

## STATISTICAL BRIEF #160

August 2013

### National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2011

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#### Introduction

Health care costs continue to grow faster than the economy, and the health share of the Gross Domestic Product (GDP) has maintained its upward trend, reaching 17.9 percent in 2011.<sup>1</sup> Policymakers are among those who are increasingly concerned with the growing burden of medical care expenses to governments, consumers, and insurers. Hospital costs are often the focus of this concern, because they constitute the largest single component of health care spending.<sup>2</sup>

This Statistical Brief presents data from the Healthcare Cost and Utilization Project (HCUP) on costs of inpatient hospital stays in the United States in 2011. This report describes the distribution of costs by expected primary payer and illustrates the conditions accounting for the largest percentage of each payer's hospital costs. The primary payers examined are Medicare, Medicaid, private insurance, and the uninsured. The hospital costs represent the hospital's cost to produce the services—not the amount paid for services by payers—and they do not include the physician fees associated with the hospitalization. All differences between estimates noted in the text are statistically significant at the .05 level or better.

#### Findings

##### *Hospital costs by primary payer, 2011*

In 2011, the aggregate cost for nearly 39 million hospital stays totaled \$387 billion. Medicare and Medicaid bore responsibility for 63 percent of the national inpatient hospital costs (Figure 1). Medicare incurred approximately \$182.7 billion in aggregate hospital costs in 2011 for 15.3 million hospital stays, representing 47.2 percent of the total aggregate costs.

During the same time period, Medicaid incurred approximately \$60.2 billion in aggregate hospital costs for 7.6 million hospital stays, representing 15.6 percent of the total aggregate costs.

Private insurance incurred approximately \$112.5 billion in aggregate hospital costs in 2011, representing 29.0 percent of the total aggregate costs for 12.2 million

#### Highlights

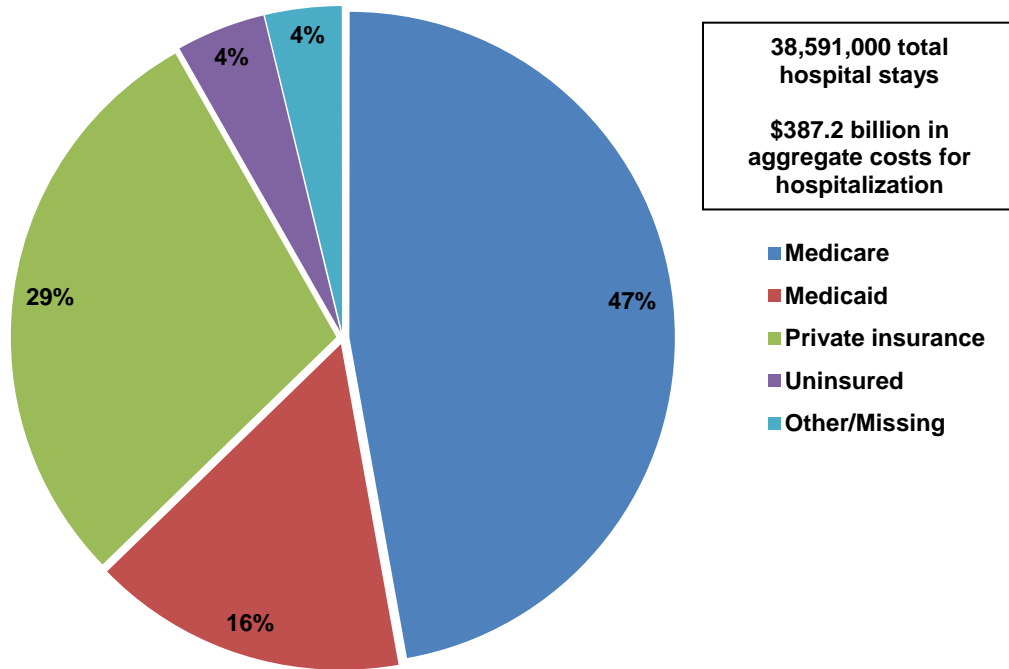
- In 2011, the aggregate hospital cost for nearly 39 million hospital stays totaled \$387 billion.
- The top five conditions—septicemia; osteoarthritis; complication of device, implant or graft; liveborn (newborn) infants; and acute myocardial infarction—accounted for nearly one-fifth of the total aggregate cost for hospitalizations.
- The primary payer shares of the total aggregate hospital costs were 63 percent for Medicare (\$182.7 billion) and Medicaid (\$60.2 billion), 29 percent for private insurance (\$112.5 billion), and 4 percent (\$17.1 billion) for uninsured hospitalizations.
- Septicemia ranked in the top four most costly conditions in the hospital for all four payer groups.
- Hospitalizations associated with pregnancy and childbirth accounted for 7 of the top 20 most expensive conditions for hospital stays covered by Medicaid.
- Complications of surgical procedures or medical care was a top-ranked condition for stays covered by Medicare, Medicaid, and private insurance.

<sup>1</sup> Centers for Medicare & Medicaid Services. National Health Expenditure Accounts. <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical.html> . Accessed July 17, 2013.

<sup>2</sup> Martin AB, Lassman D, Washington B, Catlin A. National Health Expenditure Accounts Team. Growth in US health spending remained slow in 2010; health share of gross domestic product was unchanged from 2009. *Health Aff (Millwood)*. 2012 Jan;31(1):208–19.

hospital stays. The uninsured accounted for 4.4 percent (\$17.1 billion) of the total aggregate costs for 2.1 million stays.

**Figure 1. Distribution of national inpatient hospital costs by primary payer, 2011**



Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample (NIS), 2011

*Most expensive conditions treated in U.S. hospitals, 2011*

In 2011, 47.1 percent of aggregate hospital costs were for the top 20 most expensive conditions (Table 1). The top five conditions accounted for nearly one-fifth of the total aggregate costs for all hospitalizations (18.5 percent). Septicemia resulted in an aggregate cost of \$20.3 billion or 5.2 percent of the total aggregate cost for all hospitalizations and was the most expensive condition treated. Other high-cost hospitalizations were for osteoarthritis; complication of device, implant or graft; liveborn (newborn) infants; and acute myocardial infarction (heart attack).

**Table 1. Top 20 most expensive conditions treated in U.S. hospitals, all payers, 2011**

<b>Rank</b>	<b>CCS principal diagnosis category and name</b>	<b>Aggregate hospital costs, U.S. \$, in millions</b>	<b>National costs, %</b>	<b>Number of hospital discharges, in thousands</b>
1	Septicemia (except in labor)	20,298	5.2	1,094
2	Osteoarthritis	14,810	3.8	964
3	Complication of device, implant or graft	12,881	3.3	699
4	Liveborn	12,390	3.2	3,818
5	Acute myocardial infarction	11,504	3.0	612
6	Spondylosis, intervertebral disc disorders, other back problems	11,218	2.9	667
7	Pneumonia (except that caused by tuberculosis and sexually transmitted diseases)	10,570	2.7	1,114
8	Congestive heart failure, nonhypertensive	10,535	2.7	970
9	Coronary atherosclerosis	10,400	2.7	605
10	Respiratory failure, insufficiency, arrest (adult)	8,749	2.3	404
11	Acute cerebrovascular disease	8,361	2.2	597
12	Cardiac dysrhythmias	7,624	2.0	795
13	Complications of surgical procedures or medical care	6,850	1.8	529
14	Chronic obstructive pulmonary disease and bronchiectasis	5,700	1.5	729
15	Rehabilitation care, fitting of prostheses, and adjustment of devices	5,487	1.4	420
16	Diabetes mellitus with complications	5,380	1.4	561
17	Biliary tract disease	5,137	1.3	469
18	Fracture of neck of femur (hip)	4,866	1.3	316
19	Mood disorders	4,840	1.2	896
20	Acute and unspecified renal failure	4,668	1.2	498
<b>Total for top 20 conditions</b>		182,266	47.1	16,755
<b>Total for all hospitalizations</b>		387,272	100	38,591

Abbreviation: CCS, Clinical Classifications Software

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample (NIS), 2011

*Most expensive conditions by primary payer, 2011*

Tables 2 through 5 illustrate the 20 most expensive conditions billed to Medicare, Medicaid, private insurance, and the uninsured in 2011.

There were some commonalities across payers in the conditions that generated high costs. For all four payer groups, septicemia ranked among the top four most expensive conditions.

Other conditions that appeared in the top 20 for all four payer groups were:

- Acute cerebrovascular disease
- Pneumonia
- Acute myocardial infarction
- Congestive heart failure
- Coronary atherosclerosis
- Complication of device, implant or graft
- Respiratory failure, insufficiency, arrest

Several conditions were ranked among the highest cost across three of the four payer groups:

- Complications of surgical procedures or medical care was top ranked for stays covered by Medicare, Medicaid, and private insurance.
- Diabetes with complications was top ranked for hospitalizations covered by Medicare and Medicaid as well as the uninsured.
- Mood disorders and stays for liveborn infants were top ranked for Medicaid, private insurance, and the uninsured.

Predictably, given payer differences in demographic mix and service coverage, certain conditions were relatively more prominent in the top ranking of some payer groups than in others. Osteoarthritis was ranked the second most expensive condition only for Medicare (\$8.0 billion) and private insurance (\$5.7 billion). Over 90 percent of the hospitalizations for osteoarthritis involved a knee or hip replacement. Cardiac dysrhythmias and back problems were also top ranked among hospital stays covered by Medicare and private insurance.

Hospitalizations associated with pregnancy and childbirth accounted for 7 of the top 20 most expensive conditions for hospital stays covered by Medicaid and 4 of the top 20 covered by private insurance. Appendicitis and biliary tract disease were among the most expensive conditions for private payers and for the uninsured. Skin infections were top ranked for hospital stays covered by Medicaid and for the uninsured.

In terms of injury-related hospital stays:

- Hip fracture was a top-ranked condition for Medicare.
- Fracture of the lower limb was top ranked for private insurance and the uninsured.
- Intracranial injury and crushing or internal injury was top ranked only for the uninsured.

Other conditions seen only in the top 20 most expensive conditions for the uninsured were:

- Unspecified chest pain
- Alcohol-related disorders
- Pancreatic disorders

Schizophrenia was the only condition that appeared in the top 20 only for Medicaid.

Conditions seen only in the top 20 most expensive stays for Medicare included:

- Chronic obstructive pulmonary disease
- Rehabilitation
- Acute and unspecified renal failure
- Heart valve disorder
- Urinary tract infections
- Intestinal obstruction without hernia

There were no conditions that appeared in the top 20 only for private insurance.

**Table 2. Top 20 most expensive conditions billed to Medicare, 2011**

<b>Rank</b>	<b>CCS principal diagnosis category and name</b>	<b>Aggregate hospital costs, U.S. \$, in millions</b>	<b>National costs, %</b>	<b>Number of hospital discharges, in thousands</b>
1	Septicemia (except in labor)	12,670	6.9	722
2	Osteoarthritis	7,989	4.4	525
3	Congestive heart failure, nonhypertensive	7,641	4.2	739
4	Complication of device, implant or graft	7,469	4.1	414
5	Pneumonia (except that caused by tuberculosis and sexually transmitted diseases)	6,709	3.7	667
6	Acute myocardial infarction	6,274	3.4	351
7	Coronary atherosclerosis	5,959	3.3	346
8	Respiratory failure, insufficiency, arrest (adult)	5,487	3.0	263
9	Cardiac dysrhythmias	5,099	2.8	529
10	Acute cerebrovascular disease	4,600	2.5	381
11	Spondylosis, intervertebral disc disorders, other back problems	4,493	2.5	271
12	Chronic obstructive pulmonary disease and bronchiectasis	4,074	2.2	517
13	Fracture of neck of femur (hip)	3,959	2.2	261
14	Rehabilitation care, fitting of prostheses, and adjustment of devices	3,470	1.9	285
15	Complications of surgical procedures or medical care	3,395	1.9	245
16	Acute and unspecified renal failure	3,167	1.7	346
17	Heart valve disorders	3,085	1.7	76
18	Urinary tract infections	2,712	1.5	406
19	Diabetes mellitus with complications	2,623	1.4	239
20	Intestinal obstruction without hernia	2,304	1.3	200
<b>Total for top 20 conditions</b>		103,178	56.5	7,783
<b>Total for all hospitalizations</b>		182,703	100	15,337

Abbreviation: CCS, Clinical Classifications Software

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample (NIS), 2011

**Table 3. Top 20 most expensive conditions billed to Medicaid, 2011**

<b>Rank</b>	<b>CCS principal diagnosis category and name</b>	<b>Aggregate hospital costs, U.S. \$, in millions</b>	<b>National costs, %</b>	<b>Number of hospital discharges, in thousands</b>
1	Liveborn	5,936	9.9	1,705
2	Septicemia (except in labor)	2,730	4.5	113
3	Complication of device, implant or graft	1,426	2.4	71
4	Mood disorders	1,377	2.3	244
5	Pneumonia (except that caused by tuberculosis and sexually transmitted diseases)	1,325	2.2	152
6	Schizophrenia and other psychotic disorders	1,230	2.0	130
7	Other complications of birth, puerperium affecting management of the mother	1,176	2.0	257
8	Respiratory failure, insufficiency, arrest (adult)	1,156	1.9	47
9	Other complications of pregnancy	1,062	1.8	271
10	Previous C-section	1,054	1.8	218
11	Acute cerebrovascular disease	1,043	1.7	45
12	Diabetes mellitus with complications	964	1.6	109
13	Congestive heart failure, nonhypertensive	955	1.6	73
14	Complications of surgical procedures or medical care	864	1.4	63
15	Acute myocardial infarction	858	1.4	38
16	Trauma to perineum and vulva	755	1.3	240
17	Cardiac and circulatory congenital anomalies	739	1.2	12
18	Other perinatal conditions	734	1.2	33
19	Skin and subcutaneous tissue infections	733	1.2	115
20	Coronary atherosclerosis	716	1.2	46
<b>Total for top 20 conditions</b>		26,832	44.5	3,984
<b>Total for all hospitalizations</b>		60,236	100.0	7,578

Abbreviation: CCS, Clinical Classifications Software

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample (NIS), 2011

**Table 4. Top 20 most expensive conditions billed to private insurance, 2011**

<b>Rank</b>	<b>CCS principal diagnosis category and name</b>	<b>Aggregate hospital costs, U.S. \$, in millions</b>	<b>National costs, %</b>	<b>Number of hospital discharges, in thousands</b>
1	Liveborn	5,803	5.2	1,853
2	Osteoarthritis	5,725	5.1	372
3	Spondylosis, intervertebral disc disorders, other back problems	4,709	4.2	280
4	Septicemia (except in labor)	3,665	3.3	189
5	Complication of device, implant or graft	3,229	2.9	173
6	Acute myocardial infarction	3,191	2.8	161
7	Coronary atherosclerosis	3,033	2.7	169
8	Complications of surgical procedures or medical care	2,123	1.9	181
9	Pneumonia (except that caused by tuberculosis and sexually transmitted diseases)	1,939	1.7	224
10	Acute cerebrovascular disease	1,935	1.7	120
11	Cardiac dysrhythmias	1,754	1.6	184
12	Biliary tract disease	1,678	1.5	169
13	Respiratory failure, insufficiency, arrest (adult)	1,630	1.4	65
14	Other complications of birth, puerperium affecting management of the mother	1,502	1.3	329
15	Congestive heart failure, nonhypertensive	1,429	1.3	111
16	Mood disorders	1,341	1.2	289
17	Appendicitis and other appendiceal conditions	1,305	1.2	151
18	Fracture of lower limb	1,293	1.1	89
19	Trauma to perineum and vulva	1,253	1.1	385
20	Previous C-section	1,240	1.1	255
<b>Total for top 20 conditions</b>		49,780	44.3	5,748
<b>Total for all hospitalizations</b>		112,489	100.0	12,231

Abbreviation: CCS, Clinical Classifications Software

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample (NIS), 2011

**Table 5. Top 20 most expensive conditions billed to the uninsured, 2011**

<b>Rank</b>	<b>CCS principal diagnosis category and name</b>	<b>Aggregate hospital costs, U.S. \$, in millions</b>	<b>National costs, %</b>	<b>Number of hospital discharges, in thousands</b>
1	Acute myocardial infarction	819	4.8	43
2	Septicemia (except in labor)	774	4.5	44
3	Acute cerebrovascular disease	538	3.2	34
4	Biliary tract disease	441	2.6	47
5	Diabetes mellitus with complications	440	2.6	62
6	Skin and subcutaneous tissue infections	421	2.5	75
7	Coronary atherosclerosis	403	2.4	27
8	Mood disorders	398	2.3	103
9	Pancreatic disorders (not diabetes)	359	2.1	45
10	Fracture of lower limb	359	2.1	25
11	Pneumonia (except that caused by tuberculosis and sexually transmitted diseases)	352	2.1	44
12	Alcohol-related disorders	339	2.0	69
13	Intracranial injury	337	2.0	20
14	Crushing injury or internal injury	306	1.8	17
15	Congestive heart failure, nonhypertensive	296	1.7	29
16	Appendicitis and other appendiceal conditions	293	1.7	33
17	Respiratory failure, insufficiency, arrest (adult)	260	1.5	16
18	Nonspecific chest pain	253	1.5	52
19	Complication of device, implant or graft	247	1.4	15
20	Liveborn	220	1.3	137
<b>Total for top 20 conditions</b>		7,857	46.0	937
<b>Total for all hospitalizations</b>		17,085	100	2,068

Abbreviation: CCS, Clinical Classifications Software

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample (NIS), 2011



## Data Source

The estimates in this Statistical Brief are based upon data from the Healthcare Cost and Utilization Project (HCUP) 2011 Nationwide Inpatient Sample (NIS). The statistics were generated from HCUPnet, a free, online query system that provides users with *immediate access* to the largest set of publicly available, all-payer national, regional, and State-level hospital care databases from HCUP.

## 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. *Secondary diagnoses* are concomitant conditions that coexist at the time of admission or develop during the stay.

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 diagnoses into a manageable number of clinically meaningful categories.<sup>3</sup> 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 HCUP*

HCUP 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). HCUP data include obstetrics and gynecology, otolaryngology, orthopedic, cancer, pediatric, public, and academic medical hospitals. Excluded are long-term care, rehabilitation, 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 NIS.

### *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 one year will be counted each time as a separate "discharge" from the hospital.

### *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).<sup>4</sup> *Costs* will 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.

### *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
- Private Insurance: includes Blue Cross, commercial carriers, and private health maintenance organizations (HMOs) and preferred provider organizations (PPOs)

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<sup>3</sup> HCUP Clinical Classifications Software (CCS). Healthcare Cost and Utilization Project (HCUP). U.S. Agency for Healthcare Research and Quality, Rockville, MD. Available at <http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>. Updated March 2013. Accessed July 17, 2013.

<sup>4</sup> HCUP Cost-to-Charge Ratio Files (CCR). Healthcare Cost and Utilization Project (HCUP). 2001–2009. U.S. Agency for Healthcare Research and Quality, Rockville, MD. Available at <http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp>. Updated July 2013. Accessed July 17, 2013.

- Other: includes Worker's Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs
- Uninsured: includes an insurance status of "self-pay" and "no charge."

Encounters 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 SCHIP patients specifically, it is not possible to present this information separately.

When more than one payer is listed for a hospital discharge, the first-listed payer is used.

### 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:

**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  
**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** Health Policy and Research

**Pennsylvania** Health Care Cost Containment Council  
**Rhode Island** Department of Health  
**South Carolina** 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 NIS

The HCUP Nationwide Inpatient Sample (NIS) is a nationwide database of hospital inpatient stays. The NIS is nationally representative of all community hospitals (i.e., short-term, non-Federal, nonrehabilitation hospitals). The NIS is a sample of hospitals and includes all patients from each hospital, regardless of payer. It is drawn from a sampling frame that contains hospitals comprising more than 95 percent of all discharges in the United States. The vast size of the NIS allows the study of topics at both the national and regional levels for specific subgroups of patients. In addition, NIS data are standardized across years to facilitate ease of use.

### About HCUPnet

HCUPnet is an online query system that offers instant access to the largest set of all-payer health care databases publicly available. HCUPnet has an easy step-by-step query system, allowing for tables and graphs to be generated on national and regional statistics as well as trends for community hospitals in the United States. HCUPnet generates statistics using data from HCUP's Nationwide Inpatient Sample (NIS), the Kids' Inpatient Database (KID), the Nationwide Emergency Department Sample (NEDS), the State Inpatient Databases (SID), and the State Emergency Department Databases (SEDD).

### 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/>.

For information on other hospitalizations in the United States, download HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States in 2009, located at <http://www.hcup-us.ahrq.gov/reports.jsp>.

For a detailed description of HCUP, more information on the design of the Nationwide Inpatient Sample (NIS), and methods to calculate estimates, please refer to the following publications:

Introduction to the HCUP Nationwide Inpatient Sample, 2009. Online. May 2011. U.S. Agency for Healthcare Research and Quality. [http://hcup-us.ahrq.gov/db/nation/nis/NIS\\_2009\\_INTRODUCTION.pdf](http://hcup-us.ahrq.gov/db/nation/nis/NIS_2009_INTRODUCTION.pdf). Accessed July 22, 2013.

Houchens R, Elixhauser A. Final Report on Calculating Nationwide Inpatient Sample (NIS) Variances, 2001. HCUP Methods Series Report #2003-2. Online. June 2005 (revised June 6, 2005). U.S. Agency for Healthcare Research and Quality. <http://www.hcup-us.ahrq.gov/reports/CalculatingNISVariances200106092005.pdf>. Accessed July 22, 2013.

## Suggested Citation

Torio CM (AHRQ), Andrews RM (AHRQ). National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2011. HCUP Statistical Brief #160. August 2013. Agency for Healthcare Research and Quality, Rockville, MD.

<http://www.hcup-us.ahrq.gov/reports/statbriefs/sb160.pdf>.

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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](mailto:hcup@ahrq.gov) or send a letter to the address below:

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