

STATISTICAL BRIEF #190

May 2015

Characteristics of Hospital Stays for Super-Utilizers by Payer, 2012

H. Joanna Jiang, Ph.D., Audrey J. Weiss, Ph.D., Marguerite L. Barrett, M.S., and Minya Sheng, M.S.

Introduction

A large proportion of health care resources in the United States are consumed by a relatively small number of individuals. Approximately one-fourth of U.S. health care expenses are incurred by 1 percent of the U.S. population, and half of expenses are incurred by 5 percent of the population.¹ In contrast, half of the U.S. population incurs only 3 percent of total health care expenses.² Those few individuals who consume a large share of health care resources have been dubbed *super-utilizers*.³ Super-utilizers have become the focus of strategies aimed at reducing their disproportionate use of the health care system by improving the delivery and management of their care.^{4,5}

To better understand the characteristics and health care patterns of super-utilizers, the Agency for Healthcare Research and Quality (AHRQ) recently used data from the Healthcare Cost and Utilization Project (HCUP) to examine hospital utilization and costs among Medicaid super-utilizers.⁶ The researchers found that, on average, Medicaid super-utilizers had more hospital stays, longer stays, higher hospital costs per stay, and higher hospital readmission rates compared with other Medicaid patients.⁷ As payers and providers look to target interventions, it

¹ Stanton MW, Rutherford MK. The high concentration of U.S. health care expenditures. Research in Action Issue 19. 2005. Rockville, MD: Agency for Healthcare Research and Quality. http://meps.ahrq.gov/mepsweb/data_files/publications/ra19/ra19.pdf. Accessed February 5, 2015.

² Ibid.

³ Gawande A. The hot spotters: can we lower medical costs by giving the neediest patients better care? *The New Yorker*. January 24, 2011. <http://www.newyorker.com/magazine/2011/01/24/the-hot-spotters>. Accessed February 20, 2015.

⁴ Emeche U. Is a strategy focused on super-utilizers equal to the task of health care system transformation? Yes. *Annals of Family Medicine*. 2015;13(1):6–7.

⁵ Robert Wood Johnson Foundation. A Revolutionary Approach to Improving Health Care Delivery. Better Care for Super-Utilizers series. February 1, 2014. <http://www.rwjf.org/en/about-rwjf/newsroom/newsroom-content/2012/10/improving-management-of-health-care-superutilizers.html>. Accessed April 13, 2015.

⁶ Jiang HJ, Barrett ML, Sheng M. Characteristics of Hospital Stays for Nonelderly Medicaid Super-utilizers, 2012. HCUP Statistical Brief #184. November 2014. Rockville, MD: Agency for Healthcare Research and Quality. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb184-Hospital-Stays-Medicaid-Super-Utilizers-2012.pdf>. Accessed February 5, 2015.

⁷ Ibid.

Highlights

- For this Statistical Brief, super-utilizers were defined as privately insured patients with three or more hospital stays in 2012 or patients covered by Medicare or Medicaid with four or more stays in 2012.
- The average all-cause 30-day readmission rate was four to eight times higher for super-utilizers than for other patients. Among patients aged 1–64 years, super-utilizers accounted for more than half of all 30-day readmissions.
- For all payers, patients with multiple chronic conditions accounted for a greater share of stays among super-utilizers than among other hospitalized patients. For example, among the privately insured, patients with two or more chronic conditions constituted 60.2 percent of all stays for super-utilizers compared with 36.4 percent for other patients.
- Super-utilizers were more likely to be admitted for medical conditions rather than surgical or other types of conditions. For example, among the privately insured, 65.1 percent of all stays for super-utilizers were admitted for medical conditions compared with 33.3 percent for other patients.
- Common chronic and acute conditions, such as congestive heart failure and septicemia, were among the 10 most common principal diagnoses for hospitalized super-utilizers across all payers.
- Mental health and substance use disorders were among the top 10 principal diagnoses for super-utilizers aged 1 to 64 years regardless of payer.

is useful for them to know more about the clinical and demographic profile of super-utilizers.

This HCUP Statistical Brief extends AHRQ's earlier work by exploring characteristics of super-utilizers from other payer groups—Medicare and private insurance—with a comparison to Medicaid super-utilizers. In particular, this Statistical Brief presents data on patient demographics and on resource use and outcomes of hospital stays for super-utilizers compared with stays for other patients by primary expected payer (Medicare, private insurance, and Medicaid). For this report, *super-utilizers* were defined as Medicare or Medicaid patients with four or more hospital admissions or privately insured patients with three or more hospital admissions during 2012 based on a standard cut-off rule applied to the statistical distribution specific to each payer population.⁸ The 10 most common principal diagnoses for hospital stays are also identified for these super-utilizers.

Weighted national estimates are produced from the 2012 HCUP Nationwide Readmissions Database (NRD), which includes valid encrypted patient identifiers to allow for tracking across hospital stays and examining readmissions. This analysis includes patients aged 1 to 64 years covered by private insurance, Medicaid (without Medicare listed as a payer), or Medicare, and patients aged 65 years and older covered by Medicare. Differences greater than 20 percent between weighted estimates are noted in the text.

⁸ Four or more hospital stays for Medicare and Medicaid patients and three or more hospital stays for privately insured patients are approximately two standard deviations above the average number of hospital stays for patients in each payer category.

Findings

Patient demographics of hospital stays among super-utilizers by payer, 2012

Table 1 presents patient demographic characteristics for hospital stays among super-utilizers compared with other patients by payer in 2012.

Table 1. Demographic characteristics for hospital stays among super-utilizers^a by payer, 2012

Characteristic ^b	Medicare aged 65+ years		Medicare aged 1–64 years		Private insurance aged 1–64 years		Medicaid aged 1–64 years	
	Super-utilizers ^a	Other patients	Super-utilizers ^a	Other patients	Super-utilizers ^a	Other patients	Super-utilizers ^a	Other patients
Total number of stays, thousands	1,791	10,075	865	2,384	914	7,192	884	5,297
Mean age, years	77.5	78.0	50.8	52.1	45.3	41.0	40.3	32.3
Female, %	55.2	56.7	49.3	50.8	53.3	65.0	50.9	70.4
Chronic conditions, %								
No chronic condition	1.2	2.4	4.3	7.2	14.2	42.6	10.8	46.5
1 chronic condition	4.8	8.1	10.1	14.2	25.5	20.9	21.4	20.0
2–3 chronic conditions	25.4	35.5	35.8	39.9	37.5	25.7	37.4	21.8
4+ chronic conditions	68.6	53.9	49.7	38.7	22.7	10.7	30.5	11.7

^a Super-utilizers are patients covered by Medicare or Medicaid with four or more hospital stays and privately insured patients with three or more hospital stays in 2012.

^b Patient demographic characteristics are reported across hospital stays, not across patients. All hospital stays for a patient in 2012 are included in the analysis. The payer-age group classification was identified based on the patient's first hospital stay during the year and applied to all subsequent stays. The statistics presented on patient age, sex, and chronic conditions were identified on the basis of each individual hospital stay.

Source: Weighted national estimates from the Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Readmissions Database (NRD), 2012

- **For hospital stays covered by Medicaid, on average super-utilizers were older than other patients and women accounted for a smaller share of all hospital stays among super-utilizers than among other patients.**

Among hospital stays for patients with Medicaid coverage, on average super-utilizers were older than other patients (40.3 vs. 32.3 years), and the share of hospital stays by women was smaller for super-utilizers than for other patients (50.9 vs. 70.4 percent). In contrast, there were no substantial age or sex differences between hospital stays for super-utilizers and other patients covered by Medicare. Among hospital stays for privately insured patients, the average age was similar for super-utilizers compared with other patients, but women accounted for a smaller share of all hospital stays for super-utilizers than for other patients (53.3 vs. 65.0 percent).

- **Patients with multiple chronic conditions accounted for a greater share of all hospital stays among super-utilizers than among other patients.**

For hospital stays covered by private insurance or Medicaid, patients with two or more chronic conditions contributed to a greater share of all hospital stays among super-utilizers than among other patients (private insurance: 60.2 vs. 36.4 percent; Medicaid: 67.9 vs. 33.5 percent). For hospital stays covered by Medicare, only patients with four or more chronic conditions had a higher share of all stays among super-utilizers than among other patients (aged 65+ years: 68.6 vs. 53.9 percent; aged 1–64 years: 49.7 vs. 38.7 percent).

Common principal diagnoses for hospital stays among super-utilizers by payer, 2012

Table 2 lists the 10 most common principal diagnoses for hospital stays among super-utilizers by payer in 2012. The share of hospital stays attributed to super-utilizers, by payer, also is provided for each of the top 10 principal diagnoses.

Table 2. Top 10 principal diagnoses for hospital stays among super-utilizers^a by payer, 2012

Principal diagnosis ^b	Rank based on hospital stays by payer				Share of hospital stays attributed to super-utilizers by payer, %			
	Medicare 65+ years	Medicare 1-64 years	Private 1-64 years	Medicaid 1-64 years	Medicare 65+ years	Medicare 1-64 years	Private 1-64 years	Medicaid 1-64 years
Any principal diagnosis (all stays)	-	-	-	-	15	27	11	14
Congestive heart failure; nonhypertensive	1	6	9	8	28	42	30	36
Septicemia (except in labor)	2	3	5	7	19	28	22	24
Chronic obstructive pulmonary disease and bronchiectasis	3	7		9	24	33		32
Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	4	8	8		17	25	14	
Urinary tract infections	5				18			
Cardiac dysrhythmias	6				13			
Complication of device; implant or graft	7	1	3	10	22	34	28	32
Acute and unspecified renal failure	8				20			
Respiratory failure; insufficiency; arrest (adult)	9	9			24	35		
Complications of surgical procedures or medical care	10	10	2		22	31	26	
Schizophrenia and other psychotic disorders		2		2		31		28
Diabetes mellitus with complications		4	6	3		39	24	32
Maintenance chemotherapy; radiotherapy			1	4			81	74
Mood disorders		5	4	1		26	13	18
Sickle cell anemia				5				57
Alcohol-related disorders				6				33
Secondary malignancies			7				32	
Pancreatic disorders (not diabetes)			10				20	

^a Super-utilizers are patients covered by Medicare or Medicaid with four or more hospital stays and privately insured patients with three or more hospital stays in 2012.

^b Clinical Classifications Software (CCS) categories based on International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnoses. All hospital stays for a patient in 2012 are included in the analysis. Principal diagnoses were identified based on each individual hospital stay.

Source: Weighted national estimates from the Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Readmissions Database (NRD), 2012

- **Common chronic medical conditions, such as congestive heart failure (CHF), were among the top 10 principal diagnoses for super-utilizers across payers.**

CHF was the most common reason for hospitalization among Medicare super-utilizers aged 65 years and older. It also was among the top 10 principal diagnoses for super-utilizers who were younger than 65 years and covered by Medicare, Medicaid, or private insurance. Super-utilizers accounted for around one-third of all CHF hospital stays—28 percent among Medicare patients aged 65+ years, 42 percent among Medicare patients aged 1–64 years, 30 percent among the privately insured, and 36 percent among Medicaid patients.

Chronic obstructive pulmonary disease (COPD) was a top 10 reason for hospitalization for Medicare super-utilizers in both age groups and for Medicaid super-utilizers. Diabetes with complications was a top 10 condition for super-utilizers under age 65 years, regardless of payer. For these two conditions, super-utilizers contributed to about one-third of all hospital stays among patients under age 65 years with Medicare or Medicaid coverage.

- **The top 10 conditions for super-utilizers in different payer groups included common acute conditions such as septicemia, pneumonia, and urinary tract infections.**

Septicemia was among the top 10 conditions for super-utilizers across all payers—ranked second for Medicare patients aged 65 years and older, ranked third for Medicare patients aged 1–64 years, ranked fifth for privately insured patients, and ranked seventh for Medicaid patients. The share of hospital stays for this condition attributable to super-utilizers ranged from 19 percent (Medicare aged 65+ years) to 28 percent (Medicare aged 1–64 years).

Pneumonia was a top 10 condition for super-utilizing Medicare patients in both age groups and for privately insured patients. For the younger Medicare age group, super-utilizers accounted for one in four hospital stays for pneumonia. Urinary tract infection was another top 10 condition for Medicare super-utilizers but only among those 65 years and older.

- **Mood disorders were among the top 10 principal diagnoses for super-utilizers aged 1–64 years who were covered by Medicare, Medicaid, or private insurance.**

Mood disorders were among the top 10 principal diagnoses for patients aged 1–64 years across all payers, but not for Medicare patients aged 65 years and older. Specifically, mood disorders was the most common reason for hospitalization among Medicaid super-utilizers; it was also a top 10 condition for Medicare and privately insured super-utilizers aged 1–64 years.

Other mental health and substance use disorders also were among the most common diagnoses for super-utilizers for some payers. Schizophrenia was the second most common condition for super-utilizers aged 1–64 years who were covered by Medicare or Medicaid. The share of hospital stays for this condition attributable to these super-utilizers was 31 percent among Medicare patients and 28 percent among Medicaid patients.

Alcohol-related disorders was a top 10 condition for Medicaid super-utilizers, who accounted for one-third of all hospital stays for this condition.

- **Cancer-related hospital stays were common among super-utilizing privately insured and Medicaid patients.**

Chemotherapy/radiotherapy was the most common reason for hospitalization for privately insured super-utilizers and the fourth most common reason for Medicaid super-utilizers. Super-utilizers constituted the vast majority of all hospitalizations for chemotherapy/radiotherapy: 81 percent of stays among privately insured patients and 74 percent of stays among Medicaid patients. Secondary malignancies also was a top 10 condition for super-utilizers with private insurance.

- **Complication of device and complications of surgical procedures or medical care were among the top 10 conditions for super-utilizers in various payer groups.**

Complication of medical device was a top 10 reason for hospitalization among super-utilizers across all payers and ranked first among Medicare super-utilizers aged 1–64 years. For this condition, the share of hospital stays attributable to super-utilizers ranged from about one in three (Medicare aged 1–64 years) to about one in five (Medicare aged 65+ years).

Complications of surgical procedures or medical care was another top 10 condition for super-utilizing Medicare patients in both age groups and for super-utilizing privately insured patients. Among Medicare patients, super-utilizers contributed to 31 percent of all stays for this condition among those aged 1–64 years and 22 percent among those aged 65+ years.

Table 3 presents information on hospital stays, hospital length of stay, hospital costs, readmissions, and types of hospital stays among super-utilizers compared with other patients by payer in 2012.

Table 3. Resource use and outcomes of hospital stays for super-utilizers^a by payer, 2012

Resource use, outcome	Medicare aged 65+ years		Medicare aged 1–64 years		Private insurance aged 1–64 years		Medicaid aged 1–64 years	
	Super-utilizers ^a	Other patients	Super-utilizers ^a	Other patients	Super-utilizers ^a	Other patients	Super-utilizers ^a	Other patients
Mean number of stays per year	4.9	1.4	5.7	1.5	4.0	1.1	5.9	1.3
Mean length of stay, days	6.3	5.3	6.3	5.6	5.9	3.6	6.1	4.5
Mean hospital costs, \$	12,900	13,000	12,500	13,000	14,600	10,200	11,800	9,000
Aggregate hospital costs, \$ (billions)	22.7	128.6	10.7	30.7	12.9	70.5	10.4	47.6
Rate of 30-day all-cause readmissions, %	45.7	11.4	48.1	12.0	44.5	5.1	52.4	8.8
Type of hospital stay, %								
Medical stay	80.1	64.7	70.8	57.8	65.1	33.3	67.0	35.3
Surgical stay	14.3	26.7	13.1	24.4	21.8	30.0	9.0	12.5
Mental health stay	2.3	2.2	13.6	12.2	7.7	5.7	19.3	11.6
Injury stay	3.3	6.5	2.2	4.1	1.8	4.7	2.0	3.8
Maternal/neonatal stay	0.0	0.0	0.3	1.4	3.6	26.3	2.7	36.8

^a Super-utilizers are Medicare or Medicaid patients with four or more hospital stays and privately insured patients with three or more hospital stays in 2012.

Source: Weighted national estimates from the Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Readmissions Database (NRD), 2012

- **An average super-utilizer had approximately four times as many hospital stays per year as did other patients.**

Super-utilizers were admitted to the hospital four to six times on average in 1 year. Across all payers, an average super-utilizer had approximately four times as many hospital stays as did other patients. In contrast, among other patients, the average number of stays ranged from 1.1 (private insurance) to 1.5 (Medicare aged 1–64 years).

- **Super-utilizers had an average all-cause 30-day readmission rate that was four to eight times higher than the readmission rate for other patients.**

The rate of all-cause 30-day readmissions was much higher among super-utilizers than among other patients, ranging from four times higher (among Medicare patients) to almost nine times higher (among the privately insured). Across payers, the 30-day readmission rate among super-utilizers was in the 45–52 percent range compared with 5–12 percent among other patients.

- **Compared with other patients, Medicaid and privately insured super-utilizers had longer hospital stays and higher average hospital costs.**

Compared with other Medicaid patients, Medicaid super-utilizers had stays that were approximately 30 percent longer (6.1 vs. 4.5 days) and average hospital costs that were 30 percent higher (\$11,800 vs. \$9,000). Similarly, compared with other privately insured patients, privately insured super-utilizers had stays that were approximately 62 percent longer (5.9 vs. 3.6 days) and average hospital costs that were 43 percent higher (\$14,600 vs. \$10,200). There were no substantial differences in average length of stay or average hospital costs between Medicare super-utilizers and other Medicare patients.

Overall, super-utilizers accounted for between approximately 15 and 26 percent of aggregate hospital costs: 15.0 percent for Medicare patients aged 65+ years, 25.9 percent for Medicare patients aged 1–64 years, 15.4 percent for the privately insured, and 17.9 percent for Medicaid patients.

- **Medical stays constituted a greater share of hospitalizations among super-utilizers than among other patients regardless of payer.**

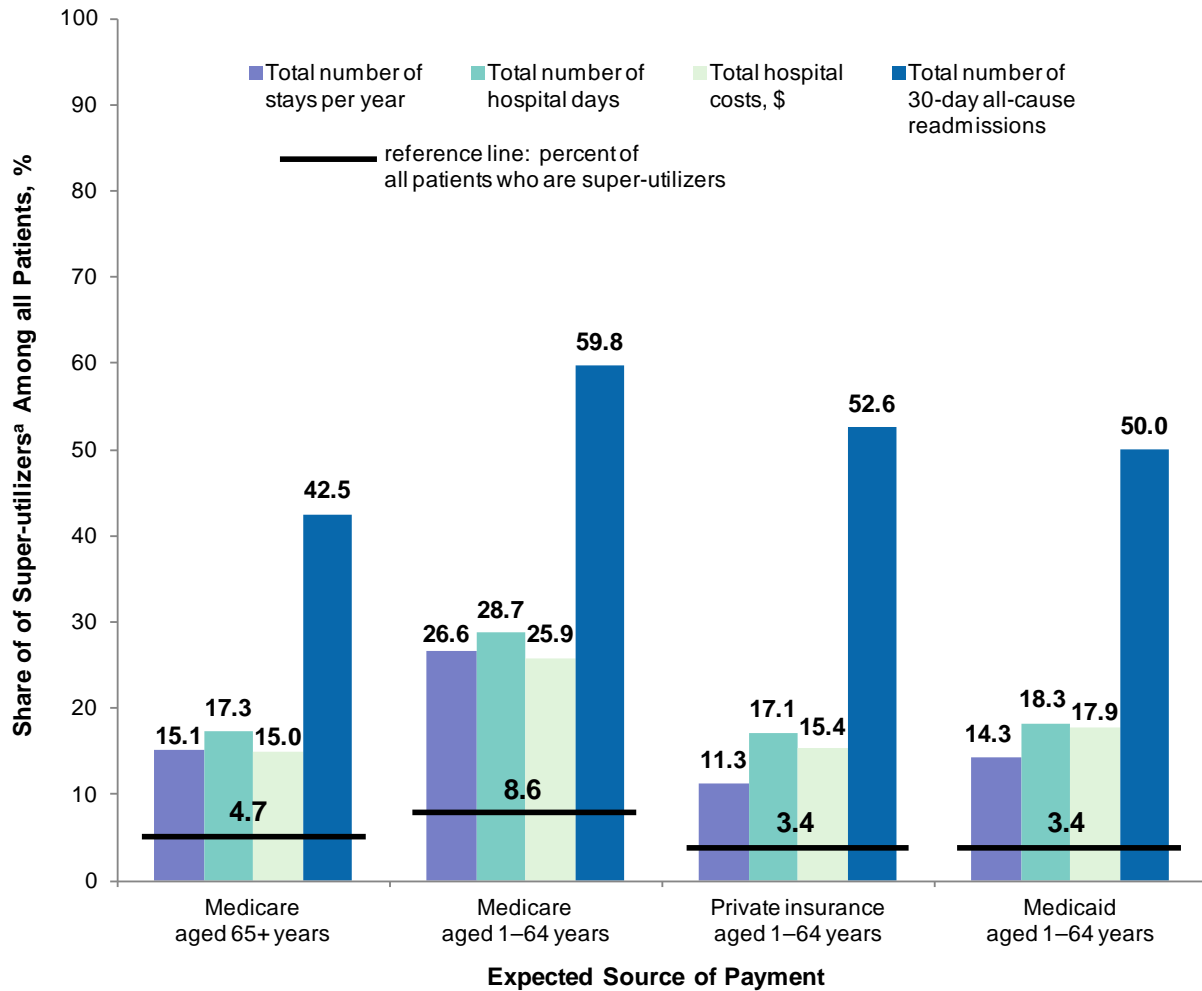
The most common reason for hospitalization across payers was to treat a medical condition; other less common types of stays were surgical, mental health, injury, and maternal/neonatal. Medical stays were more common among super-utilizers than among other patients across all expected payers. The difference was most striking for privately insured and Medicaid patients—the share of medical stays among super-utilizers was nearly twice as high as among other patients (private insurance: 65.1 vs. 33.3 percent; Medicaid: 67.0 vs. 35.3 percent).

Mental health stays also were more common for super-utilizers than for other patients among privately insured (7.7 vs. 5.7 percent) and Medicaid patients (19.3 vs. 11.6 percent.)

Resource use and outcomes of hospital stays for super-utilizers by payer, 2012

Figure 1 presents the share of total hospital stays, hospital days, hospital costs, and readmissions that were attributable to super-utilizers by payer in 2012.

Figure 1. Share of resource use and outcomes for super-utilizers^a among all patients by payer, 2012



^a Super-utilizers are Medicare and Medicaid patients with four or more hospital stays and privately insured patients with three or more hospital stays in 2012.

Source: Weighted national estimates from the Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Readmissions Database (NRD), 2012

- **Super-utilizers accounted for a disproportionate share of hospital stays, days, costs, and all cause 30-day readmissions compared with other patients.**

As indicated by the reference line in Figure 1, there were relatively few super-utilizers in 2012—they constituted only 4.7 percent of hospitalized Medicare patients aged 65+ years, 8.6 percent of hospitalized Medicare patients aged 1–64 years, 3.4 percent of hospitalized privately insured patients, and 3.4 percent of hospitalized Medicaid patients. However, across all payers, super-utilizers accounted for a substantially higher proportion of hospital stays, days, costs, and all-cause 30-day readmissions. For example, although only 4.7 percent of hospitalized Medicare patients aged 65 years and older were super-utilizers, they accounted for more than three times as many hospital stays (15.1 percent), hospital days (17.3 percent), and hospital costs (15.0 percent), and more than nine times as many readmissions (42.5 percent). The disproportionate share of resources used by super-utilizers was most pronounced for readmissions. Among privately insured and Medicaid patients, fewer than 4 percent (super-utilizers) accounted for about half of all hospital readmissions.

Data Source

The estimates in this Statistical Brief are based upon data from the Healthcare Cost and Utilization Project (HCUP) 2012 Nationwide Readmissions Database (NRD). The 2012 NRD is planned for public release in fall 2015. The NRD is a calendar-year, discharge-level database constructed from the HCUP State Inpatient Databases (SID) with verified patient linkage numbers that can be used to track a person across hospitals within a State. The NRD is designed to support various types of analyses of national readmission rates. The database includes discharges for patients with and without repeat hospital visits in a year and those who have died in the hospital. Repeat stays may or may not be related to one another. The criteria to determine the relationship between hospital admissions is left to the analyst using the NRD. The NRD was constructed as a sample of convenience consisting of 100 percent of the eligible discharges in HCUP States that provide the ability to link patients across hospital stays. Discharge weights for national estimates were developed using the target universe of community hospitals (excluding rehabilitation and long-term acute care hospitals) in the United States and poststratification on hospital characteristics (census region, urban-rural location, teaching status, bed size, and control/ownership) and patient age-sex groups. Only patients aged 1 year and older were included in the analysis. Verified patient linkage numbers tend to be less reliable and less complete for patients less than 1 year old, which makes it difficult to track multiple hospitalizations.

Definitions

Diagnoses, ICD-9-CM, and Clinical Classifications Software (CCS)

The *principal diagnosis* is that condition established after study to be chiefly responsible for the patient's admission to the hospital.

ICD-9-CM is the International Classification of Diseases, Ninth Revision, Clinical Modification, which assigns numeric codes to diagnoses. There are approximately 14,000 ICD-9-CM diagnosis codes.

CCS categorizes ICD-9-CM diagnosis codes into a manageable number of clinically meaningful categories.⁹ This clinical grouper makes it easier to quickly understand patterns of diagnoses. CCS categories identified as Other typically are not reported; these categories include miscellaneous, otherwise unclassifiable diagnoses that may be difficult to interpret as a group.

Types of hospitals included in the HCUP Nationwide Readmissions Database

The Nationwide Readmissions Database (NRD) is based on data from community hospitals, which are defined as short-term, non-Federal, general, and other hospitals, excluding hospital units of other institutions (e.g., prisons). The NRD includes obstetrics and gynecology, otolaryngology, orthopedic, cancer, pediatric, public, and academic medical hospitals. Excluded are long-term care facilities such as rehabilitation, long-term acute care, psychiatric, and alcoholism and chemical dependency hospitals. However, if a patient received long-term care, rehabilitation, or treatment for psychiatric or chemical dependency conditions in a community hospital, the discharge record for that stay will be included in the NRD.

Unit of analysis

The unit of analysis is the hospital discharge (i.e., the hospital stay), not a person or patient. This means that a person who is admitted to the hospital multiple times in 1 year will be counted each time as a separate discharge from the hospital.

Hospital use in the year determined which category (e.g., Medicare super-utilizers aged 1–64 years) included all stays for a patient. The payer-age group for the patient was defined by the first hospital stay in the year. For example, a Medicare patient who was 64 years old for a January stay and 65 years old for September hospital stay would be included in the group Medicare aged 1–64 years. After each patient was assigned to a payer-age group, the total number of hospital stays in 2012 was determined for each unique patient (based on the HCUP data element VisitLink). Using the distribution of total number of hospital stays within each payer-age group, the cut-off for super-utilizers was defined as approximately two standard deviations above the average total number of hospital stays. The assignment of the payer-age group and whether the patient

⁹ Agency for Healthcare Research and Quality. HCUP Clinical Classifications Software (CCS). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated November 2014. <http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>. Accessed January 7, 2015.

qualified as a super-utilizer in that group was then added to each hospital stay discharge for that patient. The analysis considered all hospital stays in the year, with the exception of the counts of readmissions.

Readmissions

The 30-day readmission rate is defined as the number of admissions for each condition for which there was at least one subsequent hospital admission within 30 days, divided by the total number of admissions from January through November 2012. That is, when patients are discharged from the hospital, they are followed for 30 days in the data. If any readmission to the same or to a different hospital occurs during this time period, the admission is counted as a readmission. No more than one readmission is counted within the 30-day period of each admission, because the outcome measure assessed is the “percentage of admissions that are followed by a readmission.” If a patient was transferred to a different hospital on the same day or was transferred within the same hospital, the two events were combined as a single stay and the second event was not counted as a readmission; that is, a transfer was not considered a readmission.

Costs and charges

Total hospital charges were converted to costs using HCUP Cost-to-Charge Ratios based on hospital accounting reports from the Centers for Medicare & Medicaid Services (CMS).¹⁰ *Costs* reflect the actual expenses incurred in the production of hospital services, such as wages, supplies, and utility costs; *charges* represent the amount a hospital billed for the case. For each hospital, a hospital-wide cost-to-charge ratio is used. Hospital charges reflect the amount the hospital billed for the entire hospital stay and do not include professional (physician) fees. For the purposes of this Statistical Brief, costs are reported to the nearest hundred.

How HCUP estimates of costs differ from National Health Expenditure Accounts

There are a number of differences between the costs cited in this Statistical Brief and spending as measured in the National Health Expenditure Accounts (NHEA), which are produced annually by CMS.¹¹ The largest source of difference comes from the HCUP coverage of inpatient treatment only in contrast to the NHEA inclusion of outpatient costs associated with emergency departments and other hospital-based outpatient clinics and departments as well. The outpatient portion of hospitals’ activities has been growing steadily and may exceed half of all hospital revenue in recent years. On the basis of the American Hospital Association Annual Survey, 2012 outpatient gross revenues (or charges) were about 44 percent of total hospital gross revenues.¹²

Smaller sources of differences come from the inclusion in the NHEA of hospitals that are excluded from HCUP. These include Federal hospitals (Department of Defense, Veterans Administration, Indian Health Services, and Department of Justice [prison] hospitals) as well as psychiatric, substance abuse, and long-term care hospitals. A third source of difference lies in the HCUP reliance on billed charges from hospitals to payers, adjusted to provide estimates of costs using hospital-wide cost-to-charge ratios, in contrast to the NHEA measurement of spending or revenue. HCUP costs estimate the amount of money required to produce hospital services, including expenses for wages, salaries, and benefits paid to staff as well as utilities, maintenance, and other similar expenses required to run a hospital. NHEA spending or revenue measures the amount of income received by the hospital for treatment and other services provided, including payments by insurers, patients, or government programs. The difference between revenues and costs include profit for for-profit hospitals or surpluses for nonprofit hospitals.

Payer

Payer is the expected primary payer for the hospital stay. To make coding uniform across all HCUP data sources, payer combines detailed categories into general groups:

- Medicare: includes patients covered by fee-for-service and managed care Medicare
- Medicaid: includes patients covered by fee-for-service and managed care Medicaid

¹⁰ Agency for Healthcare Research and Quality. HCUP Cost-to-Charge Ratio (CCR) Files. Healthcare Cost and Utilization Project (HCUP). 2001–2012. Rockville, MD: Agency for Healthcare Research and Quality. Updated December 2014. <http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp>. Accessed January 7, 2015.

¹¹ For additional information about the NHEA, see Centers for Medicare & Medicaid Services (CMS). National Health Expenditure Data. CMS Web site May 2014. <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html?redirect=NationalHealthExpendData/>. Accessed January 7, 2015.

¹² American Hospital Association. TrendWatch Chartbook, 2014. Table 4.2. Distribution of Inpatient vs. Outpatient Revenues, 1992–2012. <http://www.aha.org/research/reports/tw/chartbook/2014/table4-2.pdf>. Accessed January 7, 2015.

- Private Insurance: includes Blue Cross, commercial carriers, and private health maintenance organizations (HMOs) and preferred provider organizations (PPOs)
- Uninsured: includes an insurance status of *self-pay* and *no charge*
- Other: includes Worker's Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs.

Hospital stays billed to the State Children's Health Insurance Program (SCHIP) may be classified as Medicaid, Private Insurance, or Other, depending on the structure of the State program. Because most State data do not identify patients in SCHIP specifically, it is not possible to present this information separately.

For the purpose of this analysis, the expected payer designation was assigned based on a hierarchy of Medicare, Medicaid, and then privately insured. Medicare was identified based on a payer code of Medicare as a primary, secondary, or tertiary payer regardless of any other reported payers. This means that individuals who were dually eligible for Medicare and Medicaid were categorized as Medicare. If not already assigned to Medicare, Medicaid was identified based on a payer code of Medicaid as a primary, secondary, or tertiary payer regardless of any other reported payers. If not already assigned to Medicare or Medicaid, private insurance was identified based on a payer code of private insurance as a primary, secondary, or tertiary payer.

About HCUP

The Healthcare Cost and Utilization Project (HCUP, pronounced "H-Cup") is a family of health care databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, and private data organizations (HCUP Partners) and the Federal government to create a national information resource of encounter-level health care data. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. These databases enable research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to health care programs, and outcomes of treatments at the national, State, and local market levels.

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

Alaska State Hospital and Nursing Home Association
Arizona Department of Health Services
Arkansas Department of Health
California Office of Statewide Health Planning and Development
Colorado Hospital Association
Connecticut Hospital Association
District of Columbia 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 Center for Health Information and Analysis
Michigan Health & Hospital Association
Minnesota Hospital Association
Mississippi Department of Health
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
New Mexico Department of Health
New York State Department of Health
North Carolina Department of Health and Human Services
North Dakota (data provided by the Minnesota Hospital Association)
Ohio Hospital Association
Oklahoma State Department of Health
Oregon Association of Hospitals and Health Systems
Oregon Office of Health Analytics
Pennsylvania Health Care Cost Containment Council
Rhode Island Department of Health
South Carolina Revenue and Fiscal Affairs Office
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 Statistical Briefs

HCUP Statistical Briefs are descriptive summary reports presenting statistics on hospital inpatient and emergency department use and costs, quality of care, access to care, medical conditions, procedures, patient populations, and other topics. The reports use HCUP administrative health care data.

About the NRD

The HCUP Nationwide Readmissions Database (NRD) is a calendar-year, discharge-level database constructed from the HCUP State Inpatient Databases (SID) with verified patient linkage numbers that can be used to track a person across hospitals within a State. The 2012 NRD is planned for public release in fall 2015. The NRD is designed to support various types of analyses of national readmission rates. The database includes discharges for patients with and without repeat hospital visits in a year and those who have died in the hospital. Repeat stays may or may not be related. The criteria to determine the relationship between hospital admissions is left to the analyst using the NRD. The NRD was constructed as a sample of convenience consisting of 100 percent of the eligible discharges. Discharge weights for national estimates are developed using the target universe of community hospitals (excluding rehabilitation and long-term acute care hospitals) in the United States.

For More Information

For more information about HCUP, visit <http://www.hcup-us.ahrq.gov/>.

For additional HCUP statistics, visit HCUPnet, our interactive query system, at <http://hcupnet.ahrq.gov/>. HCUPnet provides ready-to-use tables on readmission rates by condition and procedure (using Clinical Classification Software categories), diagnosis-related groups (DRGs), and major diagnostic categories (MDCs).

For information on readmissions-related topics, refer to the following HCUP Statistical Briefs located at <http://www.hcup-us.ahrq.gov/reports/statbriefs/statbriefs.jsp>:

- Statistical Brief #184, Characteristics of Hospital Stays for Nonelderly Medicaid Super-Utilizers, 2012
- Statistical Brief #172, Conditions With the Largest Number of Adult Hospital Readmissions by Payer, 2011
- Statistical Brief #127, 30-Day Readmissions following Hospitalizations for Chronic vs. Acute Conditions, 2008
- Statistical Brief #115, All-Cause Readmissions by Payer and Age, 2008
- Statistical Brief #89, All-Cause Hospital Readmissions among Non-Elderly Medicaid Patients, 2007

Suggested Citation

Jiang HJ (AHRQ), Weiss AJ (Truven Health Analytics), Barrett ML (M.L. Barrett, Inc.), Sheng M (Truven Health Analytics). Characteristics of Hospital Stays for Super-Utilizers by Payer, 2012. HCUP Statistical Brief #190. May 2015. Agency for Healthcare Research and Quality, Rockville, MD.
<http://www.hcup-us.ahrq.gov/reports/statbriefs/sb190-Hospital-Stays-Super-Utilizers-Payer-2012.pdf>.

* * *

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:

Virginia Mackay-Smith, Acting Director
Center for Delivery, Organization, and Markets
Agency for Healthcare Research and Quality
540 Gaither Road
Rockville, MD 20850