

Hospitalization

Definition: Hospitalizations are all inpatient discharges of Washington residents admitted to Washington and Oregon licensed acute-care facilities. In-hospital childbirths (including women and newborns) are excluded where noted. A hospitalization rate is the number of hospital visits per 100,000 people. One person may be hospitalized multiple times.

Summary

In 2011, there were more than 600,000 hospitalizations of Washington State residents (age-adjusted rate: 9,325 per 100,000 people). Hospitalization rates declined during the late 1980s and early 1990s, remained stable from 1995 to 2007, and declined again between 2007 and 2011.

Hospitalizations for childbirth (including both women and newborns) accounted for nearly a quarter of all hospital visits in 2009–2011. After childbirth, the leading causes of hospitalization were digestive system disorders, heart disease, infectious and parasitic diseases, injuries and cancer. The overall hospitalization rate was similar for males and females after age adjustment when birth-related hospitalizations were omitted. Heart disease is the leading cause of hospitalization for men. Not including childbirth, digestive system disorders were the leading cause for women.

When compared to other hospitals in the nation, Washington’s rate of hospitalizations for conditions that can be prevented by early intervention or good outpatient care was lower than expected in 2011. This suggests that Washington’s primary care system functions well to reduce preventable hospitalizations.

Hospital charges in Washington adjusted for inflation more than doubled between 2000 and 2011. The average charge for a hospital visit in 2011 was \$33,132. Among all hospital visits, 41% were billed to private insurance, 32% to Medicare, 20% to Medicaid, and 7% to all other payers.

Overview of Hospitalization

The Washington State Department of Health collects inpatient hospitalization billing data from

all Washington-licensed non-Federal acute-care hospitals through the Comprehensive Hospital Abstract Reporting System (CHARS). CHARS contains diagnostic, procedural, demographic and billing information. In this report, CHARS data are augmented with hospital discharge data for Washington residents discharged from Oregon acute-care hospitals. (See [Data Sources](#) for additional information.)

[Hospitalization data](#) do not include emergency department visits or hospital observation stays. Hospital observation stays are short-term treatments or assessments that occur when determining if a patient requires further treatment as an inpatient. Nationally, emergency department visits, hospital observation stays, hospital outpatient care, physician office visits, and home healthcare services have increasingly replaced inpatient hospital care.^{1,2} Despite these types of healthcare services replacing acute-care hospitalizations, inpatient hospitalization data continue to provide meaningful insights into the health of the population and promote understanding of the strengths and weaknesses of the healthcare delivery system. Inpatient hospitalizations represent conditions serious enough to warrant hospital admission and account for the most costly type of healthcare.³

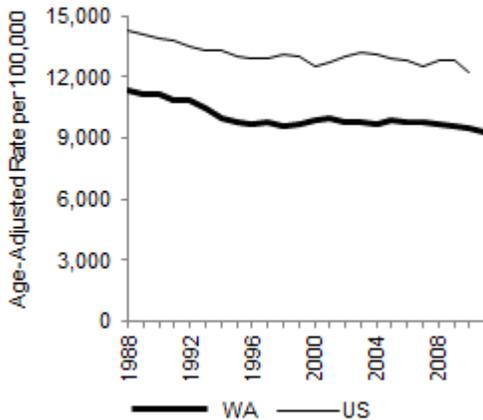
Time Trends

From 1988 to 1995, Washington’s [age-adjusted](#) inpatient hospitalization rate declined from 11,377 to 9,821 per 100,000 people. The rate was stable from 1995 to 2007, and decreased from 9,775 in 2007 to 9,325 per 100,000 in 2011. In 2011, more than half a million Washington residents were hospitalized in Washington or Oregon, with a total of 641,580 hospitalizations reported.

The decline in hospitalization rates in the late 1980s and early 1990s has been attributed to changes in reimbursement for care, increased enrollment in managed care plans and other cost containment programs that restrict the use of inpatient hospital

services.^{4,5} In the mid-1990s, the influence of managed care on hospitalization rates appeared to decrease, with rates for people in managed care programs becoming comparable to rates for people insured by fee-for-service programs.⁵

**Hospitalizations
Washington State and US
Hospital Discharge Data, 1988–2011**



Since the late 1980s, Washington has consistently had a much lower age-adjusted hospitalization rate than the United States as whole. This is likely due to many factors, including Washington’s higher percentage of residents with health insurance than the national average. (See the *Health of Washington State* chapter on [Access to Primary Healthcare Services](#)). Washington’s population is also healthier than much of the nation, ranking as the 14th healthiest state by the United Health Foundation in 2013.⁶

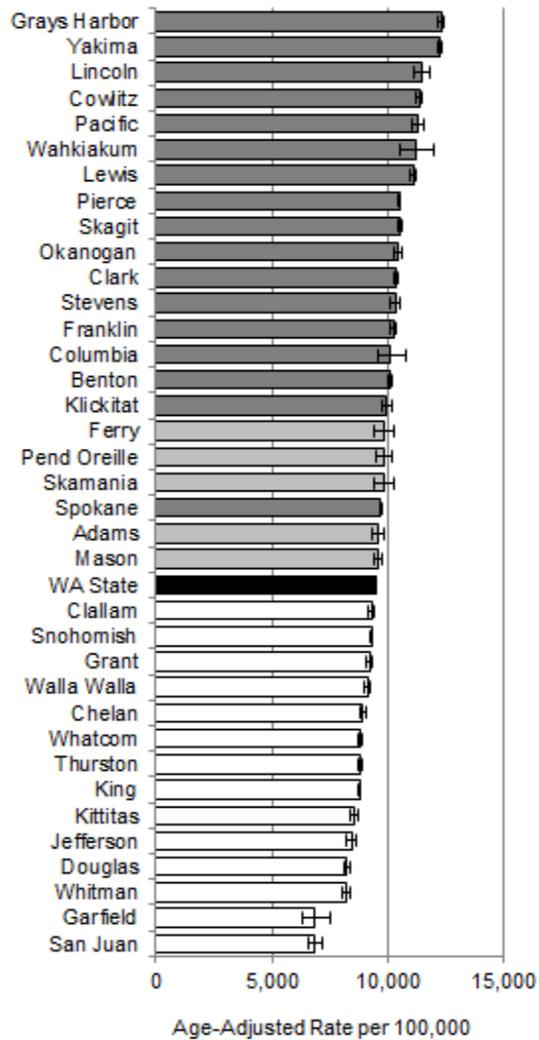
2010 and 2020 Goals

There are not *Healthy People* objectives for summary measures of hospitalization. *Healthy People 2020* goals aim to reduce hospitalizations for six specific chronic diseases and injuries. *Health of Washington State* includes information on *Healthy People* goals for two of these conditions: [asthma](#) and [hip fracture among older adults](#).

Geographic Variation

Washington counties vary in their rates of hospitalization. Hospital discharge data for 2009–2011 show that age-adjusted hospitalization rates ranged from a high of 12,300 per 100,000 people for Grays Harbor County to a low of 6,863 per 100,000 people for San Juan County.

**Hospitalization
County Data
Hospital Discharge Data, 2009–2011**



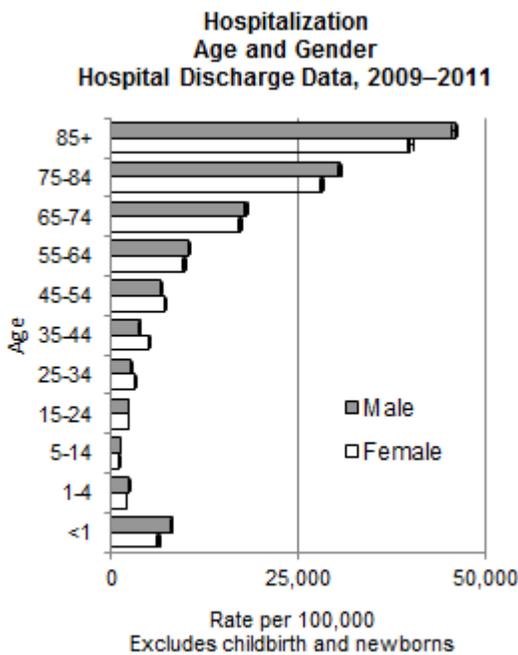
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Seventeen Washington counties had hospitalization rates significantly higher than the state average. (NOTE: Asotin and Garfield counties are excluded from the analysis due to missing data from hospitalizations in Idaho.) Fourteen counties had rates significantly lower than the state average.

Age and Gender

With a quarter of hospitalization being for childbirth (both women and newborns), females have a higher

rate of hospitalization than males. Hospital discharge data for 2009–2011 show that the overall age-adjusted hospitalization rate for females was 10,861 visits per 100,000 women. In comparison, the age-adjusted rate for males was 8,190 visits per 100,000 men. When birth-related hospitalizations are omitted, the overall hospitalization rate was similar for females and males at 6,677 per 100,000 population and 6,876 per 100,000, respectively.

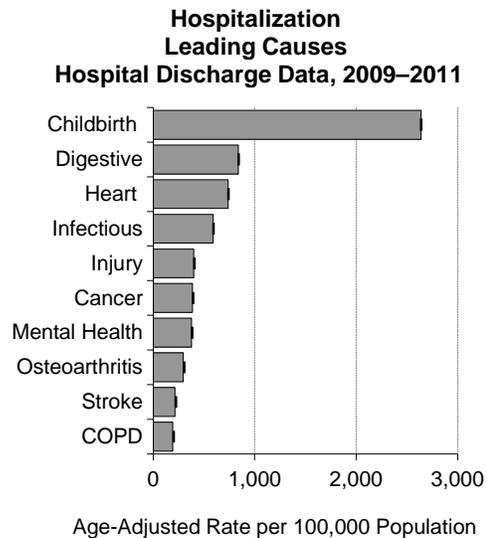


Hospitalization rates for both males and females increase with age. Rates for both genders nearly doubled from 55–64 to 65–74 years of age, and again from 65–74 to 75–84 years of age. The highest hospitalizations rates are of individuals ages 85 years and older. During 2009–2011, people in this age group represented 12% of the state population^{7,8} but 43% of all hospitalizations.

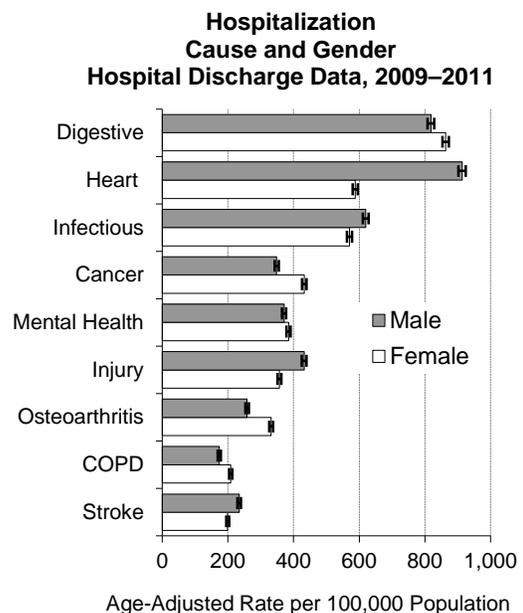
Leading Causes of Hospitalization

The leading causes of hospitalization are derived from ICD-9-CM codes and diagnosis-related groups. The categories are adapted from definitions used by the National Hospital Discharge Survey.⁹ During 2009–2011, the ten leading causes of hospitalization in rank order of age-adjusted rates were childbirth (including both women and newborns), digestive system disorders (including ulcer, appendicitis and hernia), heart disease, infectious and parasitic diseases, injuries, cancer, mental health

disorders, osteoarthritis, stroke and chronic obstructive pulmonary disease (COPD, including bronchitis, emphysema and asthma). These conditions accounted for over two-thirds of all hospitalizations for Washington residents.



Leading causes of hospitalization and rates vary by gender and age. According to hospital discharge data for 2009–2011, males had higher hospitalization rates than females for heart disease, infectious and parasitic diseases, injuries and stroke. Females had higher hospitalization rates than males for digestive system disorders, cancer, mental health disorders, osteoarthritis and COPD.



Hospital discharge data for 2009–2011 show that the leading causes of hospitalization for individuals younger than 65 years were digestive system disorders (213 per 100,000), mental health disorders (130 per 100,000), and infectious and parasitic diseases (111 per 100,000). For people ages 65 years and older, hospitalization rates were highest for heart disease, (1,326 per 100,000), infectious and parasitic diseases (850 per 100,000), and digestive system disorders (826 per 100,000).

Economic Factors and Education

Hospital discharge data do not contain information about the income or education levels of patients.

Race and Hispanic Origin

The CHARS dataset began collecting information about patient’s race and ethnic origin in 2007. The percent of records with this information has continued to increase, but in 2011, about 15% of records still lacked information on race and ethnic origin. Given this level of missing data, we have not calculated hospitalization rates by race and Hispanic origin.

Other Measures of Impact and Burden

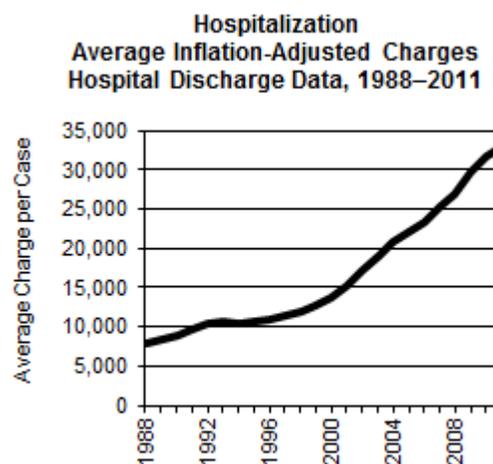
Length of stay. Since Washington began collecting data in 1988, the average length of hospital stay in Washington has been consistently lower than the national average.^{10,11} Washington hospital discharge data show that the average length of a hospital stay declined from 5.2 days in 1988 to 4.0 days in 1995. It has been fairly stable since then. In 2011, the average length of stay was 4.1 days (median: 2 days). Average length of stay varies by condition. Of the top 10 leading causes of hospitalization, childbirth has the lowest average length of stay with 2.7 days in 2011 and mental health disorders has the highest with 8.2 days.

Many forces have helped to contain the length of hospital stays, such as changes in reimbursement, increased enrollment in managed care plans and other cost containment programs, greater development and coverage of post-acute care alternatives to hospitalizations, advances in technology and drug therapy that have assisted in the earlier diagnosis and treatment of acute conditions, and safer and less invasive surgical interventions.¹²

Discharge status. After about 75% of hospital discharges, patients are able to return home after their hospital stay, but many require additional care. The percentage requiring additional care increases with patient’s age. From 2009–2011, patients younger than 65 years were discharged to nursing homes or other health facilities after 5% of hospital visits. Patients ages 65–84 were discharged to nursing homes or other health facilities after 23% of visits, and patients 85 years and older were discharged to these facilities after 40% of hospital visits.

Hospital mortality. During 2009–2011, hospital discharge data indicate that patient death occurs during 2% of hospital visits. The rate of in-hospital mortality varies by diagnosis and age. Infectious and parasitic diseases have the highest in-hospital mortality, accounting for 24% of the in-hospital deaths during 2009–2011. In-hospital mortality rates increase with older age. For 2009–2011, the rate of in-hospital mortality for patients younger than 65 years was 62 patients per 100,000 people, while patients ages 65–84 had a rate of 774 per 100,000 people, and patients 85 years and older had a rate of 2,581 per 100,000 people.

Charges. In 2011, hospital charges exceeded \$21 billion for Washington residents. The average charge per hospitalization was \$33,132 (median: \$18,826). Hospital charges vary by the patient’s condition and treatment. About 12% of the total hospital charges in 2011 were for heart disease. Childbirth and digestive system disorders accounted for the second and third highest charges: 10% and 9% of total charges for 2011, respectively.



Hospital charges have been increasing dramatically over time, even after adjusting for inflation. From 1988 to 2011, the average inflation-adjusted hospital

charge rose from \$7,983 to \$33,132, a 4-fold increase.

Hospital charges do not reflect the total cost of hospital care because hospitals report only what they charge payers at the time of discharge, not what they receive nor what it costs them to provide the care. Providers and payers enter into contracts that determine the amount to be paid for specific services, independent of the actual charge or how hospitals set costs for services. Also, hospital charges do not include physician fees, which are billed separately.

Primary payer. The primary payer is the health plan or individual that pays for the hospitalization or is the first payer of hospital charges when more than one entity pays, such as when a person has more than one type of health insurance. In 2011, 41% of hospitalizations were paid primarily by private insurance, 32% by Medicare, 20% by Medicaid, 4% by self-pay and 2% by other government programs. Less than 1% was uncompensated charity care.

The percentage of hospitalizations paid primarily by private insurance decreased from 47% in 1988 to 41% in 2011. During the same period, the percentage of hospitalizations paid by Medicare increased from 28% to 32%. The percentage of hospitalizations paid by Medicaid fluctuated between 1988 and 2001, and has remained fairly steady around 20% since.

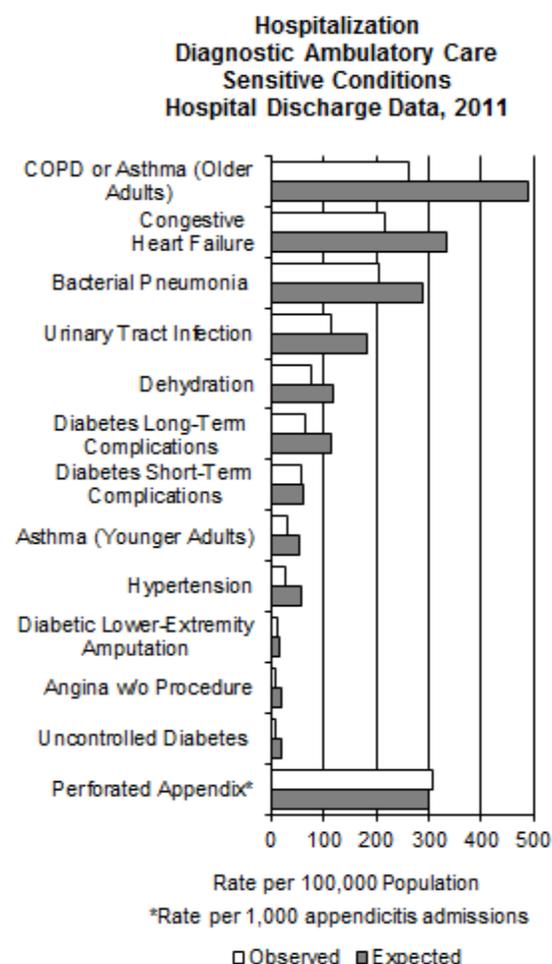
Hospital readmissions. Unplanned hospital readmissions may or may not be related to the previous visit, and some unplanned readmissions are not preventable. Hospital readmissions are costly.¹³ High rates of readmissions may indicate poor quality of hospital care if they occur within a short amount of time after a previous discharge.¹⁴ Readmission rates tend to vary by age and condition. Older individuals and those with chronic conditions have higher rates of readmission than younger individuals and those with acute conditions.¹⁴ In 2011, 82% of Washington patients had only one hospitalization, 12% had two, 3% had three and 2% had four or more hospitalizations.

Potentially avoidable hospitalizations. Hospitalizations can be prevented for some conditions if high-quality primary care is available and used.^{15,16} The U.S. Agency for Healthcare Research and Quality has identified a standardized set of measures for identifying potentially avoidable hospitalizations through its

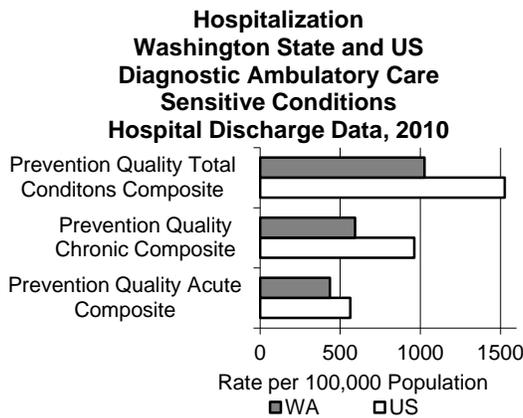
Healthcare Utilization and Cost Project: Prevention Quality Indicators (PQIs). The indicators address 13 diagnostic and three summary categories, covering chronic and acute conditions. These conditions are often referred to as “ambulatory care sensitive conditions” or ACSCs.

Rates of ACSCs for 2011 Washington hospitalizations were lower than expected in 12 of the 13 diagnostic categories, and were similar to expected for perforated appendix admissions). The expected rate is based on rates from a reference population and adjusts for Washington’s actual case mix (e.g. age, gender, comorbidities). (See [Technical Note.](#))

Rates for summary ACSCs were last calculated nationally in 2010. In 2010, Washington’s summary rates for chronic conditions, acute conditions and total conditions were much lower than national rates. The acute, chronic and overall summary rates were 435, 593 and 1,027 discharges per 100,000 people in Washington, and 563, 963 and 1,526 per 100,000 in the United States.



Washington's lower than expected PQIs in all but one category suggest that Washington's healthcare system is performing fairly well at all levels of care, beginning with preventive care and ambulatory care, and resulting in fewer hospitalizations for many potentially avoidable chronic and acute conditions. However, PQI rates are higher in some areas of Washington, and these areas may benefit from investing in primary care, care coordination and community health worker strategies.¹⁷



Intervention Strategies

There are many potential approaches for reducing hospital admissions and readmissions. These range from improving the availability and quality of care in nonhospital clinical and home settings to implementing community-based programs that prevent disease and injury. Many chapters in *Health of Washington State* discuss both clinical and community-based activities to prevent or manage diseases and injuries that currently are included among the common causes of hospitalization. A review of interventions to reduce readmissions identified four categories of interventions to reduce readmissions: enhanced care and support when transitioning to out-of-hospital care, improved patient education and support for self-management, multidisciplinary team management, and patient-centered care planning at the end of life.¹⁸

See Related Sections and Chapters:

[Washington: The State and Its People, Healthcare Services, Chronic Disease](#), and [Injury and Violence](#).

Data Sources (For additional detail, see [Appendix B](#).)

Washington hospitalization data: Dataset compiled by the Washington State Department of Health, Center for Health

Statistics from the Washington Comprehensive Hospital Abstract Reporting System (1988–2011) and Oregon Hospital Discharge data (1988–2011). CHARS data describe Washington residents hospitalized in either Washington or Oregon. Readmission and patient quality indicators are calculated using all hospitalizations occurring in Washington, regardless of residence. The county chart excludes Asotin, Kitsap, and Island counties due to a large amount of missing data. Island and Kitsap counties are primarily served by federal hospitals, which are not represented in the CHARS dataset, and many residents in Asotin County receive hospital care in Idaho.

U.S. hospitalization data: U.S. Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Discharge Survey 1998–2010.

State Inpatient Database (SID), Healthcare Cost and Utilization Project (HCUP), U.S. Agency for Healthcare Research and Quality (AHRQ), Oregon 1988–2011.

Prevention Quality Indicators (PQI), 2009–2011, available at WA-MONAHRO: <http://www.wamonahrq.net/>

For More Information

Washington State Department of Health, Center for Health Statistics

Technical Notes

Inflation adjustment. Inflation-adjusted charges are calculated with the Bureau of Labor Statistics' inflation calculator (http://www.bls.gov/data/inflation_calculator.htm). The calculator is based on the average Consumer Price Index (CPI) for a given calendar year. It shows yearly changes in the average prices of all goods and services purchased for consumption by urban households. The CPI has been calculated every year since 1913. For a given base year, the calculator finds the equivalent dollar amount for a target year. HWS used 2011 as the base year and converted amounts for other years into year 2011 dollar equivalents.

Leading cause definitions. The leading causes are derived from ICD-9CM diagnosis codes. These are the codes that hospitals use to record what is treated for billing purposes. The hospital discharge record reports up to 25 diagnosis codes. The first-listed condition is thought to be the main reason for the hospitalization (principal diagnosis). The codes used to calculate the leading causes of hospitalization for this chapter are shown in the table below. The first three digits of the principal diagnosis were used unless otherwise specified.

Cause	Coding Definition
Infectious and parasitic disease	001-139, 480-487
Cancer	140-239
Diabetes	250
Mental health	290-319
Central nervous system disorders	320-336, 340-349
Heart disease	391-392.0, 393-398, 402, 404, 410-416, 420-429

Stroke	430-438
Chronic obstructive pulmonary disease	490-496
Digestive system disorders	530-579
Osteoarthritis	715
Injuries	800-959
Childbirth	DRG 765-782, 789-795

PQIs. The Prevention Quality Indicators (PQIs) are used to identify quality of care for ambulatory-sensitive conditions. These are conditions where good outpatient care can potentially prevent the need for hospitalization, or early intervention can prevent complications or more severe disease. The Agency for Healthcare Research and Quality devised the PQIs. PQIs are calculated by the Washington State Office of Financial Management, and are available at http://www.wamonahrq.net/MONAHRO_WA_2011/AvoidableStays.html. More information about the PQIs and their development can be viewed at <http://www.qualityindicators.ahrq.gov/>.

Acknowledgments

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Endnotes

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