages 18 and 64.

Figure 25: Race of uninsured and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Uninsured PQI patients were nearly twice as likely to be racial/ethnic minorities, compared to all PQI patients (51% versus 28%).

Hispanic PQI patients less likely to receive additional services after discharge

In 2012, there were nearly 4,700 Hispanic PQI hospitalizations, totaling 22,400 patient days and \$137 million in charges. COPD, CHF, bacterial pneumonia and low birth weight newborn were the most prevalent conditions requiring an inpatient stay.

Hispanic PQI patients were less likely to receive additional care after discharge, at home or in other settings, compared to the overall PQI patient population (35% versus 50%).

Multiple hospitalizations were most common for Hispanic PQI patients with CHF and diabetes (long-term complications) conditions.

Table 17: Hispanic PQI Volume, 2012

| Quality Indicator | Hospitalizations | Patient Days | Charges ³ | Percent with emergency department charges | Transferred to other institution/or discharged to home healthcare | Multiple admissions for same PQI |
|---|------------------|---------------|----------------------|---|---|----------------------------------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | | | |
| Asthma | 264 | 436 | \$3,523,596 | 76% | 3% | 9% |
| Diabetes (short-term complications) | 17 | 27 | \$245,146 | 88% | 12% | 0% |
| Gastroenteritis | 109 | 170 | \$1,195,946 | 68% | 1% | 3% |
| Perforated appendix | 39 | 191 | \$1,717,877 | 85% | 10% | --- |
| Urinary tract infection | 48 | 110 | \$648,619 | 67% | 2% | 4% |
| Adult Quality Indicators (Ages 18+) | | | | | | |
| Angina without a procedure | 34 | 52 | \$562,800 | 97% | 35% | 0% |
| Asthma | 183 | 551 | \$3,358,846 | 99% | 10% | 13% |
| Bacterial pneumonia | 478 | 2,140 | \$13,106,811 | 98% | 34% | 4% |
| Chronic obstructive pulmonary disease (COPD) | 786 | 3,247 | \$18,253,176 | 97% | 31% | 16% |
| Congestive heart failure (CHF) | 619 | 2,993 | \$19,524,791 | 94% | 60% | 24% |
| Dehydration | 240 | 777 | \$4,313,097 | 95% | 35% | 1% |
| Diabetes (long-term complications) | 397 | 2,384 | \$14,087,490 | 84% | 55% | 20% |
| Diabetes (short-term complications) | 258 | 853 | \$5,706,200 | 99% | 25% | 16% |
| Diabetes (lower extremity amputation) | 39 | 383 | \$2,598,188 | 62% | 87% | 10% |
| Diabetes (uncontrolled) | 50 | 131 | \$832,994 | 98% | 40% | 0% |
| Hypertension | 154 | 405 | \$2,830,377 | 99% | 23% | 5% |
| Low birth weight newborns ¹ | 452 | 5,603 | \$33,928,489 | 0% | 41% | --- |
| Perforated appendix | 73 | 361 | \$2,991,751 | 100% | 14% | --- |
| Urinary tract infection | 441 | 1,768 | \$9,306,668 | 98% | 35% | 6% |
| Totals² | 4,662 | 22,401 | \$137,321,612 | 84% | 35% | 11% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of Hispanic Connecticut residents admitted to Connecticut acute care hospitals with a PQI condition.

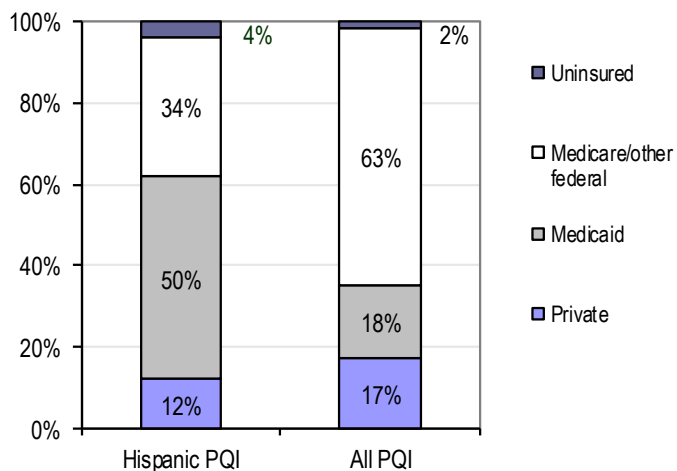
¹Low birth weight newborns are grouped with the adult PQI conditions because low birth weight is related to the mother's prenatal care.

²Reported total hospitalizations, charges, and patient days are not the summed total for all individual PQI conditions. Several patients had more than one PQI during a hospital stay and therefore their hospitalizations, charges and patient days are counted in the individual totals of multiple PQI conditions. Overall totals are presented without any double counting of these patients.

³In 2012, the statewide ratio of cost to charges was 0.36, meaning that total costs were 36 cents for every dollar of charges. The statewide ratio of payment to charges was 0.34 and varied by insurer.

Hispanic PQI patients were mostly young and Medicaid-insured

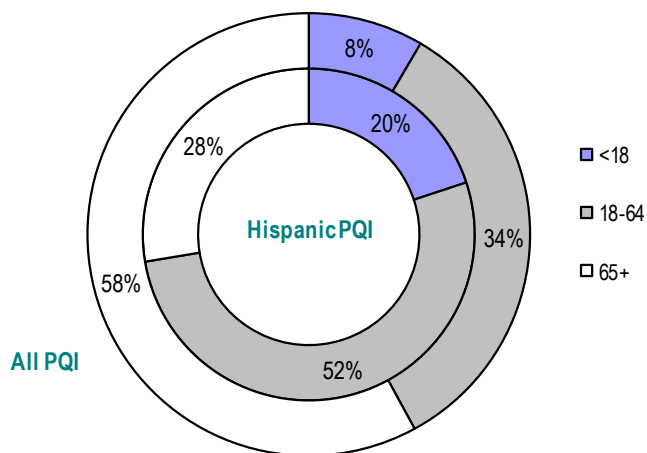
Figure 26: Primary insurer for Hispanic and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Half of all Hispanic PQI patients were Medicaid covered; nearly three times the rate for the overall PQI patient population.

Figure 27: Age (in years) of Hispanic and all PQI patients, 2012



Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Hispanic PQI patients were younger than the overall PQI population; consistent with Connecticut's Hispanic population age distribution.⁸

On a percentage basis, Hispanic PQI patients consisted of fewer seniors and more adults between ages 18 and 64 and children than the overall PQI patient population.

Black non-Hispanic PQI patients were likely to be admitted through ED

In 2012, there were about 6,300 Black non-Hispanic PQI patients totaling 32,500 patient days and \$221 million in charges. CHF, COPD, diabetes (long-term complications) and bacterial pneumonia were the most common PQI conditions and accounted for more than half of the hospitalizations.

Most (88%) Black non-Hispanic PQI patients were admitted through the emergency department. Black non-Hispanics were also less likely to receive follow-up care after discharge compared to the overall PQI patient population (39% versus 50%).

Multiple admissions were most common for Black non-Hispanic PQI patients with COPD, CHF, adult diabetes (long-term complications) and pediatric urinary tract infections.

Table 18: Black non-Hispanic PQI Volume, 2012

| Quality Indicator | Hospitalizations | Patient Days | Charges ³ | Percent with emergency department charges | Transferred to other institution/or discharged to home healthcare | Multiple admissions for same PQI |
|---|------------------|---------------|----------------------|---|---|----------------------------------|
| Pediatric Quality Indicators (Ages 0 - 17) | | | | | | |
| Asthma | 331 | 576 | \$5,349,745 | 80% | 4% | 13% |
| Diabetes (short-term complications) | 17 | 36 | \$317,010 | 82% | 6% | 13% |
| Gastroenteritis | 41 | 117 | \$722,035 | 73% | 2% | 0% |
| Perforated appendix | 5 | 36 | \$301,437 | 60% | 20% | --- |
| Urinary tract infection | 20 | 36 | \$267,933 | 85% | 10% | 18% |
| Adult Quality Indicators (Ages 18+) | | | | | | |
| Angina without a procedure | 36 | 83 | \$841,229 | 92% | 31% | 0% |
| Asthma | 184 | 505 | \$3,779,417 | 99% | 7% | 14% |
| Bacterial pneumonia | 638 | 3,016 | \$18,721,900 | 97% | 39% | 6% |
| Chronic obstructive pulmonary disease (COPD) | 986 | 3,783 | \$25,381,084 | 99% | 34% | 23% |
| Congestive heart failure (CHF) | 1,003 | 5,635 | \$36,818,069 | 94% | 53% | 20% |
| Dehydration | 404 | 1,457 | \$9,549,767 | 94% | 40% | 3% |
| Diabetes (long-term complications) | 722 | 4,395 | \$28,620,460 | 84% | 58% | 18% |
| Diabetes (short-term complications) | 458 | 2,068 | \$14,338,636 | 99% | 32% | 11% |
| Diabetes (lower extremity amputation) | 85 | 995 | \$7,848,544 | 54% | 93% | 10% |
| Diabetes (uncontrolled) | 72 | 220 | \$1,366,691 | 97% | 46% | 3% |
| Hypertension | 393 | 1,197 | \$8,741,569 | 97% | 22% | 7% |
| Low birth weight newborns ¹ | 397 | 6,546 | \$47,373,756 | 0% | 39% | --- |
| Perforated appendix | 57 | 333 | \$2,373,104 | 89% | 28% | --- |
| Urinary tract infection | 462 | 2,054 | \$12,314,279 | 99% | 55% | 10% |
| Totals² | 6,271 | 32,515 | \$220,724,576 | 88% | 39% | 13% |

Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Reporting hospitalizations of black Connecticut residents admitted to Connecticut acute care hospitals with a PQI condition.

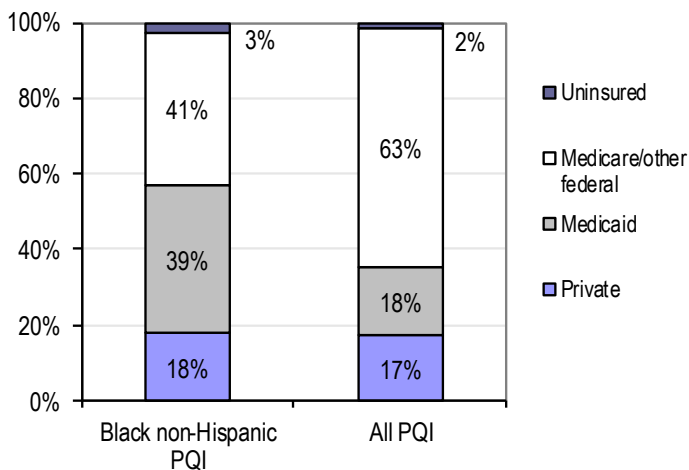
¹Low birth weight newborns are grouped with the adult PQI conditions because as a quality indicator low birth weight is related to the mother's prenatal care.

²Reported total 2012 hospitalizations, charges, and patient days are not the summed total for all individual PQIs conditions. Several patients had more than one PQI during a hospital stay and therefore their hospitalizations, charges and patient days are counted in the individual totals of multiple PQI conditions. Overall totals are presented without any double counting of these patients.

³Due to discounts and other factors, actual payments are significantly lower than charges. In 2012, the ratio of cost to charges was 0.36, meaning that total costs were 36 cents for every dollar of charges. Statewide ratio of payment to charges was 0.34 and varies by insurer.

Black non-Hispanic PQI patients had higher percentage of Medicaid coverage

Figure 28: Primary insurer for Black non-Hispanic and all PQI patients, 2012

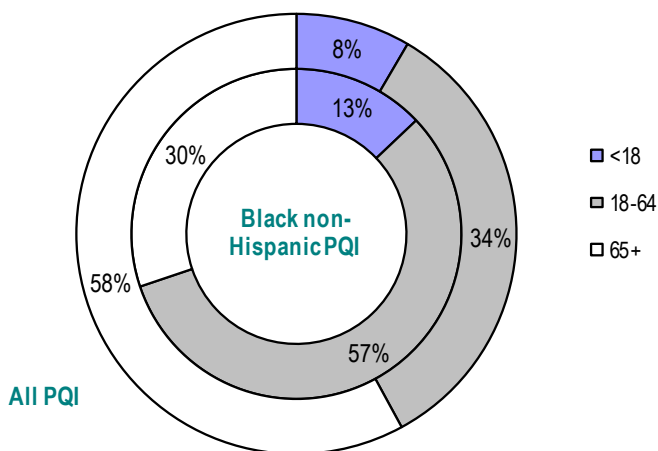


Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

Medicare (41%) and Medicaid (39%) were the primary insurers for Black non-Hispanic PQI hospitalizations in 2012.

Black non-Hispanics' rate of Medicaid coverage (39%) was double that of the overall PQI patient population (18%).

Figure 29: Age (in years) of Black non-Hispanic and all PQI patients, 2012



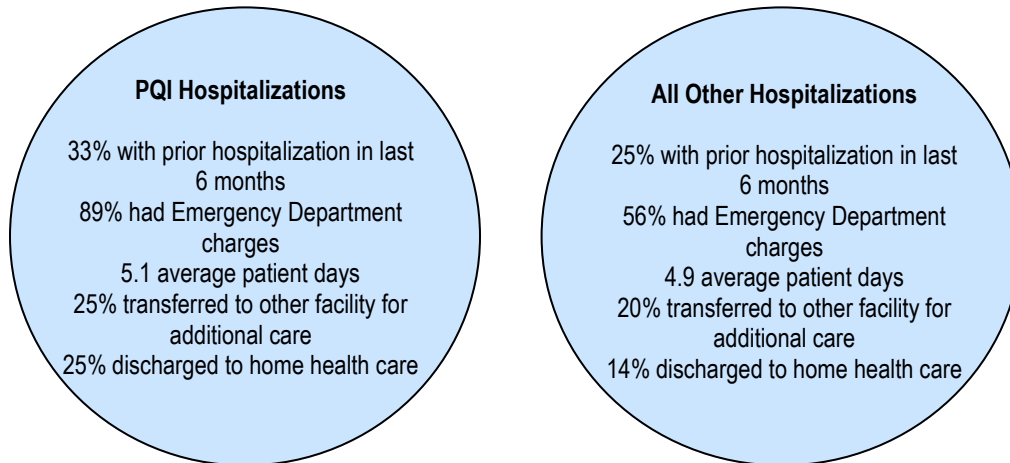
Source: CT Department of Public Health Office of Health Care Access Acute Care Hospital Inpatient Discharge Database

More than half (57%) of Black non-Hispanic PQI patients were adults between ages 18 and 64.

Conclusion

OHCA utilized the Agency for Healthcare Research and Quality (AHRQ) Quality Indicators (QI) tool to examine “preventable” hospitalizations. This includes a set of 19 health conditions considered preventable because timely and effective primary care and medical management of these conditions have been clinically demonstrated to reduce the need for hospitalization. Illustration 1 below provides a comparison between PQI and all other hospitalizations.

Illustration 1: Comparison of PQI and other hospitalizations, 2012



Preventable hospitalizations provide a good starting point for examining the health care system, particularly outside of the hospital. They are designed to illuminate possible gaps in the primary health care system, community health needs and barriers to primary care.

Preventable hospitalizations data may be used by a variety of programs within DPH, other state agencies such as the Department of Social Services and the Office of the Comptroller, local health departments/districts, providers and payers of health care services and researchers. Potential applications of the data include using it:

- as the basis for addressing and reducing health disparities in prenatal care and chronic disease management, and among specific populations such as Medicaid and Medicare recipients or state employees;
- to develop targeted interventions to improve health services delivery and cost; and
- as supporting data in grant applications.

OHCA continues to provide data on these issues to state and local officials, providers and others attempting to address improved access to primary care, along with increased case management, outreach and patient education.

For questions regarding OHCA's PQI research or data requests please contact Olga Armah (860) 418-7070 or olga.armah@ct.gov.

TECHNICAL NOTES

This databook updates a prior OHCA report (*Preventable Hospitalizations in Connecticut: A Current Assessment of Access to Community Health Services, 2004 - 2008*) published in January 2010. Both projects implemented a methodology developed by the U.S. Department of Health and Human Services Agency for Health Research and Quality (AHRQ). AHRQ developed the Quality Indicators (QI) tool as part of a broader effort to promote public health research by providing clinically validated and standardized methods that can be applied to the administrative hospital data that most states now collect.

Quality indicators were first developed in 2001 by a panel of clinicians and researchers from the University of California-San Francisco and Stanford University sponsored by AHRQ. Through their review of the clinical literature and analysis of national hospital data, they identified 16 Ambulatory Care Sensitive Conditions (ACSCs) for which effective and timely primary care significantly reduced the likelihood of hospitalization. AHRQ has made software publicly available that processes administrative hospital data, identifying hospitalizations for these 16 ACSCs. The software also generates observed (discharges per the relevant population), risk adjusted (based on race and age) and smoothed (rates shrunk to national averages) population rates. OHCA's 2005 preventable hospitalization report utilized this methodology (AHRQ Prevention Quality Indicators tool version 2.1).

After OHCA published its 2005 report, AHRQ made significant changes to its QI tool. Specifically, it created a pediatric module with five conditions to address the "differential epidemiology of child health care relative to adult health care."⁹ This change resulted in 19 area level prevention quality indicator conditions. AHRQ made substantive coding changes for some of these conditions, modified its rate calculations and added overall pediatric and adult PQI rates. OHCA's 2008 preventable hospitalization report utilized this methodology (AHRQ Prevention Quality Indicators tool version 3.1).¹⁰

AHRQ made additional changes to version 4.0 of the QI tool. Changes include coding changes for some of the 19 conditions, and addition of new data elements as part of the implementation of the National Uniform Billing Committee UB-04 and Centers for Medicare and Medicaid Services Medicare Severity Diagnosis Related Group (CMS MS-DRGs). The January 2010 preventable hospitalization report utilized version 4.0 of the Windows version of AHRQ Prevention Quality Indicators tool.

Since 2010, AHRQ has made more changes to its QI tool.¹¹ Some of the substantive changes are the ability to estimate overall pediatric PQI rates missing in version 4.0, updated population rates using 44 state files from the 2010 State Inpatient Databases (SID) and recalculated risk adjustment coefficients. The risk adjustments accounts for difference in the age, sex, modified DRG and co-morbidities; race was not included as a factor therefore no risk-adjusted rates are provided in the current report. Additional changes were made to codes for some of the 19 conditions to incorporate National Uniform Billing Committee UB-04 and Centers for Medicare and Medicaid Services Medicare Severity Diagnosis Related Group (CMS MS-DRGs) changes. This preventable hospitalization report utilizes version 4.5 of the Windows version of the AHRQ Prevention Quality Indicators tool (WinQI v.4.5).

In order to report consistent results over time that reflect these most recent changes, OHCA included in this report 2008 data from the years covered in the 2010 preventable hospitalization report. This report covers calendar years 2008 through 2012 of hospital utilization.

ENDNOTES

¹ Agency for Healthcare Research and Quality, *AHRQ Quality Indicators—Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions Version 3.1*, March 12, 2007.

² Other factors outside the direct control of the health care system such as poor environmental conditions or lack of patient adherence to treatment recommendations, comorbidities, patient age and physiology and general health status can result in hospitalization. Therefore, individual hospitalizations may not have been truly “preventable.” However, analyses of national samples of PQI patients show a statistically significant relationship between timely and effective primary care and a significant reduction in hospitalizations for these conditions.

³ Agency for Healthcare Research and Quality, *AHRQ Quality Indicators—Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions Version 3.1*, March 12, 2007; *AHRQ Quality Indicators—Prevention Quality Indicators: Technical Specifications, version 4.1*, December 2009; *AHRQ QI Windows Application Documentation, version 4.1, December 2009*; *Pediatric Quality Indicators Technical Specifications version 4.1*, December 2009.

⁴ Office of Health Care Access, *Preventable Hospitalizations in Connecticut: A Current Assessment of Access to Community Health Services, 2004 - 2008*, January 2010. For QI changes see Agency for Healthcare Research and Quality *Prevention Quality Indicators (PQIs) Log of ICD-9-CM and DRG Coding Updates and Revisions to PQI Documentation and Software, Version 4.5*, May 2013; and *Pediatric Quality Indicators (PDI) Log of ICD-9-CM and DRG Coding Updates and Revisions to PDI Documentation and Software, Version 4.5*, May 2013.

⁵ Percent difference between 2010 observed Connecticut and U.S. rates, the most recent rates available (AHRQ Quality Indicators, Prevention Quality Indicator v4.5 Benchmark Data Tables, May 2013 and Pediatric Quality Indicator v4.5 Benchmark Data Tables, May 2013).

⁶ According to U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement 2012, 92% of Connecticut’s population age 65 and older are White non-Hispanics. The share of elderly varies by race as 15% of White non-Hispanics are ages 65 and older compared to only 7% of Black non-Hispanics and 4% of Hispanics.

⁷ The reduction occurred among all age groups, pediatric (31%), adults between ages 18 and 64 (5%) and seniors (9%).

⁸ See note 6.

⁹ Agency for Healthcare Research and Quality, *Pediatric Quality Indicators Overview*, February 2008.

¹⁰ Office of Health Care Access, *Preventable Hospitalizations in Connecticut: An Updated Assessment of Access to Community Health Services, 2000 - 2006*, April 2008.

¹¹ See note 4.



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