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All-Cause Readmissions by Payer and Age, 2008

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Highlights

- In 2008, 30-day readmission rates were about 25 percent higher among non-elderly Medicare patients (24.1 percent) than among Medicare patients 65 and over (19.0 percent).
- Among non-maternal adults ages 45–64 years old, Medicaid patients were re-hospitalized about 60 percent more often than uninsured patients and about twice as frequently as privately insured patients, regardless of the readmission period.
- Maternal readmission rates were about 50 percent higher for uninsured and Medicaid patients than for privately insured patients across all time periods.
- Medicaid and privately insured pediatric patients were re-hospitalized within 7 and 14 days at a similar rate and more frequently than uninsured patients irrespective of the readmission period.

Introduction

Hospital readmissions have been identified as an important outcome measure for assessing performance of the health care system.[1,2] Reducing readmission rates and variation in those rates can be an effective strategy for improving the quality of health care while lowering the cost. Developing national or multi-state benchmarks for hospital readmissions by payer category and patient characteristics can help identify subpopulations with relatively high readmission rates for targeted improvement efforts.

AHRQ added supplemental data elements to selected[3] Healthcare Cost and Utilization Project (HCUP) State-level databases to facilitate research focusing on repeat hospital visits. These data elements allow analysts to track a patient across time and hospital setting while adhering to strict privacy protections.[4] Hospital visits that belong to a unique person may be linked and the elapsed time between visits can be calculated.

This Statistical Brief presents data from HCUP on all-cause readmissions by expected payer and age groups in 15 selected states in 2008. The 15 states are dispersed geographically and account for 42 percent of the total U.S. resident population. For this Statistical Brief, readmission rate is defined as the number of times patients had a readmission within a certain number of days after being discharged alive from an initial hospital stay divided by the total number of initial stays between January and November 2008. Each hospital stay can be a new initial stay. Thus, a patient is allowed to have more than one initial stay and also multiple readmissions within a time period. Readmission rates 7, 14, and 30 days post-discharge are presented by expected primary payer and age group.[5] All differences between estimates noted in the text are statistically significant at the 0.05 level or better.

[1] MedPac Report to Congress. Promoting Greater Efficiency in Medicare. June 2007. http://www.medpac.gov/documents/jun07_entirereport.pdf.

[2] Axon R. N., Williams M. V. Hospital Readmission as an Accountability Measure. *JAMA*. 2011;305(5):504-505.

[3] The HCUP revisit variables are available for the State Inpatient Databases, State Ambulatory Surgery Databases, and State Emergency Department Databases in select States starting in 2003. Appendix A of the User Guide provides a detailed list of which states, years, and types of data are available.

[4] Overview of the HCUP Supplemental Variables for Revisit Analyses available at http://www.hcup-us.ahrq.gov/toolssoftware/revisit/revisit.jsp.

[5] See definition section at the end of this Brief for additional information on methods.

Findings

Among the 15 selected states there were a combined 11.8 million inpatient hospital stays in 2008, representing information on 8.5 million patients. Across all payers and age groups, readmission rates increased with the number of days post-discharge, such that the 30-day readmission rate was higher than the 14-day rate, which was then higher than the 7-day rate (table 1).

Table 1. Readmission rates by 7, 14, and 30 days post-discharge of an initial hospital stay, by expected payer and age group, 2008

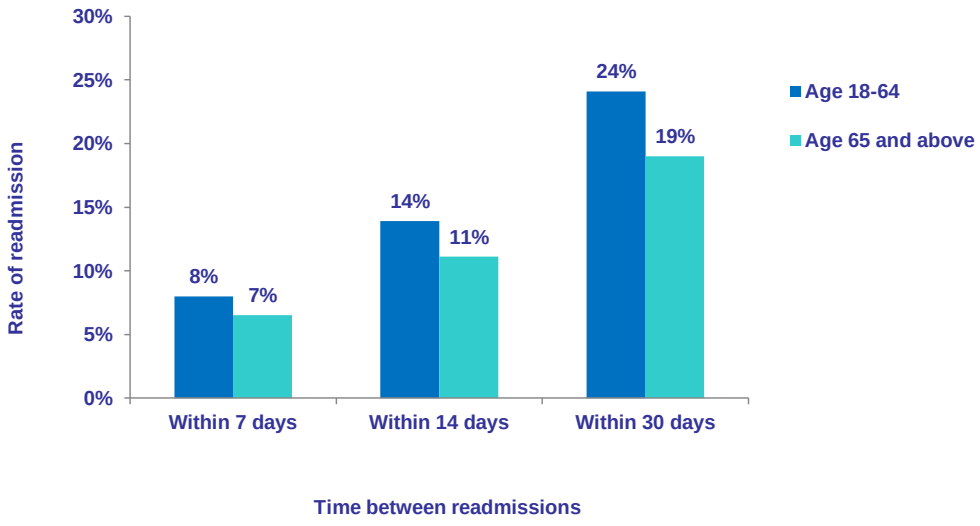
Expected payer and age group	Number of discharges	Number of patients	Readmission rate		
			7 day	14 day	30 day
Medicare					
Adults, age 65+	4,426,500	2,884,700	6.5%	11.1%	19.0%
Adults, age 18–64	959,900	539,600	8.0%	13.9%	24.1%
Medicaid					
Maternal, regardless of age	732,400	655,200	2.2%	3.5%	5.5%
Non-maternal pediatric, age 1–17	224,800	174,600	4.1%	7.0%	12.1%
Non-maternal adults, age 18–44	469,800	299,800	7.6%	12.5%	20.8%
Non-maternal adults, age 45–64	565,100	326,500	8.1%	14.2%	24.4%
Private insurance					
Maternal, regardless of age	851,400	794,700	1.6%	2.4%	3.6%
Non-maternal pediatric, age 1–17	167,000	137,400	4.1%	6.9%	11.3%
Non-maternal adults, age 18–44	808,300	661,100	3.8%	6.2%	10.1%
Non-maternal adults, age 45–64	1,587,500	1,236,800	4.2%	7.1%	11.9%
Uninsured					
Maternal, regardless of age	39,600	34,500	2.3%	3.6%	5.7%
Non-maternal pediatric, age 1–17	15,000	13,200	2.9%	4.4%	7.0%
Non-maternal adults, age 18–44	273,600	216,700	4.4%	7.0%	11.2%
Non-maternal adults, age 45–64	254,500	188,200	5.1%	8.7%	14.4%
All other payers					
All ages	391,200	307,600	4.3%	7.1%	11.7%

Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2008, from the following 15 states: AR, CA, FL, HI, LA, MA, MO, NE, NH, NY, SC, TN, UT, VA, WA

Medicare readmissions, by age

Although non-elderly patients (18 to 64 years) comprised a relatively small proportion of stays billed to Medicare (17.8 percent), their readmission rates were higher than those for elderly patients (65 years and older).[6] For example, 30-day readmission rates were about 25 percent higher among non-elderly than among elderly Medicare patients (24.1 versus 19.0 percent; figure 1). In contrast, readmission rates for non-maternal stays increased with age for Medicaid, privately insured, and uninsured patients.

Figure 1. Rate of readmissions for Medicare patients, by age, 2008



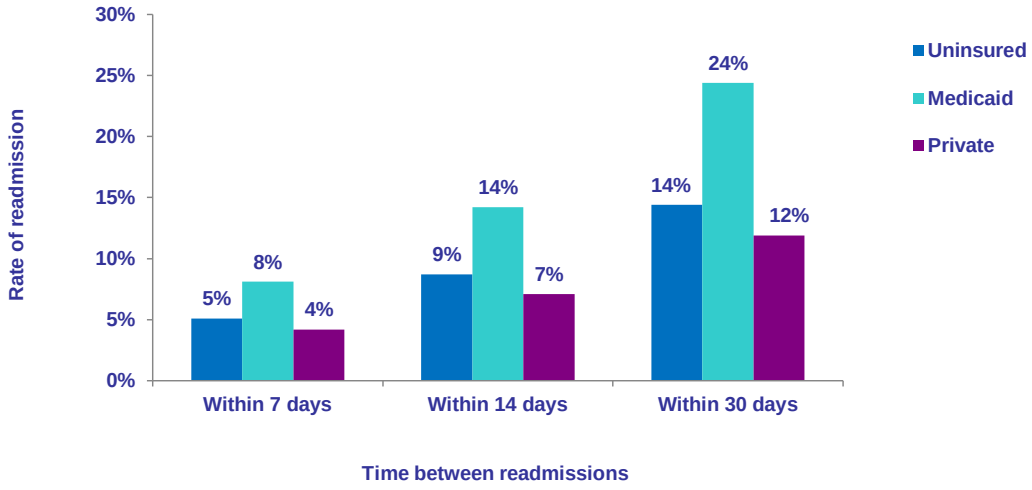
Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2008, from the following 15 states: AR, CA, FL, HI, LA, MA, MO, NE, NH, NY, SC, TN, UT, VA, WA

[6] Medicare covers patients who are 65 and older or disabled.

Non-maternal adult readmissions, by payer

Among adults ages 45–64 years old, Medicaid patients were re-hospitalized about 60 percent more often than uninsured patients and about twice as frequently as privately insured patients, regardless of the readmission period (figure 2). For instance, the non-maternal 30-day readmission rate was 24.4 percent for Medicaid patients compared with 14.4 percent for the uninsured and 11.9 percent for the privately insured.

Figure 2. Rate of readmissions for non-maternal adult discharges, ages 45-64, by payer, 2008

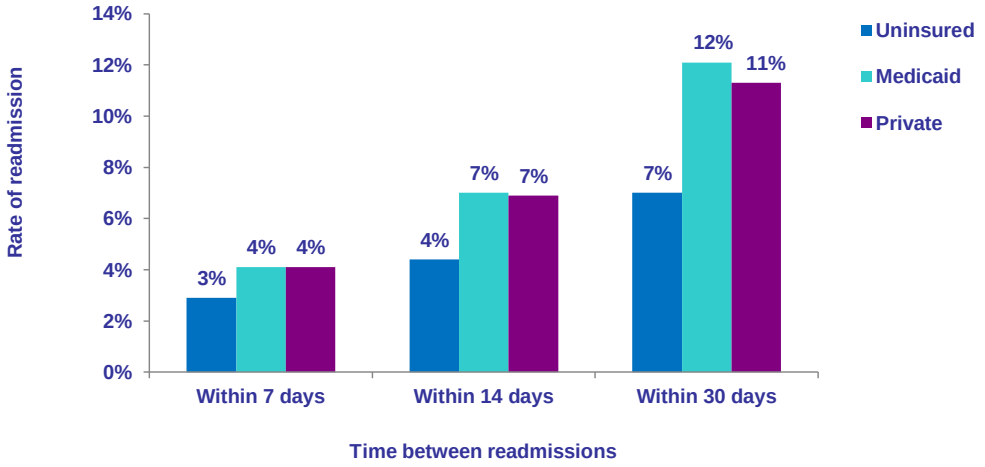


Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2008, from the following 15 states: AR, CA, FL, HI, LA, MA, MO, NE, NH, NY, SC, TN, UT, VA, WA

Non-maternal pediatric readmissions, by payer

The majority of pediatric patients were insured by either Medicaid (54 percent) or private insurance (42 percent) in 2008; only 4 percent were uninsured (table 1). Medicaid and privately insured pediatric patients were re-hospitalized within 7 and 14 days at a similar rate and more frequently than uninsured patients irrespective of the readmission period. As shown in figure 3, the non-maternal 30-day readmission rate was 12.1 percent for Medicaid patients and 11.3 percent for privately insured patients compared with 7.0 percent for uninsured.

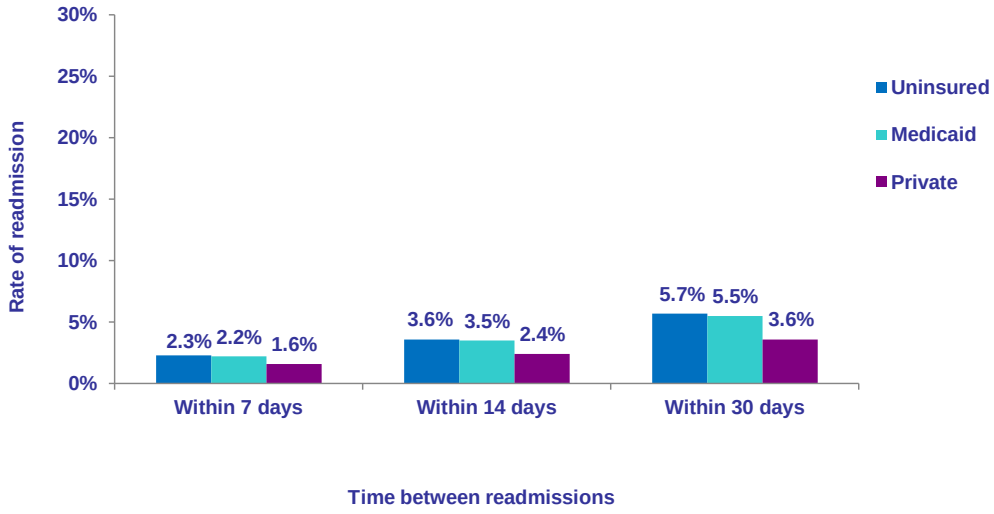
Figure 3. Rate of readmissions for non-maternal pediatric patients, ages 1-17, by payer, 2008



Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2008, from the following 15 states: AR, CA, FL, HI, LA, MA, MO, NE, NH, NY, SC, TN, UT, VA, WA

Maternal readmissions, by payer
Nearly half (45.0 percent) of Medicaid patients were classified as maternal (i.e., had at least one inpatient stay related to pregnancy, childbirth, and post-partum conditions in the year). Obstetric patients accounted for 28.1 percent of privately insured and 7.6 percent of uninsured patients. Across all payers, readmissions for maternal discharges were less frequent than for non-maternal discharges. Maternal readmission rates were about 50 percent higher for uninsured and Medicaid patients than for privately insured patients across all time periods (figure 4).

Figure 4. Rate of readmissions for maternal patients, (all ages) by payer, 2008



Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2008, from the following 15 states: AR, CA, FL, HI, LA, MA, MO, NE, NH, NY, SC, TN, UT, VA, WA

Data Source

The estimates in this Statistical Brief are based upon data from the HCUP 2008 State Inpatient Databases for 15 States. States were selected based on availability of synthetic patient-level identifiers that enabled tracking of patients across hospitals and time within a State: Arkansas, California, Florida, Hawaii, Louisiana, Massachusetts, Missouri, Nebraska, New Hampshire, New York, South Carolina, Tennessee, Utah, Virginia, and Washington.

Definitions

Diagnoses, Diagnosis Related Groups (DRGs) and Major Diagnostic Categories (MDCs)
DRGs comprise a patient classification system that categorizes patients into groups that are clinically coherent and homogeneous with respect to resource use. DRGs group patients according to diagnosis, type of treatment (procedures), age, and other relevant criteria.

MDCs are broad groups of DRGs that relate to an organ or a body system (digestive system, for example) and not to an etiology. For example, MDC 01—Diseases and Disorders of the Nervous System, MDC 02—Diseases and Disorders of the Eye, MDC 03—Diseases and Disorders of the Ear, Nose, Mouth, and Throat. Each hospital stay has one DRG and one MDC assigned to it.

For the purpose of this Brief, MDC 14 (Pregnancy, Childbirth, and the Puerperium) was used to identify maternal discharges.

Types of hospitals included in HCUP
HCUP is based on data from community hospitals, defined as short-term, non-Federal, general and other hospitals, excluding hospital units of other institutions (e.g., prisons). HCUP data include OB-GYN, ENT, orthopedic, cancer, pediatric, public, and academic medical hospitals. Excluded are long-term care, rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals.

Unit of analysis
The unit of analysis is the individual patient identified by the synthetic patient-level identifier. A patient may be counted multiple times if he or she has multiple admissions to the hospital in the year.

Readmission
Readmission rate is defined as the number of times patients had a readmission within a certain number of days (e.g., 7, 14, or 30 days) after being discharged alive from an initial hospital stay divided by the total number of initial stays between January and November 2008. Each hospital stay can be a new initial stay. Thus, a patient is allowed to have multiple initial stays, regardless of the time elapsed between admissions. For example, if one admission is January 10 and the next admission is January 20, followed by a third admission on January 27th, and a fourth on March 30th, all four are counted in the denominator of the readmission rates. The January 20th admission is counted in the numerator for 14- and 30-day readmissions relative to the January 10th admission. The January 27th admission is counted in the numerator as a 30-day readmission relative to the January 10th admission. The January 27th admission also counts as a readmission within 7, 14, and 30 days of the January 20th admission. The March 30th stay is not counted as a readmission, as it is outside the 7-, 14- or 30-day window of any previous stay. The final count is 4 initial hospital stays, with one 7-day readmission, two 14-day readmissions and three 30-day readmissions. Excluded from the analysis are discharges with missing age, expected payer, length of stay, or principal diagnosis, in addition to discharges without a valid Diagnosis Related Group (DRG). Discharges for patients who died at an initial stay or whose initial stay occurred in December of 2008 were also disqualified because they could not be followed for 30 days. If a patient was transferred to a different hospital on the same day as or next day after discharge from the previous stay, the two admissions were combined as a single stay. Transfers, thus, were not considered as a readmission.

Payer
Payer is based on the first hospital stay in the year with non-missing expected payer. To make coding uniform across all HCUP data sources, payer combines detailed categories into more general groups:

- Medicare includes fee-for-service and managed care Medicare patients.
- Medicaid includes fee-for-service and managed care Medicaid patients. Patients covered by the State Children's Health Insurance Program (SCHIP) may be included here. Because most state data do not identify SCHIP patients specifically, it is not possible to present this information separately.
- Private insurance includes Blue Cross, commercial carriers, and private HMOs and PPOs.
- Other includes Workers' Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs.
- Uninsured includes an insurance status of "self-pay" and "no charge."

Up to two expected payers can be coded for a hospital stay in HCUP data. When this occurs, the following hierarchy is used:

- For purpose of this Statistical Brief, if either payer is listed as Medicare, the payer is "Medicare".
- For non-Medicare stays, if either payer is listed as Medicaid, the payer is "Medicaid".
- For stays that are neither Medicare nor Medicaid, if either payer is listed as private insurance, the payer is "private insurance".
- For stays that are not classified as Medicare, Medicaid, or private insurance, if the expected primary payer is self-pay or no-charge, the payer is "uninsured".

About HCUP

HCUP is a family of powerful health care databases, software tools, and products for advancing research. Sponsored by the Agency for Healthcare Research and Quality (AHRQ), HCUP includes the largest all-payer encounter-level collection of longitudinal health care data (inpatient, ambulatory surgery, and emergency department) in the United States, beginning in 1988. HCUP is a Federal-State-Industry Partnership that brings together the data collection efforts of many organizations—such as State data organizations, hospital associations, private data organizations, and the Federal government—to create a national information resource.

HCUP would not be possible without the contributions of the following data collection Partners from across the United States:

Arizona Department of Health Services
Arkansas Department of Health
California Office of Statewide Health Planning and Development
Colorado Hospital Association
Connecticut Hospital Association
Florida Agency for Health Care Administration
Georgia Hospital Association
Hawaii Health Information Corporation
Illinois Department of Public Health
Indiana Hospital Association
Iowa Hospital Association
Kansas Hospital Association
Kentucky Cabinet for Health and Family Services
Louisiana Department of Health and Hospitals
Maine Health Data Organization
Maryland Health Services Cost Review Commission
Massachusetts Division of Health Care Finance and Policy
Michigan Health & Hospital Association
Minnesota Hospital Association
Missouri Hospital Industry Data Institute
Montana MHA – An Association of Montana Health Care Providers
Nebraska Hospital Association
Nevada Department of Health and Human Services
New Hampshire Department of Health & Human Services
New Jersey Department of Health and Senior Services
New Mexico Health Policy Commission
New York State Department of Health
North Carolina Department of Health and Human Services
Ohio Hospital Association
Oklahoma State Department of Health
Oregon Association of Hospitals and Health Systems
Pennsylvania Health Care Cost Containment Council
Rhode Island Department of Health
South Carolina State Budget & Control Board
South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
Texas Department of State Health Services
Utah Department of Health
Vermont Association of Hospitals and Health Systems
Virginia Health Information
Washington State Department of Health
West Virginia Health Care Authority
Wisconsin Department of Health Services
Wyoming Hospital Association

About the SID

The HCUP State Inpatient Databases (SID) are hospital inpatient databases from data organizations participating in HCUP. The SID contain the universe of the inpatient discharge abstracts in the participating HCUP states, translated into a uniform format to facilitate multistate comparisons and analyses. Together, the SID encompasses 95 percent of all U.S. community hospital discharges in 2009. The SID can be used to investigate questions unique to one state; to compare data from two or more states; to conduct market area variation analyses; and to identify state-specific trends in inpatient care utilization, access, charges, and outcomes.

For More Information

For more information about HCUP, visit www.hcup-us.ahrq.gov.

For additional HCUP statistics, visit HCUPnet, our interactive query system, at www.hcup.ahrq.gov.

For information on other hospitalizations in the U.S., download *HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States in 2008*, located at http://www.hcup-us.ahrq.gov/reports.jsp.

For a detailed description of HCUP, more information on the design of the SID, and revisit analyses using HCUP, please refer to the following publications:

Introduction to the HCUP State Inpatient Databases. Online. June 2010. Agency for Healthcare Research and Quality. http://hcup-us.ahrq.gov/db/state/siddist/Introduction_to_SID.pdf

Barrett M., Steiner C., Andrews R., Kassed C., Nagamine M. *Methodological Issues when Studying Revisits using Hospital Administrative Data*. 2011. HCUP Methods Series Report # 2011-01. Online. March 2011. Agency for Healthcare Research and Quality. http://www.hcup-us.ahrq.gov/reports/methods/methods.jsp.

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AHRQ welcomes questions and comments from readers of this publication who are interested in obtaining more information about access, cost, use, financing, and quality of health care in the United States. We also invite you to tell us how you are using this Statistical Brief and other HCUP data and tools, and to share suggestions on how HCUP products might be enhanced to further meet your needs. Please e-mail us at hcup@ahrq.gov or send a letter to the address below:

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