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# The National Hospital Bill: The Most Expensive Conditions, by Payer, 2004

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#### Introduction

Approximately one-third of the U.S. health care dollar is spent on inpatient hospital care, making hospitalizations the single most expensive component of the health care system. As health care costs rise and the population ages, policy makers are concerned with the growing burden of hospital-based medical care and expenses to governments, consumers, and insurers.

This Statistical Brief presents data from the Healthcare Cost and Utilization Project (HCUP) on the national inpatient hospital bill (aggregate community hospital charges) in 2004. This report describes the distribution of the nation's bill by primary payer and illustrates the conditions accounting for the largest percentage of payers' hospital bills. The primary payers examined are Medicare, Medicaid, private insurance, and the uninsured. All differences between estimates noted in the text are statistically significant at the 0.05 level or better.

#### **Findings**

The nation's hospitals billed almost \$800 billion in total charges in 2004 for hospitalizations. These charges, which do not include physician fees, involved 38.7 million hospital stays.

#### The national hospital bill, by primary payer

In 2004, two government payers, Medicare and Medicaid, bore responsibility for almost two-thirds of the national hospital bill (figure 1). Medicare incurred approximately \$363 billion in total charges in 2004, representing 46.0 percent of the total national hospital bill. Hospital stays billed to Medicaid totaled \$112 billion, or 14.1 percent of the national bill. Although private insurance was billed for nearly the same number of hospital stays as Medicare (14.0 million), the total charges billed to private insurance totaled \$252 billion (31.9 percent of the national hospital bill). Uninsured patients accounted for 4.6 percent (\$36 billion) of the national bill.

#### Most expensive conditions requiring hospitalization

In 2004, the five conditions accounting for the largest percentage of U.S. hospital charges included coronary atherosclerosis (hardening of the arteries of the heart), mother's pregnancy and delivery, newborn infants, acute myocardial infarction (heart attack), and congestive heart failure (table 1). Together, the treatment of these



- In 2004, the national hospital bill totaled almost \$800 billion for nearly 39 million hospital stays.
- Sixty percent of the national bill for hospital care was billed to two government payers, Medicare (\$363 billion) and Medicaid (\$112 billion), while \$252 billion was billed to private insurance.
- One-fifth of the national hospital bill was for treatment of five conditions: coronary atherosclerosis, mother's pregnancy and delivery, newborn infants, acute myocardial infarction, and congestive heart failure. Hospital stays for coronary atherosclerosis incurred the highest charges (\$44 billion); mother's pregnancy and delivery had the second highest charges (\$41 billion).
- Six circulatory diseases were among the most expensive conditions billed to Medicare (\$89 billion), and osteoarthritis was the fifth most expensive (\$12.8 billion). Over 90 percent of these osteoarthritis patients were admitted for elective hip or knee joint replacement
- Of diagnoses billed to Medicaid, the most expensive were related to a mother's pregnancy and delivery and the care of newborn infants; schizophrenia and affective disorders were among the top 5 most expensive.
- Of diagnoses billed to private insurance, the most expensive were related to a mother's pregnancy and delivery and the care of newborn infants; back problems were the fifth most expensive.
- Among the uninsured, acute myocardial infarction and coronary atherosclerosis were the two most expensive reasons for hospitalization; four of the top 20 most expensive reasons for hospitalization involved injuries.

five conditions accounted for approximately one-fifth of all hospital charges. Coronary atherosclerosis involved 1.2 million hospital stays and was the most expensive condition treated. This condition resulted in 5.6 percent of the total national hospital bill, translating into more than \$44 billion in expenses. More than half of the hospital stays for coronary atherosclerosis were among patients who also received percutaneous coronary angioplasty (PTCA) or coronary artery bypass grafts (CABG) during their stay. Hospital stays for pregnancy and delivery resulted in a total hospital bill of \$41 billion. Nearly 4.3 percent of the national hospital bill—\$34 billion—was for stays involving newborn infants. Acute myocardial infarction resulted in \$31 billion of hospital charges for 695,000 hospital stays. The 1.1 million hospitalizations for congestive heart failure amounted to nearly \$29 billion in hospital charges.

#### Most expensive conditions requiring hospitalization, by primary payer

Tables 2 through 5 illustrate the 20 most expensive conditions billed to Medicare, Medicaid, private insurance, and the uninsured in 2004. Some commonalities exist across payers in the conditions that generated high total charges. Both coronary atherosclerosis and acute myocardial infarction ranked among the top 5 most expensive conditions for Medicare, private insurance, and the uninsured. Conditions related to a mother's pregnancy and delivery and newborn infants ranked in the top 5 for Medicaid, private insurance, and the uninsured. For all four payer groups, pneumonia and congestive heart failure ranked among the top 10, while acute cerebrovascular disease (stroke) and septicemia ranked among the top 20 most expensive conditions. Diabetes with complications was included in the top 20 for Medicaid, and the uninsured.

Predictably, given payer differences in demographic mix and service coverage, certain conditions are relatively more prominent in the top rankings of some payer groups than in others. For example, table 2 shows that circulatory diseases accounted for six of the top 20 most expensive conditions billed to Medicare, resulting in \$89 billion of total hospital charges. Three circulatory diseases—coronary atherosclerosis, congestive heart failure, and acute myocardial infarction—were the three most expensive conditions billed to Medicare and accounted for \$64 billion in total hospital charges. Osteoarthritis, a degenerative disorder that becomes more commonplace and debilitating with age, was the fifth most expensive condition billed to Medicare (\$13 billion). More than 90 percent of these osteoarthritis patients were admitted for elective hip or knee joint replacement. Hip fracture ranked 12th for Medicare (\$7.9 billion), but was not in the top 20 ranking for other payers.

Table 3 illustrates that the most expensive hospital stays billed to Medicaid were related to pregnancy and delivery (\$16 billion) and the care of newborn infants (\$15 billion). Two mental health disorders schizophrenia and affective disorders (depression and bipolar disorders)—were included among the top 5 most expensive reasons for hospitalization. These two conditions resulted in hospital bills totaling \$2.7 billion and \$2.4 billion, respectively. Hospitalizations for HIV infection (\$1.4 billion) were also among the top 20 most expensive conditions billed to Medicaid, but this was not the case for the other payers. The high ranking for these conditions is related to the categories of people with Medicaid as their primary payer for hospital care: women of childbearing age (and their children) and disabled persons.

The top 20 most expensive reasons for hospitalization among patients with private insurance included six circulatory diseases (totaling \$40 billion) and two conditions related to childbirth (totaling \$40 billion) (table 4). Back problems constituted the fifth most expensive condition billed to private insurers (\$7.9 billion), who primarily cover an employed population (and their dependents). Back problems did not appear among the top 20 most expensive disorders for Medicaid or the uninsured. The top 20 ranking for private insurance also included two injuries—fracture of the lower limb (\$3.5 billion) and intracranial injury (\$3.3 billion). Other nutritional, endocrine, and metabolic disorders—a condition which includes obesity—was the 15th most expensive reason for hospitalization among those covered by private insurance, though this condition did not appear in the top 20 rankings for other payer types.

Acute myocardial infarction and coronary atherosclerosis were the two most expensive reasons for hospitalization among the uninsured (table 5). Four of the top 20 most expensive reasons for hospitalization among the uninsured involved injuries. Hospitalizations for intracranial injury, fracture of the lower limb, crushing injury or external injury, and other fractures resulted in more than \$3.2 billion of total hospital charges. The top 20 for the uninsured also included affective disorders (\$0.6 billion). Pancreatic disorders (\$ 0.7 billion) ranked 15th for the uninsured, but was not included among the top 20 for other payers.

#### **Data Source**

The estimates in this Statistical Brief are based upon data from the HCUP 2004 Nationwide Inpatient Sample (NIS).

#### **Definitions**

#### 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. They exclude long-term care, rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals, but these types of discharges are included if they are from community hospitals.

#### 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.

#### Charges

Hospital charges reflect the amount the hospital billed for the entire hospital stay and do not include professional (physician) fees. The charge is generally more than the amount paid to the hospital by payers for the hospitalization and is also generally more than the hospital's costs of care. For this brief, when a hospital record is missing charge information, a value is imputed by calculating the mean charge for all discharges with the same diagnosis-related group (DRG) with non-missing charges. Approximately 2 percent of hospital records in the 2004 NIS have missing charge data.

#### Primary payer

Each hospitalization and its related hospital bill are attributed to the payer who was expected by the hospital to pay the major portion of the bill (i.e., the expected primary payer). The expected primary source of payment at admission may not be the ultimate primary payer. In addition, other (secondary) payers may pay a portion of the bill. For this report, if the primary payer is listed as "self-pay" or "no charge," the payer is "uninsured." If the primary payer is some other third-party payer besides Medicare, Medicaid, or private insurance, the payer is "other." "Other" payer consists of Worker's Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government programs.

#### Principal 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 about 12,000 ICD-9-CM diagnosis codes.

CCS categorizes ICD-9-CM diagnoses into 260 clinically meaningful categories. This "clinical grouper" makes it easier to quickly understand patterns of diagnoses and procedures.

For this report, "Mother's pregnancy and delivery" conditions were defined as CCS categories:

- 177 Spontaneous abortion
- 178 Induced abortion
- 180 Ectopic pregnancy
- 181 Other complications of pregnancy
- 182 Hemorrhage during pregnancy, abruptio placenta, placenta previa
- 183 Hypertension complicating pregnancy, childbirth and the puerperium
- 184 Early or threatened labor
- 185 Prolonged pregnancy
- 186 Diabetes or abnormal glucose tolerance complicating pregnancy, childbirth, or the puerperium
- 187 Malposition, malpresentation
- 188 Fetopelvic disproportion, obstruction
- 189 Previous C-section

- 190 Fetal distress and abnormal forces of labor
- 191 Polyhydramnios and other problems of amniotic cavity
- 192 Umbilical cord complication
- 193 Trauma to perineum and vulva
- 194 Forceps delivery
- 195 Other complications of birth, puerperium affecting management of the mother

"Newborn infants" were defined as CCS categories:

- 218 Liveborn
- 219 Short gestation, low birth weight, and fetal growth retardation
- 220 Intrauterine hypoxia and birth asphyxia
- 221 Respiratory distress syndrome
- 222 Hemolytic jaundice and perinatal jaundice
- 223 Birth trauma
- 224 Other perinatal conditions

#### 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, non-rehabilitation 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 of states that comprise 88 percent of the U.S. population for 2004. 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 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.

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

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 & Human Services California Office of Statewide Health Planning & Development Colorado Health & Hospital Association **Connecticut** Integrated Health Information (Chime, Inc.) Florida Agency for Health Care Administration Georgia GHA: An Association of Hospitals & Health Systems Hawaii Health Information Corporation Illinois Health Care Cost Containment Council and Department of Public Health Indiana Hospital&Health Association Iowa Hospital Association Kansas Hospital Association Kentucky Department for Public Health 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 Nebraska Hospital Association Nevada Division of Health Care Financing and Policy, Department of Human Resources **New Hampshire** Department of Health & Human Services New Jersey Department of Health & Senior Services New York State Department of Health North Carolina Department of Health and Human Services **Ohio** Hospital Association Oregon Office for Oregon Health Policy and Research and Oregon Association of Hospitals and Health **Systems** 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 & Family Services

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

#### References

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

Steiner, C., Elixhauser, A., Schnaier, J. The Healthcare Cost and Utilization Project: An Overview. *Effective Clinical Practice* 5(3):143–51, 2002.

Design of the HCUP Nationwide Inpatient Sample, 2004. Online. August 14, 2006. U.S. Agency for Healthcare Research and Quality. <u>http://www.hcup-us.ahrq.gov/db/nation/nis/reports/</u><u>NIS\_2004\_Design\_Report.pdf</u>

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. <u>http://www.hcup-us.ahrq.gov/reports/CalculatingNISVariances 200106092005.pdf</u>

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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:

Irene Fraser, Ph.D., Director Center for Delivery, Organization, and Markets Agency for Healthcare Research and Quality 540 Gaither Road Rockville, MD 20850

Rank	Principal diagnosis	Total national hospital bill (millions)	Percentage of national hospital bill	Number of hospital stays (thousands)
1	Coronary atherosclerosis (hardening of the arteries of the heart)	\$44,466	5.6%	1,192
2	Mother's pregnancy and delivery	\$40,857	5.2%	4,421
3	Newborn infants	\$34,330	4.3%	4,411
4	Acute myocardial infarction (heart attack)	\$31,291	4.0%	695
5	Congestive heart failure	\$28,562	3.6%	1,104
6	Pneumonia	\$25,965	3.3%	1,213
7	Complication of device, implant or graft	\$22,287	2.8%	601
8	Osteoarthritis	\$21,832	2.8%	659
9	Septicemia (except in labor)	\$17,845	2.3%	452
10	Back problems	\$17,199	2.2%	616
11	Cardiac dysrhythmias	\$16,487	2.1%	694
12	Acute cerebrovascular disease (stroke)	\$16,220	2.1%	546
13	Respiratory failure, insufficiency, arrest		1.8%	264
13	(adult) Rehabilitation care, fitting of prostheses, and	\$14,222	1.0%	204
14	adjustment of devices	\$13,012	1.6%	489
15	Complications of surgical procedures or medical care	\$11,922	1.5%	458
16	Biliary tract disease	\$10,748	1.4%	453
17	Diabetes mellitus with complications	\$10,395	1.3%	489
18	Hip fracture	\$9,721	1.2%	306
19	Chronic obstructive pulmonary disease and bronchiectasis	\$9,685	1.2%	556
20	Nonspecific chest pain	\$9,487	1.2%	846
Total fo	or top 20 conditions	\$406,533	51.5%	20,466
Total fo	or all hospitalizations	\$790,119	100.0%	38,662

# Table 1. Top 20 most expensive conditions treated in U.S. hospitals, 2004

Rank	Principal diagnosis	Total hospital charges (millions)	Percentage of Medicare's hospital bill	Number of hospital stays (thousands)
1	Coronary atherosclerosis (hardening of the arteries of the heart)	\$24,842	6.8%	654
2	Congestive heart failure	\$20,984	5.8%	840
3	Acute myocardial infarction (heart attack)	\$17,822	4.9%	407
4	Pneumonia	\$16,639	4.6%	737
5	Osteoarthritis	\$12,797	3.5%	391
6	Complication of device, implant or graft	\$12,720	3.5%	342
7	Septicemia (except in labor)	\$11,787	3.2%	312
8	Cardiac dysrhythmias	\$11,362	3.1%	462
9	Acute cerebrovascular disease (stroke)	\$9,269	2.6%	360
10	Respiratory failure, insufficiency, arrest (adult)	\$8,799	2.4%	175
11	Rehabilitation care, fitting of prostheses, and adjustment of devices	\$8,387	2.3%	339
12	Hip fracture	\$7,874	2.2%	253
13	Chronic obstructive pulmonary disease and bronchiectasis	\$6,967	1.9%	395
14	Spondylosis, intervertebral disc disorders, other back problems (back pain)	\$5,755	1.6%	218
15	Complications of surgical procedures or medical care	\$5,680	1.6%	198
16	Diabetes mellitus with complications	\$5,234	1.4%	215
17	Heart valve disorders	\$4,904	1.4%	55
18	Acute and unspecified renal failure	\$4,716	1.3%	178
19	Urinary tract infections	\$4,660	1.3%	300
20	Aspiration pneumonitis, food/vomitus	\$4,639	1.3%	146
Total fo	r top 20 conditions	\$205,834	56.7%	6,975
Total fo	r all hospitalizations	\$363,106	100.0%	14,028

# Table 2. Top 20 most expensive conditions billed to Medicare, 2004

Rank	Principal diagnosis	Total hospital charges (millions)	Percentage of Medicaid's hospital bill	Number of hospital stays (thousands)
1	Mother's pregnancy and delivery	\$15,909	14.2%	1,737
2	Newborn infant	\$14,816	13.3%	1,767
3	Pneumonia	\$3,169	2.8%	160
4	Schizophrenia and related disorders	\$2,700	2.4%	129
5	Affective disorders (depression and bipolar disorders)	\$2,362	2.1%	187
6	Complication of device, implant or graft	\$2,285	2.0%	60
7	Coronary atherosclerosis (hardening of the arteries of the heart)	\$2,260	2.0%	70
8	Congestive heart failure	\$2,231	2.0%	78
9	Septicemia (except in labor)	\$2,064	1.8%	44
10	Respiratory failure, insufficiency, arrest (adult)	\$2,018	1.8%	30
11	Diabetes mellitus with complications	\$1,661	1.5%	89
12	Acute myocardial infarction (heart attack)	\$1,658	1.5%	34
13	Acute cerebrovascular disease (stroke)	\$1,558	1.4%	35
14	HIV infection	\$1,364	1.2%	34
15	Cardiac and circulatory congenital anomalies	\$1,357	1.2%	15
16	Asthma	\$1,348	1.2%	131
17	Complications of surgical procedures or medical care	\$1,323	1.2%	50
18	Biliary tract disease	\$1,237	1.1%	54
19	Skin and subcutaneous tissue infections	\$1,233	1.1%	88
20	Intracranial injury	\$1,183	1.1%	21
Total fo	or top 20 conditions	\$63,738	57.0%	4,813
Total fo	r all hospitalizations	\$111,748	100.0%	7,345

# Table 3. Top 20 most expensive conditions billed to Medicaid, 2004

Rank	Principal diagnosis	Total hospital charges (millions)	Percentage of private insurers' hospital bill	Number of hospital stays (thousands)
1	Mother's pregnancy and delivery	\$22,428	8.9%	2,403
2	Newborn infants	\$17,362	6.9%	2,328
3	Coronary atherosclerosis (hardening of the arteries of the heart)	\$14,823	5.9%	392
4	Acute myocardial infarction (heart attack)	\$9,303	3.7%	199
5	Spondylosis, intervertebral disc disorders, other back problems (back pain)	\$7,904	3.1%	283
6	Osteoarthritis	\$7,688	3.0%	229
7	Complication of device, implant or graft	\$6,030	2.4%	165
8	Pneumonia	\$4,672	1.9%	244
9	Complications of surgical procedures or medical care	\$4,105	1.6%	176
10	Congestive heart failure	\$4,069	1.6%	135
11	Acute cerebrovascular disease (stroke)	\$4,023	1.6%	114
12	Biliary tract disease	\$3,816	1.5%	183
13	Cardiac dysrhythmias	\$3,752	1.5%	170
14	Nonspecific chest pain	\$3,570	1.4%	330
15	Other nutritional, endocrine, and metabolic disorders	\$3,503	1.4%	115
16	Fracture of lower limb	\$3,471	1.4%	122
17	Intracranial injury	\$3,325	1.3%	73
18	Appendicitis and other appendiceal conditions	\$3,314	1.3%	183
19	Septicemia (except in labor)	\$3,105	1.2%	75
20	Benign neoplasm of uterus	\$2,917	1.2%	191
Fotal for	top 20 conditions	\$133,178	52.8%	8,110
Total for all hospitalizations		\$252,104	100.0%	13,956

Table 4. Top 20 most expensive conditions billed to private insurance, 2004

Rank	Principal diagnosis	Total hospital charges (millions)	Percentage of uninsured hospital bill	Number of hospital stays (thousands)
1	Acute myocardial infarction (heart attack)	\$1,706	4.7%	37
2	Coronary atherosclerosis (hardening of the arteries of the heart)	\$1,441	4.0%	44
3	Mother's pregnancy and delivery	\$1,420	3.9%	152
4	Newborn infants	\$1,233	3.4%	211
5	Intracranial injury	\$988	2.7%	25
6	Acute cerebrovascular disease (stroke)	\$967	2.7%	26
7	Pneumonia	\$950	2.6%	47
8	Fracture of lower limb	\$855	2.4%	30
9	Crushing injury or internal injury	\$845	2.3%	23
10	Congestive heart failure	\$839	2.3%	34
11	Skin and subcutaneous tissue infections	\$791	2.2%	60
12	Diabetes mellitus with complications	\$781	2.2%	46
13	Biliary tract disease	\$776	2.1%	36
14	Nonspecific chest pain	\$772	2.1%	73
15	Pancreatic disorders (not diabetes)	\$666	1.8%	35
16	Appendicitis and other appendiceal conditions	\$663	1.8%	36
17	Affective disorders (depression and bipolar disorders)	\$586	1.6%	66
18	Respiratory failure, insufficiency, arrest (adult)	\$578	1.6%	10
19	Septicemia (except in labor)	\$526	1.5%	12
20	Other fractures	\$465	1.3%	14
Total for	r top 20 conditions	\$17,847	49.3%	1,015
Total for	r all hospitalizations	\$36,169	100.0%	2,081

# Table 5. Top 20 most expensive conditions billed to the uninsured, 2004



# Figure 1. Distribution of the national hospital bill, by primary payer, 2004

