Preventable Hospitalizations in California: Statewide and County Trends in Access to and Quality of Outpatient Care, Measured with Prevention Quality Indicators (PQIs)

1999-2008

oshpd

Office of Statewide Health Planning and Development

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EXECUTIVE SUMMARY

"Preventable hospitalizations" occur when persons are admitted for treatment into a hospital for a medical condition which could have been avoided had they received proper outpatient care earlier. They point to missed opportunities outside of hospitals for providing treatment to improve or stabilize a medical condition so that hospitalization may be avoided; they are not indicators of hospital performance. For example, a person admitted to a hospital due to asthma or bacterial pneumonia because effective care, such as medication, wasn't properly provided earlier.

Since hospital care requires greater resources and costs more than outpatient care, preventing hospitalizations saves healthcare system resources, especially within hospitals, which could instead be redirected where needed. Measuring preventable hospitalizations informs us about potential problems with access to or the quality of outpatient primary or preventative care, and helps us identify where researchers, public health professionals, and other interested parties can focus efforts to improve outpatient care quality or access in a community or for a population.

Prevention Quality Indicators (PQIs) measure preventable hospitalizations by assessing how well a community or population has access to primary care and preventative outpatient ("ambulatory") care. Based on hospital inpatient discharge data and adjusted for age and gender, PQIs were developed by the federal Agency for Healthcare Research and Quality (AHRQ). They are an important starting point for examining the effectiveness of health care delivery and use and must be studied together with other information before conclusions can be drawn.

Factors that may impact a community's rates for one or more PQIs include: air quality or other environmental conditions, patient adherence to treatment recommendations, access to medical professionals in a community, including the supply of healthcare providers, and health insurance coverage rates.

This report measures and compares fifteen PQIs in all fifty-eight California counties. Thirty-four counties are individually reported. Due to its large population, Los Angeles has eight sub-county areas separately reported. Due to small population sizes, twenty-four counties are reported using seven groupings of two to five counties each.

An example: PQIs 1 and 14, measure short-term complications from diabetes and uncontrolled diabetes. A high rate indicates worse outpatient primary or preventative care, or access to outpatient care, while a low rate indicates better access to or quality of outpatient care. The five-county "North East" grouping of Lassen, Modoc, Sierra, Nevada, and Plumas had California's best (lowest) rate for PQIs 1 and 14, suggesting that residents there have the best access to outpatient care. This is important since when a person receives early and proper treatment for specific medical conditions, disease complications may be reduced or eliminated, disease progression may be slowed, and hospitalization may be prevented. Yuba, on the other end of the spectrum, has the State's worse (highest) rate for the same measure, suggesting that more work needs to be done there to identify and address barriers to appropriate and timely outpatient services.

FINDINGS

The good news: Ten PQIs (see Table 1) showed significant improvement, by ten percent to sixty percent, from 1999 through 2008. The bad news: Three PQIs (see Table 3) worsened. The worst, by far, was an over thirty-six percent increase in high blood pressure (hypertension) hospitalization rates. Lastly, any change in the remaining two PQIs (see Table 2) is inconclusive.

INTRODUCTION

A person's health can be judged, in part, by using data gathered from tests. The same applies to our health system. Its "health" can be judged, in part, by using data gathered from hospitals. For example, the rate at which people are admitted to hospitals provides us with important clues about how well our health system is performing. If the system is functioning properly there should be fewer hospitalizations because people have access to and receive the outpatient care they need.

Hospital admissions associated with certain medical conditions are especially telling. Hospitalizations related to these conditions can often be prevented if a person receives necessary and timely outpatient care. For example, people are less likely to be hospitalized for asthma if they have ready access to outpatient providers who follow established guidelines and order appropriate treatments. Similarly, people with diabetes are less likely to be hospitalized if their conditions are adequately monitored and they receive and use the patient education needed for timely self-management of their medical condition. A high rate of hospital admissions for these and other conditions may not only indicate deficiencies in management and follow-up of medical conditions but in affordable access to health care as well.

The benefits of caring for patients in outpatient settings instead of admitting them to hospitals include:

- Patients receive treatment earlier, preventing further deterioration of their health, and leading to improved health sooner.
- Outpatient care costs less than hospital care, resulting in significant cost savings for health plans/insurers, employers, government and the ultimate payer – all of us.
- Treating patients in outpatient settings instead of hospitals frees up beds, staff and other resources for patients who truly need them.

Why this analysis?

OSHPD, in conjunction with national and state healthcare leaders and health research organizations, is presenting this important information to show where efforts to reduce preventable hospitalizations seem to be working and to identify local and regional needs for further development of strategies to improve access to and increase the quality of outpatient care. This, in turn, is intended to move our healthcare system toward providing higher quality, more effective and efficient, and less costly healthcare services.

As an example, a 2007 California HealthCare Foundation report entitled "Preventable Hospitalizations among Medi-Cal Beneficiaries and the Uninsured" compares preventable hospitalization rates for Medi-Cal managed care with fee-for-service care. Among other things, the report found that from 1994 to 2002, the average annual preventable hospitalization rate among selected beneficiaries was more than one-third lower in managed care than in fee-for-service.

What are Prevention Quality Indicators or PQIs?

Research is constantly being undertaken to help us better understand which health conditions are most useful in studying community healthcare needs in outpatient settings. The federal Agency for Healthcare Research and Quality (AHRQ) uses this important research in developing and maintaining Prevention Quality Indicators (PQIs) – a set of measures that can be calculated using hospital inpatient data to identify the quality of and access to care provided in outpatient settings for "ambulatory care-sensitive conditions." However, these measures cannot be used alone. They must be studied together with many other factors before conclusions can be drawn. Even so, they are an important starting point for examining the effectiveness of health care delivery and use. More information about PQIs is available at: http://www.qualityindicators.ahrq.gov/

Fortunately, California can report and make use of PQIs because OSHPD has routinely collected the necessary inpatient data from hospitals in California for over 25 years. These Patient Discharge Data are collected from nearly every hospital in California, totaling over 4 million records annually.

Please note that statewide figures are presented for comparison with county and sub-county results. They should not be thought of as a standard. In fact, the ultimate, although not realistic, goal is to have zero hospital admissions for preventable conditions as this would mean that all persons who need care are receiving care outside of hospitals, thus avoiding all hospitalizations altogether. Working together, we can move closer to that goal in the years ahead.

This analysis uses the following 15 PQIs to identify preventable hospital admissions at both the state and county levels:

Diabetes, Short-Term Complications (PQI 1) and Uncontrolled (PQI 14) (Combined to allow comparison with the national Healthy People 2010 measure)

Examples of complications include:

- Diabetic ketoacidosis involves the build-up of dangerously high levels of acids in the blood—a warning sign that a person's diabetes is out of control or they are becoming sick
- Hyperosmolarity (a measurement of dehydration which often occurs when diabetes is out of control)
- Coma (prolonged unconsciousness)

Perforated Appendix [ruptured appendix] (PQI 2)

Diabetes Long-Term Complication (PQI 3)

Examples of complications include:

- Kidney failure
- Blindness
- Nervous system and circulatory problems

Pediatric Asthma (PQI 4)

Asthma involves airway constriction and inflammation and blockage from excessive amounts of thickened mucus. Sometimes there is no trigger but asthma often occurs in response to one or more of the following:

- Exercise especially while breathing cold, dry air
- Environmental pollution especially from smoking or even exposure to second hand tobacco smoke
- Airborne allergens such as pet dander or pollens, perfume or other strong chemical smells
- Respiratory tract infections
- Emotional stress

Chronic Obstructive Pulmonary Disease (COPD) [chronic bronchitis or emphysema] (PQI 5)

COPD is a combination of emphysema (damaged air sacs in the lungs) and chronic obstructive bronchitis (constantly irritated and inflamed airways in the lungs)

Pediatric Gastroenteritis (PQI 6)

Gastroenteritis is the inflammation of the digestive tract resulting in acute diarrhea involving both the stomach and small intestine. It is caused most often by certain viruses and less often by bacteria, parasites, or reactions to medications or diet.

Hypertension [high blood pressure] (PQI 7)

Congestive Heart Failure (CHF) [heart failure] (PQI 8)

CHF is a condition in which the heart cannot pump enough blood to the body's other organs. It can result from:

- Coronary artery disease (narrowed arteries supplying blood to the heart)
- Scar tissue from past heart attacks that interferes with the work of the heart muscle
- High blood pressure
- Heart valve disease due to past rheumatic fever or other causes
- Congenital heart defects (defects present at birth)
- Infection of the heart muscle or its valves

Dehydration (PQI 10)

Dehydration results from such things as diarrhea, diabetes, vomiting and sweating.

Bacterial Pneumonia (PQI 11)

Bacterial pneumonia is an inflammation of the lungs caused by a bacterial infection.

Urinary Tract Infection (UTI) (PQI 12)

UTI is an infection of the kidneys, bladder and connecting tubes.

Angina without Procedure [chest pain] (PQI 13)

Angina is chest pain or discomfort that occurs when the heart muscle does not get enough blood. Inflammation and hardening of the arteries that feed the heart are common underlying problems. Angina without procedure means chest pain that is not associated with some other medical or surgical procedure, such as cardiac catheterization or angioplasty.

Adult Asthma (PQI 15)

Lower-Extremity Amputation among Patients with Diabetes [removal of leg or foot due to diabetes complications] (PQI 16)

Note: PQI 9, low birth weight, is not covered in this analysis since the Comprehensive Perinatal Services Program in the California Department of Public Health specifically reports outcome measures about this condition. More information is available at www.cdph.ca.gov.

PQI Current and Past Reporting by OSHPD

This analysis builds on findings from the OSHPD's 2005 Preventable Hospitalizations in California report adding five years of data to the analysis. It also modifies the presentation of information by comparing counties against the statewide rate for each health condition reported. Finally, for the State's most populous county, this year's analysis breaks down reporting within Los Angeles County to PQI rates for all eight Service Planning Areas (SPAs).

Readers should note that the rates for the same years in both the previous report (2005) and this current analysis are not comparable because AHRQ updated its PQI measures during the intervening period. This analysis covers the period of 1999 through 2008 using version 3.1 of the PQI tool.

For additional reports produced by OSHPD using PQIs, see "Racial and Ethnic Disparities in Healthcare in California: California Fact Book," November 2003, and "Preventable Hospitalizations in California: Statewide and County Trends (1997-2003)," November 2005.

Why Rates?

This analysis uses rates of hospital admissions instead of total numbers of hospital admissions. Measuring only the number of admissions fails to take into account population size. Generally, the more people there are, the more hospitalizations occur for any reason. Population increases can be factored in by using rates. Given the size of California's population (38+ million) and annual number of hospital admissions (4+ million), a rate of hospitalizations per 100,000 persons is the appropriate choice for this analysis given the size of the numbers. Population by age group or sex is used where appropriate. The only exception is PQI 2- perforated appendix where the rate is based on non-maternal hospitalizations of persons ages 18+ with a diagnosis of appendicitis.

Adjusting the Rates

The rates in this analysis are standardized to reflect the impact of the age and sex of the population. For example, heart failure is the leading cause of hospitalization in people older than 65. If a particular county has a large number of elderly people one would expect to see a higher number of hospital admissions for congestive heart failure (CHF). Therefore, when calculating PQI 8

for that county the rate is adjusted to reflect the high proportion of elderly people. The calculated rate, in this case, would actually be lower than the observed rate.

Statewide Numbers

Graphs for all statewide PQI rates are available on the OSHPD Web site at www.oshpd.ca.gov/hid/products/preventable_hospitalizations/SearchCharts.aspx.

RESULTS AND FINDINGS

Improved Measures in Ten PQIs

On a positive note, the overall hospitalization rate in California declined 6.8% from 11,298 hospitalizations per 100,000 in 1999 to 10,533 hospitalizations per 100,000 in 2008.

Even better is the decline in hospitalization rates for 10 of the 15 PQI measures contained in this report (Table 1).

Unchanged Measure

Only the rate for Diabetes' Short-Term Complications and Uncontrolled remained essentially unchanged from 1999 to 2008 (Table 2). However, this does not necessarily reflect a trend because during that time the rate fluctuated from a high of 54.1 in 2001 to a low of 49.7 in 2004. Again, closer examination of local situations is warranted.

Worsened Measures in Three PQIs

The rates of hospitalization for long-term complications associated with diabetes and urinary tract infections have increased moderately since 1999 (Table 3). The rate for hypertension increased dramatically with most of that increase taking place from 2006 to 2008.

Long-term diabetes complications are thought to arise from sustained, long-term, poor control of diabetes. Intensive treatment programs have been shown to decrease the incidence of long-term complications in both Type 1 and Type 2 diabetes. Most urinary tract infections can be treated with antibiotics in an outpatient setting. Hypertension is a chronic condition that is often controllable in an outpatient setting with appropriate drug therapy and lifestyle modifications.

AHRQ notes that hospital admissions for these three conditions should be of most interest to comprehensive health care delivery systems such as Kaiser and other health maintenance organizations. These types of managed care systems focus on preventing illness and improving health. As such, the measures in this analysis are also measures of their success.

Trends

The real value in PQI measures is realized when communities use them to explore their unique situations more closely and take positive action when needed. However, statewide trends are important as well, especially for policy makers and health care leaders as they consider decisions that affect the availability of and access to high quality outpatient care.

Calculating trends can be difficult and even impossible depending on the data. If a trend is to have meaning it must be "statistically significant."

A widely used method in calculating trends is something called linear regression. This is a statistical technique that is applied to detect whether or not the measures in a study are following some kind of pattern (or trend) over time. For example, if you record your bowling scores you may see what appears to be a pattern of improvement. However, it could simply be the effect of just a few very good games. The same thing applies here. For some PQIs we can see an obvious trend using linear regression. For others the trend is less clear.

In all PQI measures, the lower the rate the better and a negative percent change is good. It means fewer people are being hospitalized for conditions that can be treated in outpatient settings.

There is no clear trend in all areas

Looking at the statewide rate for Angina (without procedure) (PQI 13) we see a clear trend toward improvement (Figure 1). (Note: lower rates indicate improvement in health status or access to care in outpatient settings, because the measure is the rate of admission to a hospital.)

Looking at the statewide rate for Adult Asthma (PQI 15) we see that it is almost 12% lower in 2008 than it was in 1999 (Figure 2). That's good but we cannot say it is a trend because from 1999 to 2003 the rate changed from 93.6 to 78.9 and then back to 90.6. These kinds of fluctuations preclude the assumption of a trend. A closer examination of the possible causes of those fluctuations is warranted at the local level.

Table 1 - Improved Measures in Prevention Quality Indicators in California				
	Hospitalization Rates*			
	1999	2008	Percent Change	Trend**
Angina without Procedure (chest pain) - PQI 13	65.7	26.0	-60.4%	YES
Pediatric Gastroenteritis (severe vomiting and/or severe diarrhea in children) - PQI 6	137.9	75.3	-45.4%	YES
Chronic Obstructive Pulmonary Disease (COPD) (chronic bronchitis or emphysema) - PQI 5	216.2	127.7	-40.9%	YES
Pediatric Asthma - PQI 4	126.9	77.6	-38.8%	YES
Dehydration - PQI 10	103.3	66.7	-35.4%	MAYBE
Bacterial Pneumonia - PQI 11	374.8	249.6	-33.4%	YES
Congestive Heart Failure (CHF) (heart failure) - PQI 8	391.6	293.5	-25.1%	YES
Perforated Appendix (ruptured appendix) - PQI 2	32.5	26.4	-18.8%	YES
Adult Asthma - PQI 15	93.6	82.5	-11.9%	MAYBE
Lower-Extremity Amputation among Patient with Diabetes (removal of leg or foot due to diabetes complications) - PQI 16	30.8	27.6	-10.4%	MAYBE

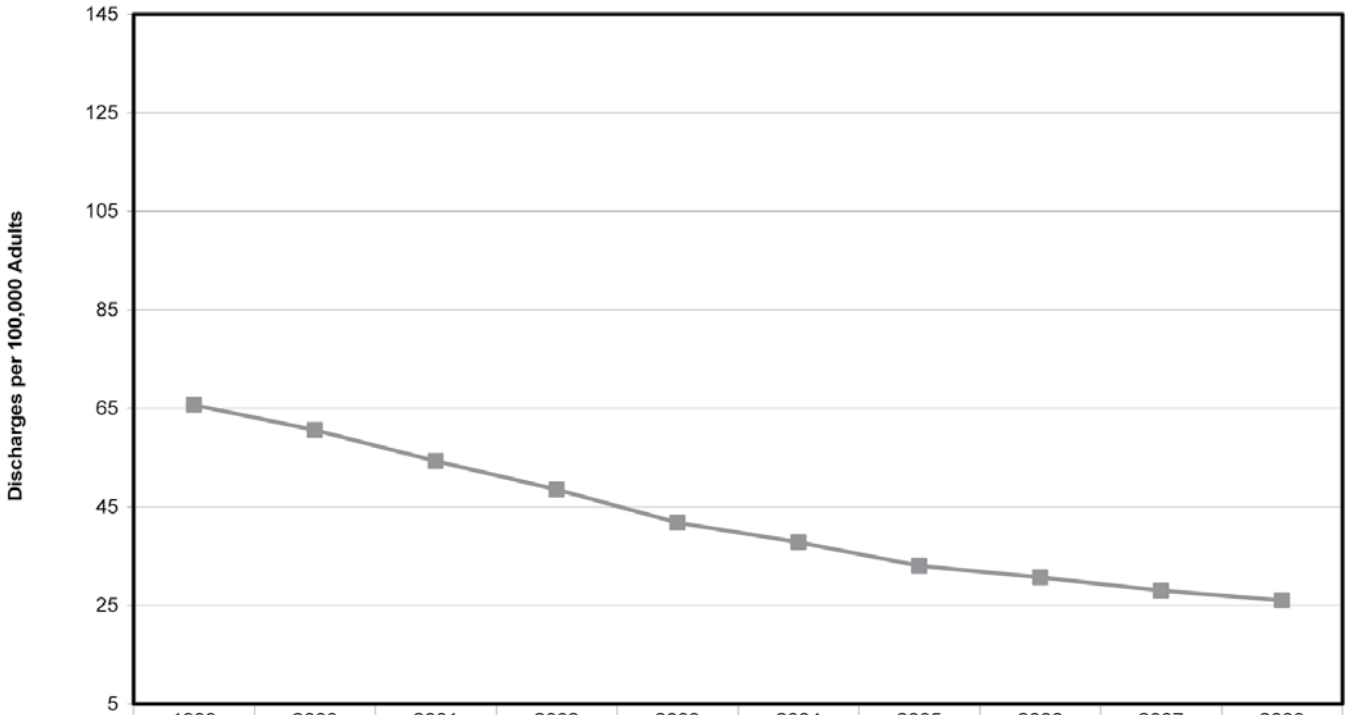
Table 2 - Unchanged Measures in Prevention Quality Indicators in California				
	Hospitalization Rates*			
	1999	2008	Percent Change	Trend**
Diabetes, Short-Term Complications and Uncontrolled - PQI 1 & 14	52.2	55.2	5.7%	MAYBE

Table 3 - Worsened Measures in Prevention Quality Indicators in California				
	Hospitalization Rates*			
	1999	2008	Percent Change	Trend**
Diabetes Long-Term Complications - PQI 3	97.4	105.2	8.0%	MAYBE
Urinary Tract Infection - PQI 12	134.2	147.1	9.6%	NO
Hypertension (high blood pressure) - PQI 7	24.0	32.7	36.3%	NO

* Note: Rates are the numbers of hospitalizations per 100,000 persons aged 18 and older except:
- Pediatric Gastroenteritis – hospitalizations per 100,000 persons ages 3 months to 17 years
- Pediatric Asthma – hospitalizations per 100,000 persons ages 2 to 17 years
- Perforated Appendix – hospitalizations per 100 non-maternal discharges ages 18 and older with a diagnosis of appendicitis

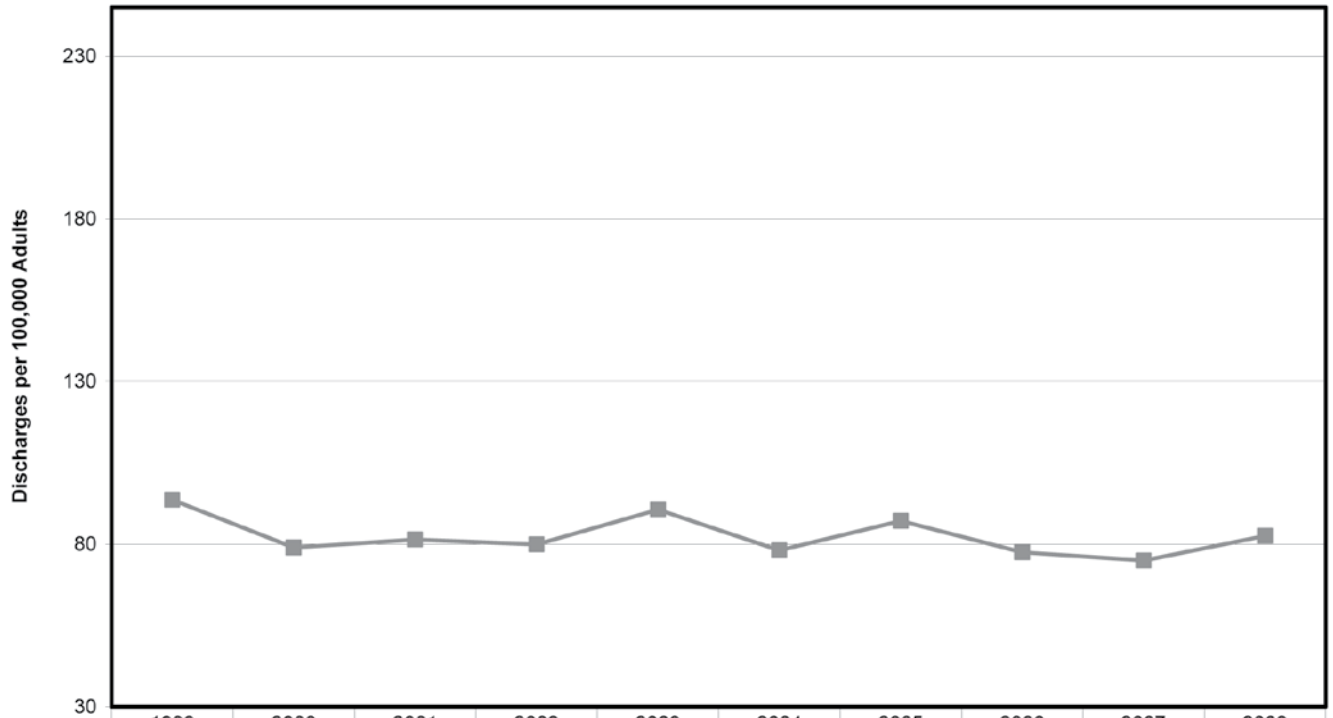
** Note: Refer to discussion of trends on page 5

Figure 1 - Statewide Hospital Admission Rates for Angina (Without Procedure) - PQI 13, 1999-2008



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Statewide	65.7	60.6	54.3	48.5	41.8	37.8	33	30.7	28	26

Figure 2 - Statewide Hospital Admission Rates for Adult Asthma - PQI 15, 1999-2008



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Statewide	93.6	78.9	81.4	79.9	90.6	78.1	87.1	77.5	74.9	82.5

Relative Rankings

Another way to consider PQI statewide rates is to look at their prevalence and overall ranking.

Table 4 displays all the conditions in rank order with the ones at the top having a greater statewide prevalence. Now one can see that although a 60% reduction in preventable hospitalizations for angina (bottom) is very good, a 25% reduction in preventable hospitalizations for congestive heart failure (top) is more significant because it involves over 11 times more hospitalizations.

AHRQ notes that vaccination for pneumococcal pneumonia in the elderly and early treatment of bacterial respiratory infections on an outpatient basis may reduce hospitalizations for pneumonia. A vaccine developed for the elderly has been shown to be 45% effective in preventing hospitalizations during peak seasons. Such basic efforts could have a significant impact given that hospitalization for bacterial pneumonia has one of the highest rates – almost 250 for every 100,000 adults in 2008.

A Different Look

In addition to the personal price paid for being hospitalized for any of the conditions in this report, there is a financial cost and the numbers are significant.

When California hospitals report patient discharge data they include the total charges for services rendered during the length of stay for each patient. Charges are based on a hospital's full established rates and include daily hospital, ancillary and patient care services. Hospital-based physician fees are not included.

Table 4 - Statewide Prevention Quality Indicator Rates - Relative Rankings

	Hospitalization Rates*	
	2008	**Percent change from 1999**
Congestive Heart Failure (CHF) (heart failure) - PQI 8	293.5	-25.1
Bacterial Pneumonia - PQI 11	249.6	-33.4
Urinary Tract Infection - PQI 12	147.1	9.6
Chronic Obstructive Pulmonary Disease (COPD) (chronic bronchitis or emphysema) - PQI 5	127.7	-40.9
Diabetes Long-Term Complications - PQI 3	105.2	8.0
Adult Asthma - PQI 15	82.5	-11.9
Pediatric Asthma - PQI 4	77.6	-38.8
Pediatric Gastroenteritis (severe vomiting and/or severe diarrhea in children) - PQI 6	75.3	-45.4
Dehydration - PQI 10	66.7	-35.4
Diabetes, Short-Term Complications and Uncontrolled - PQI 1 & 14	55.2	5.7
Hypertension (high blood pressure) - PQI 7	32.7	36.3
Lower-Extremity Amputation among Patients with Diabetes (removal of leg or foot due to diabetes complications) - PQI 16	27.6	-10.4
Perforated Appendix (ruptured appendix) - PQI 2	26.4	-18.8
Angina without Procedure (chest pain) - PQI 13	26.0	-60.4

* Note: Rates are the numbers of hospitalizations per 100,000 persons aged 18 and older except:

- Pediatric Gastroenteritis – hospitalizations per 100,000 persons ages 3 months to 17 years
- Pediatric Asthma – hospitalizations per 100,000 persons ages 2 to 17 years
- Perforated Appendix – hospitalizations per 100 non-maternal discharges ages 18 and older with a diagnosis of appendicitis

Unfortunately, hospital charges do not provide a useful measure of the resources expended on the care provided. The charges established by hospitals for a certain procedure vary considerably from facility to facility. To accommodate this variation, charges can be converted to costs by calculating a cost-to-charge ratio based on the financial data reported each year by every hospital. However, the conversion is only a general approximation. The actual cost-to-charge ratio for individual facilities and services also varies. A hospital could lose money on one procedure and make up for the loss with another. There is no set "mark-up" applied to all services. Nevertheless, when looking across all hospitals and all admissions, a statewide cost-to-charge ratio can be applied to provide a more meaningful approximation of the actual cost of care. The dollar figures in Table 5 are the total charges reported after adjustment by the 2008 statewide cost-to-charge ratio of 25.98%. In other words, $13,751,297,656 in total charges for all hospitalizations for all conditions actually represents $3,572,587,131 in total costs.

Table 5 displays the total and median hospitalization costs for the ambulatory care sensitive conditions covered in this analysis. If we take bacterial pneumonia for example we see that a 3% reduction in hospitalizations for this condition would result in a one year savings of over $22,000,000. Table 4 shows that hospitalizations for bacterial pneumonia have declined 33% during the 10-year period from 1999 to 2008, about 3% on average each year. If that rate of decline continues for another 10 years it could translate into a savings of more than $220,000,000. Further, as noted earlier, vaccination for pneumococcal pneumonia in the elderly and early treatment of bacterial respiratory infections on an outpatient basis may reduce hospitalizations involving pneumonia. Achieving significant gains in this one area alone is quite feasible.

Applying a similar scenario to all fifteen preventable hospitalizations, a 3% reduction each year for the next 10 years could save well over a billion dollars! It is not difficult to

Table 5 - Hospital Costs for Preventable Hospitalizations in California - 2008

	Total 2008 Hospitalizations	Total Hospital Cost* All Hospitalizations	Median Cost per Hospitalization
Congestive Heart Failure (CHF) (heart failure) - PQI 8	70,294	$878,135,409	$8,644
Bacterial Pneumonia - PQI 11	59,873	$745,264,405	$8,227
Chronic Obstructive Pulmonary Disease (COPD) (chronic bronchitis or emphysema) - PQI 5	32,064	$369,413,910	$7,776
Diabetes Long-Term Complications - PQI 3	25,642	$355,881,578	$7,954
Urinary Tract Infection - PQI 12	35,837	$298,661,338	$6,231
Lower-Extremity Amputation among Patients with Diabetes (removal of leg or foot due to diabetes complications) - PQI 16	6,509	$205,502,679	$20,062
Adult Asthma - PQI 15	20,302	$194,482,488	$6,651
Perforated Appendix (ruptured appendix) - PQI 2	7,053	$119,883,049	$12,699
Dehydration - PQI 10	16,347	$118,918,114	$5,237
Diabetes, Short-Term Complications and Uncontrolled - PQIs 1 &14	14,962	$136,557,765	$6,284
Hypertension (high blood pressure) - PQI 7	8,471	$62,993,197	$5,446
Angina without Procedure (chest pain) - PQI 13	6,220	$38,147,602	$4,890
Pediatric Asthma - PQI 4	6,406	$26,477,811	$3,102
Pediatric Gastroenteritis (severe vomiting and/or severe diarrhea in children) - PQI 6	7,070	$22,267,787	$2,327
Totals	**317,050**	**$3,572,587,131**	

* Note: Costs based on reported charges at $13,751,297,656 adjusted by statewide cost-to-change ratio of 25.98%

see that even modest reductions in hospitalizations for these conditions could have enormous consequences.

California is doing very well as evidenced by significant declines in 10 PQIs but more can and should be done to reduce preventable hospitalizations.

Local Numbers

Local communities can use these data to compare different population subgroups, defined by age, ethnicity, gender or insurance coverage. They can look for admission rates that are especially high in major cities or other areas. After identifying disparities in admission rates in the community and in specific patient groups, further investigation can be undertaken to ascertain possible underlying reasons for those disparities. Equipped with this information communities can begin to work with local providers and insurers to discern if there are any quality-of-care or access problems or if there is a need for outreach programs encouraging patients to seek care and/or lifestyle changes. Specific interventions can then be undertaken to reduce preventable hospitalizations.

California has 58 counties. PQI rates are calculated for 34 individual counties. Due to small population sizes, twenty-four counties are reported using seven groupings of two to five counties each. Groups are used because the count of selected hospitalizations in some counties is too small for meaningful analysis. Groupings are based on patient location and on hospitalization counts. In some cases a county with more patients is paired with one or more smaller counties to create sufficient data for analysis or to create a contiguous area for the group. Rates are also calculated for 8 sub-county Service Planning Areas in Los Angeles County.

INDIVIDUAL COUNTIES					
Alameda	Kings	Orange	San Francisco	Santa Cruz	Tulare
Butte	Los Angeles	Placer	San Joaquin	Shasta	Ventura
Contra Costa	Madera	Riverside	San Luis Obispo	Solano	Yolo
Fresno	Marin	Sacramento	San Mateo	Sonoma	Yuba
Imperial	Merced	San Bernardino	Santa Barbara	Stanislaus	
Kern	Napa	San Diego	Santa Clara	Sutter	

COUNTY GROUPS	
NORTH CENTRAL – Lake, Colusa, Glenn	NORTH – Siskiyou, Tehama, Trinity
FOOTHILLS – Amador, Calaveras, Tuolumne, Mariposa	NORTH EAST – Lassen, Modoc, Nevada, Sierra, Plumas
CENTRAL COAST – Monterey, San Benito	EAST CENTRAL – El Dorado, Alpine, Inyo, Mono
NORTH COAST – Humboldt, Del Norte, Mendocino	

LOS ANGELES COUNTY SERVICE PLANNING AREAS (SPAs)		
1 Antelope Valley	4 Metro	7 East
2 San Fernando Valley	5 West	8 South Bay
3 San Gabriel	6 South	

Graphs for each county, group of counties and Los Angeles County SPA are available on the OSHPD Web site at www.oshpd.ca.gov/hid/products/preventable_hospitalizations/SearchCharts.aspx.

COUNTIES AND COUNTY GROUPINGS
NORTH COAST
NORTH
NORTH EAST
NORTH CENTRAL
EAST CENTRAL
FOOTHILLS
CENTRAL COAST
INDIVIDUAL COUNTIES
Del Norte
Siskiyou
Modoc
Humboldt
Trinity
Shasta
Lassen
Tehama
Plumas
Mendocino
Glenn
Butte
Sierra
Nevada
Lake
Colusa
Yuba
Placer
Sutter
El Dorado
Sonoma
Yolo
Napa
Sacramento
Alpine
Amador
Solano
Calaveras
Marin
Contra Costa
San Joaquin
Tuolumne
Mono
San Francisco
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Santa Cruz
Madera
Fresno
San Benito
Inyo
Tulare
Monterey
Kings
San Luis Obispo
Kern
San Bernardino
Santa Barbara
Ventura
Los Angeles
Orange
Riverside
San Diego
Imperial

Los Angeles County Service Planning Areas – Explanation

Los Angeles County has a very large population, more than most states, and has divided itself into eight "Service Planning Areas" (SPAs) for health care planning purposes. Each SPA has an Area Health Office responsible for planning public health and clinical services according to local needs. Accordingly, risk-adjusted PQI measures are calculated for each SPA.

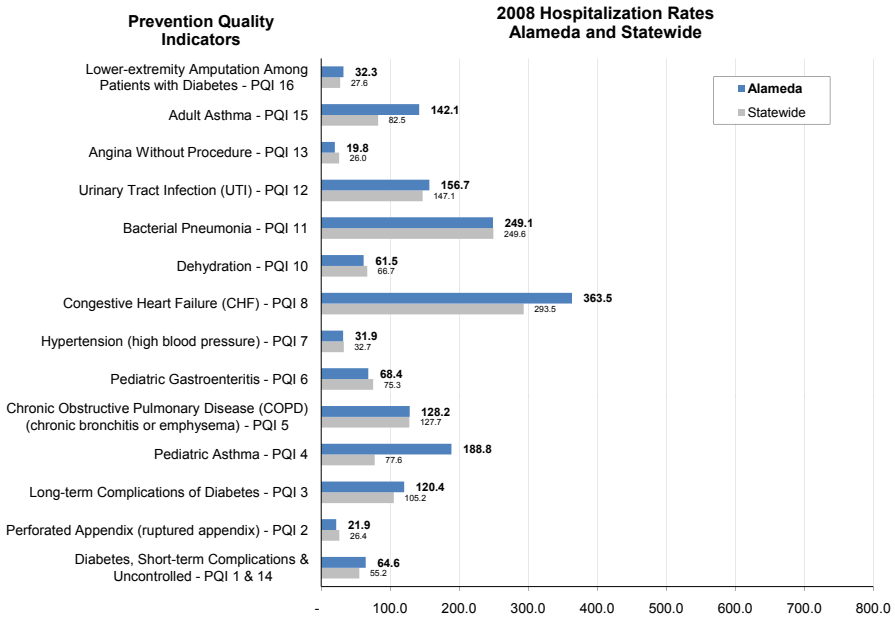
Note: The risk adjusting method used in calculating the rates for the SPAs as well as the statewide and county rates used in the SPA graphs is different from the one used elsewhere in the analysis. This is because the AHRQ formulas do not take into account sub-county calculations. A special risk adjustment formula had to be developed and applied. Therefore, the statewide and Los Angeles County rates in the SPA graphs will not match the statewide and Los Angeles County rates in the county charts and graphs. Additionally, measures of hospitalization for Pediatric Gastroenteritis and Pediatric Asthma could not be calculated for the SPAs because population data for the associated age groups was not available at the sub-county level. More information about Service Planning Areas is available at: www.lapublichealth.org/spa.

Comparisons

The charts in Appendix A – State-Local PQI Rate Comparisons 2008 – compare state rates with local rates and provide a starting point for further exploration at the local level. These charts are available on the OSHPD Web site at www.oshpd.ca.gov/hid/products/preventable_hospitalizations/SearchCharts.aspx. For most measures the local and state numbers generally align. In some cases, however, there are significant differences. As an example, Figure 3 shows that 2008 hospitalization rates for Adult Asthma, Congestive Heart Failure (CHF) and Pediatric Asthma are significantly greater in Alameda County than in the State.

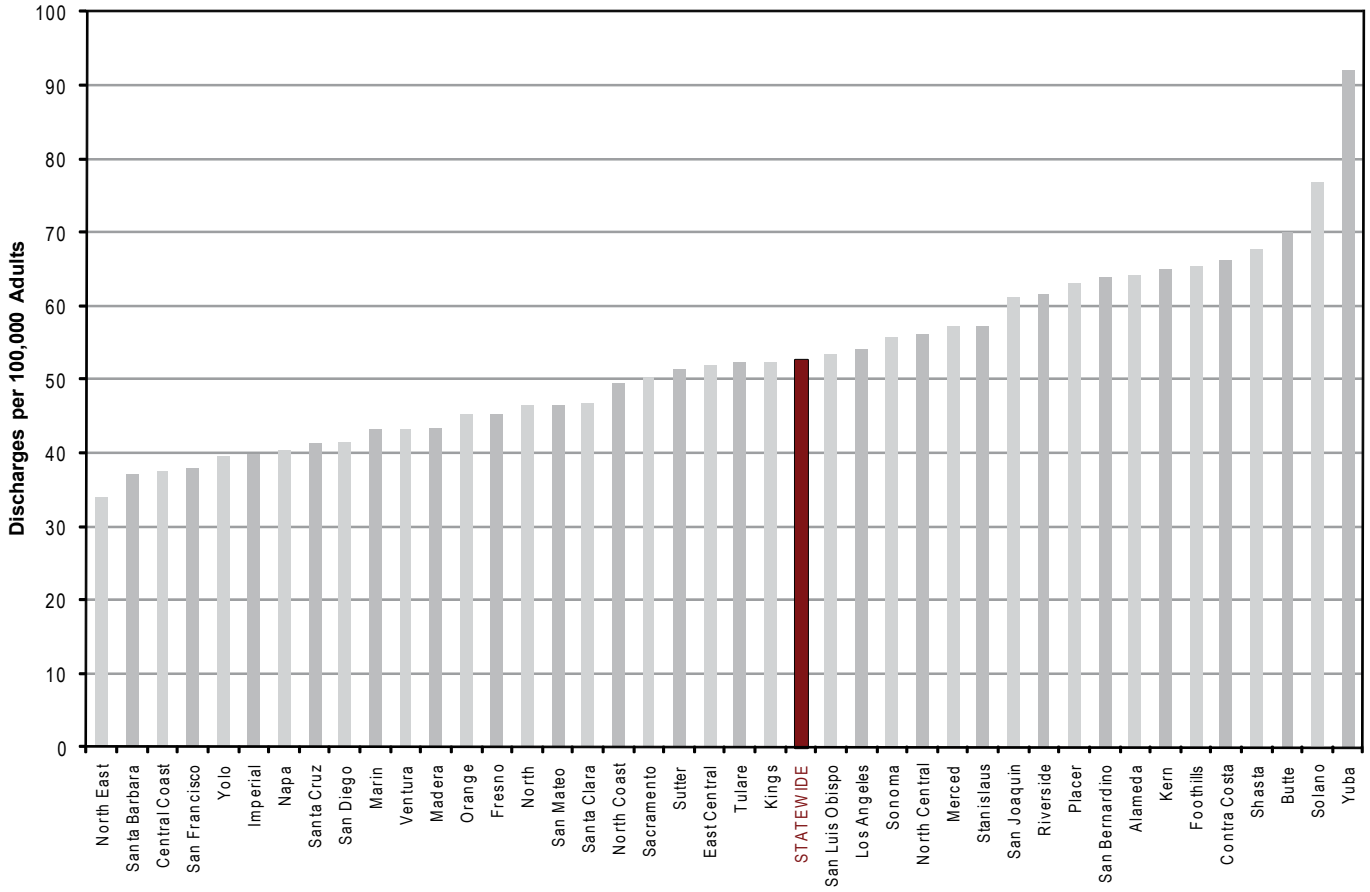
Los Angeles County Service Planning Areas

Figure 3: State/Local Comparison of 2008 Hospitalization Rates - All PQIs - Alameda County



The charts in Appendix B – Average PQI Rates 1999-2008 – rank order the rates for counties, county groupings and the State for each PQI measure. These charts are available on the OSHPD Web site at www.oshpd.ca.gov/hid/products/preventable_hospitalizations/Comparisons.html. As an example, Figure 4 shows the comparison for Diabetes, Short-term Complications and Uncontrolled. Los Angeles County Service Planning Areas are not included because the methodology used to compute the rate differs.

Figure 4: 1999-2008 Average Rates of Hospitalization - Diabetes, Short-term Complications and Uncontrolled - PQIs 1 &14



For further information visit OSHPD's Web site at: **www.oshpd.ca.gov**

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