

STATISTICAL BRIEF #81

November 2009

The Costs of End-of-Life Hospitalizations, 2007

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Introduction

It is well known that end-of-life care is a major expenditure in the Medicare program.¹ However, there has been very little recent empirical research on the costs of end-of-life care outside of Medicare, across the whole population and all payers. Since most of the financial burden of care in the last month of life is inpatient care,² in this Statistical Brief we present the latest statistics on the inpatient costs of patients who die in the hospital for the whole U.S. population and all payers in 2007.

This Statistical Brief presents data from the Healthcare Cost and Utilization Project (HCUP) on hospital deaths in 2007. We first estimated national inpatient deaths and death rates by payer, age, sex, admission type, household income, and hospital region. Hospital costs for inpatient deaths were then compared to the costs for patients discharged alive among all payer groups. We also listed the top principal diagnoses and procedures, defined by the AHRQ's Clinical Classifications Software (CCS) grouper, among hospital deaths. All differences between estimates provided in the text are statistically significant at the 0.05 level or better.

Findings

Hospitals as the place of death

In 2007, it is estimated by the Centers for Disease Control (CDC) that 2,423,995 people died in the U.S.³ Of these, we estimate that 765,651 died in the hospital (Table 1). That is, 32 percent of all deaths in the U.S. in 2007 occurred in the hospital. Similarly, combining our hospital data with CDC mortality data, we find that 74 percent of infant deaths occurred in the hospital. Among the elderly, 31 percent of deaths occurred in the hospital, while 34 percent of nonelderly deaths took place in the hospital (data not shown).

Mortality in U.S. hospitals by payer, sex, age, admission type, household income, and hospital region

Table 1 provides the number of deaths and inpatient death rates in U.S. hospitals by payer, sex, age, admission type, household

Highlights

- Thirty-two percent of all deaths in the U.S. in 2007 were inpatient hospital deaths.
- The inpatient death rate in 2007 was 1.9 percent. However, these hospital stays ending in death were responsible for 5.2 percent (\$20 billion) of all hospital inpatient costs.
- Average hospital costs for a stay ending in death were \$26,000, about 2.8 times higher than for a patient discharged alive.
- Medicaid had the highest costs for a hospital stay ending in death, \$39,000, nearly 5.6 times higher than for a Medicaid patient discharged alive. However, Medicaid had the lowest death rate among payers, 0.8 percent.
- Medicare had 67 percent of all inpatient deaths, with a total cost of over \$12 billion, which accounted for 7.0 percent of all Medicare inpatient costs.
- Twelve percent of all inpatient deaths were for elective admissions, with a death rate of 0.9 percent.
- The leading principal diagnosis for inpatient death cases was septicemia, which was the principal diagnosis for 15 percent of all deaths; 17 percent of patients with septicemia died in the hospital.
- Other leading causes of inpatient death included stroke, pneumonia, myocardial infarction, congestive heart failure, and malignancies.

¹ Christopher Hogan, June Lunney, Jon Gabel, and Joanne Lynn. 2001. Medicare Beneficiaries' Costs of Care in the Last Year of Life. *Health Affairs*. 20:4, 188–195.

² Alan M. Garber, Thomas MaCurdy, Mark McClellan. 1999. Medical Care at the End of Life: Diseases, Treatment Patterns, and Costs, in ed. Alan Garber, *Frontiers in Health Policy Research*, Volume 2. MIT University Press: Cambridge, MA.

³ Xu J, Kochanek KD, Tejada-Vera B. Deaths: Preliminary Data for 2007. *National Vital Statistics Reports*; Vol. 58 No. 1. Hyattsville, MD: National Center for Health Statistics. 2009. <http://www.cdc.gov/nchs/deaths.htm>

income, and hospital region in 2007. There were 765,651 inpatient deaths in 2007, with an inpatient death rate of 1.9 percent. Medicare experienced 512,391 inpatient deaths, accounting for 67 percent of all inpatient death cases. The privately insured, Medicaid, and the uninsured accounted for 18.0, 8.1, and 3.5 percent, respectively, of all inpatient death cases. There were 137,409 hospital deaths for the privately insured while Medicaid had 61,765 hospital deaths and the uninsured had 26,477 cases. The remaining 3.4 percent of hospital deaths were covered by other payers such as charity and government programs.

The inpatient death rate was 3.6 percent among Medicare inpatients, the highest among all payer groups. The inpatient death rates among the uninsured, privately insured, and Medicaid were 1.3, 1.0, and 0.8 percent, respectively.

Males had a higher inpatient death rate compared to females (2.4% versus 1.7%). The number of male deaths was slightly higher than female deaths while in the hospital. There were 383,347 male inpatient deaths and 382,052 female inpatient deaths in 2007, accounting for 50.1 percent and 49.9 percent, respectively, of all hospital deaths.

Elderly inpatients aged 65 and older accounted for 539,120 hospital deaths, 71 percent of all hospital deaths. For the elderly aged 65–84, there were 358,486 hospital deaths, accounting for 47 percent of all hospital deaths. For the elderly aged 85 and older, there were 180,634 hospital deaths, accounting for 24 percent. Inpatients aged 45–64 accounted for 21 percent of all hospital deaths. Inpatients under 45 years old (aged 1–44) accounted for less than 6.0 percent of all hospital deaths, while infants accounted for 2.8 percent of all hospital deaths.

Patients aged 85 and older had the highest hospital death rate (6.1 percent), while patients aged 18–34 had the lowest (0.25 percent). Inpatients aged 65–84 had the second highest death rate (3.5 percent), while inpatients aged 1–17 had the second lowest death rate (0.29 percent). Infants under 1 year old had a death rate of 0.42 percent. Death rates among the group aged 35–44 and the group aged 45–64 were 0.65 and 1.74 percent, respectively.

There were 548,840 inpatient deaths among emergency admissions, accounting for 72 percent of all inpatient deaths. There were 89,648 inpatient deaths among elective admissions, accounting for 12 percent of all hospital deaths. Newborn admissions had 14,285 deaths in the hospital, accounting for 1.9 percent of all hospital deaths. There were 56,535 inpatient deaths among admissions for trauma, accounting for 7.4 percent of all inpatient deaths.

The highest hospital death rate occurred among emergency admissions (2.9 percent), while the lowest was among newborns (0.36 percent). The hospital death rate for trauma was 2.6 percent, the second highest among the admission groups. The hospital death rate was 0.92 percent for elective admissions.

Inpatients with a median ZIP Code household income below \$39,000 accounted for 30 percent of all inpatient deaths, while inpatients with household income higher than \$63,000 accounted for 20 percent of all inpatient deaths. The inpatient death rate declined with household income. The highest inpatient death rate occurred among the poorest (2.0 percent).

By hospital region, the Midwest had the lowest inpatient death rate (1.8 percent) while the Northeast had the highest (2.1 percent). The inpatient death rate in the South and the West was 2.0 percent and 1.9 percent, respectively.

Hospital costs by payer for stays ending in death

Table 2 provides total hospital costs and costs per discharge for hospital stays ending in death. The costs were further examined by payer. In addition, the mean hospital length of stay by payer is shown in the table.

Medicare hospital costs for stays ending in death were over \$12 billion, which accounted for 7.0 percent of all Medicare inpatient costs and 62 percent of total hospital costs for stays ending in death. Privately insured deaths cost nearly \$4 billion, accounting for 20 percent of total hospital costs for stays ending in death. Medicaid hospital stays ending in death cost \$2.4 billion and the uninsured hospital stays ending in death cost \$0.63 billion, accounting for 12 percent and 3.1 percent, respectively, of total hospital costs for stays ending in death. Overall, the costs of hospitalizations ending in death were \$20 billion, which accounted for 5.2 percent of total inpatient hospital costs in the U.S. in 2007.

Hospital stays ending in death on average cost \$26,035, which was 2.8 times higher than for inpatients discharged alive. Among Medicaid patients, the costs per hospital stay ending in death were \$38,939, which was more than five times higher than for inpatients discharged alive. The privately insured cost \$29,089 and Medicare patients cost \$23,964 for a hospital stay ending in death. The uninsured had mean hospital costs of \$23,686 for a stay ending in death.

The average hospital length of stay was 8.8 days for deaths and 4.5 days for those discharged alive. Average hospital stays among Medicaid deaths lasted 13 days, compared to 4.3 days for patients discharged alive. Uninsured deaths had the shortest stay, 6.9 days. Medicare and privately insured deaths had the same length of stay, 8.5 days.

Top ten principal diagnoses and procedures among inpatient deaths

Table 3 lists the top ten principal CCS diagnoses and procedures for inpatient deaths. The number of deaths and death rates for these principal diagnoses and procedures are also shown in the table.

The leading principal diagnosis for inpatient death cases was septicemia, the principal diagnosis in 15 percent of deaths, with a death rate of 17 percent. The next leading principal diagnosis was respiratory failure, found in 8.7 percent of deaths, with a death rate of 17 percent. Aspiration pneumonitis had an inpatient death rate of 13 percent and cancer of the bronchus had an inpatient death rate of 11 percent. Other conditions responsible for a large number of inpatient deaths included acute cerebrovascular disease, pneumonia, acute myocardial infarction, congestive heart failure, secondary malignancies, acute and unspecified renal failure.

Next, 73 percent of inpatient deaths had one or more procedures during the hospital stay and 27 percent of inpatient deaths experienced no procedure. Note that 25 percent of inpatient deaths had a principal procedure of respiratory intubation and mechanical ventilation, accompanied with a death rate of 25 percent. The next leading principal procedure was "other vascular catheterizations (not heart)," which accounted for 5.1 percent of all death cases, with a death rate of 7.0 percent. Inpatients with a principal procedure of conversion of cardiac rhythm had a death rate of 21 percent and inpatients with a principal procedure of tracheostomy had a death rate of 17 percent. The death rate among inpatients with no procedure was 1.5 percent.

Other top principal CCS procedures for inpatient death cases included blood transfusion, other therapeutic procedures, incision of pleura/thoracentesis/chest drainage, other operating room procedures on vessels other than head and neck, colorectal resection, and hemodialysis.

Data Source

The estimates in this Statistical Brief are based upon data from the HCUP Nationwide Inpatient Sample (NIS) for 2007. Supplemental source included data on national death estimates from <http://www.cdc.gov/nchs/deaths.htm>.

Definitions

Diagnoses, ICD-9-CM, and Clinical Classifications Software (CCS), and Diagnosis-Related Groups (DRGs)

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 that develop during the stay. All-listed diagnoses include the principal diagnosis plus these additional secondary conditions.

ICD-9-CM is the International Classification of Diseases, Ninth Revision, Clinical Modification, which assigns numeric codes to diagnoses. There are about 13,600 ICD-9-CM diagnosis codes.

CCS categorizes ICD-9-CM diagnoses into a manageable number of clinically meaningful categories.⁴ This "clinical grouper" makes it easier to quickly understand patterns of diagnoses and procedures.

DRGs comprise a patient classification system that categorizes patients into groups that are clinically coherent and homogeneous with respect to resource use. DRGs group patients according to diagnosis, type of treatment (procedures), age, and other relevant criteria. Each hospital stay has one DRG assigned to it.

⁴ HCUP CCS. Healthcare Cost and Utilization Project (HCUP). June 2009. U.S. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

Procedures and Clinical Classifications Software (CCS)

The principal procedure is the procedure that was performed for definitive treatment rather than one performed for diagnostic or exploratory purposes (i.e., the procedure that was necessary to take care of a complication). If two procedures appear to meet this definition, the procedure most related to the principal diagnosis was selected as the principal procedure.

CCS categorizes procedure codes into clinically meaningful categories.⁴ This "clinical grouper" makes it easier to quickly understand patterns of procedure use.

Case Definition

In this report, trauma cases were identified based on ICD-9-CM codes and DRGs. ICD-9-CM codes for trauma cases included 800–825, 827–833, 835–839, 850–854, 860–882, 884, 887, 890–892, 894, 896, 897, 900–904, 925–929, 940–949, 952, 953, and 958. Emergency admissions were defined using variable HCUP_ED and elective admissions were defined using variable ELECTIVE.

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.

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 and Medicaid Services (CMS).⁵ Costs will tend to reflect the actual costs of production, while charges represent what the hospital billed for the case. For each hospital, a hospital-wide cost-to-charge ratio is used because detailed charges are not available across all HCUP States. Hospital charges reflect the amount the hospital charged for the entire hospital stay and does not include professional (physician) fees. For the purposes of this Statistical Brief, costs are reported to the nearest hundred.

Median community-level income

Median community-level income is the median household income of the patient's ZIP Code of residence. The cut-offs for the quartile designation is determined using ZIP Code demographic data obtained from Claritas. The income quartile is missing for homeless and foreign patients.

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 more general groups:

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

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

⁴ HCUP CCS. Healthcare Cost and Utilization Project (HCUP). June 2009. U.S. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

⁵ HCUP Cost-to-Charge Ratio Files (CCR). Healthcare Cost and Utilization Project (HCUP). 2001–2005. U.S. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/db/state/costtocharge.jsp

Region

Region is one of the four regions defined by the U.S. Census Bureau:

- Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania
- Midwest: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas
- South: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas
- West: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, and Hawaii

Admission source

Admission source indicates where the patient was located prior to admission to the hospital. Emergency admission indicates the patient was admitted to the hospital through the emergency department. Admission from another hospital indicates the patient was admitted to this hospital from another short-term, acute-care hospital. This usually signifies that the patient required the transfer in order to obtain more specialized services that the originating hospital could not provide. Admission from long-term care facility indicates the patient was admitted from a long-term facility such as a nursing home.

Discharge status

Discharge status indicates the disposition of the patient at discharge from the hospital, and includes the following six categories: routine (to home), transfer to another short-term hospital, other transfers (including skilled nursing facility, intermediate care, and another type of facility such as a nursing home), home health care, against medical advice (AMA), or died in the hospital.

About HCUP

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

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

Arizona Department of Health Services
Arkansas Department of Health
California Office of Statewide Health Planning and Development
Colorado Hospital Association
Connecticut Hospital Association
Florida Agency for Health Care Administration
Georgia Hospital Association
Hawaii Health Information Corporation
Illinois Department of Public Health
Indiana Hospital Association
Iowa Hospital Association
Kansas Hospital Association
Kentucky Cabinet for Health and Family Services
Maine Health Data Organization
Maryland Health Services Cost Review Commission
Massachusetts Division of Health Care Finance and Policy
Michigan Health & Hospital Association
Minnesota Hospital Association
Missouri Hospital Industry Data Institute
Nebraska Hospital Association
Nevada Department of Health and Human Services

New Hampshire Department of Health & Human Services
New Jersey Department of Health and Senior Services
New York State Department of Health
North Carolina Department of Health and Human Services
Ohio Hospital Association
Oklahoma State Department of Health
Oregon Association of Hospitals and Health Systems
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 and Family 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, 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 that contains hospitals comprising about 90 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.

For More Information

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

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

For information on other hospitalizations in the U.S., download *HCUP Facts and Figures: Statistics on Hospital-based Care in the United States in 2006*, located at <http://www.hcup-us.ahrq.gov/reports.jsp>.

For a detailed description of HCUP, 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.

Introduction to the HCUP Nationwide Inpatient Sample, 2006. Online. May 14, 2008. U.S. Agency for Healthcare Research and Quality. http://www.hcup-us.ahrq.gov/db/nation/nis/2006NIS_INTRODUCTION.pdf

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>

Suggested Citation

Zhao, Y., and Encinosa, W. *The Cost of End-of-Life Hospitalizations, 2007*. HCUP Statistical Brief #81. November 2009. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb81.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:

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

Table 1: Hospital Mortality in 2007			
	Deaths	Live Discharges	Inpatient Death Rate
Hospitalization	765,651	38,776,297	1.94%
<i>By Payer</i>			
Medicare	512,391 (66.92%)	13,869,295 (35.77%)	3.56%
Medicaid	61,765 (8.07%)	7,601,245 (19.60%)	0.81%
Private Insurance	137,409 (17.95%)	13,582,245 (35.03%)	1.00%
Uninsured	26,477 (3.46%)	2,078,020 (5.36%)	1.26%
<i>By Age</i>			
Under 1 year	21,563 (2.82%)	5,107,020 (13.17%)	0.42%
1–17	4,862 (0.64%)	1,652,998 (4.26%)	0.29%
18–34	17,245 (2.25%)	6,752,275 (17.41%)	0.25%
35–44	23,350 (3.05%)	3,561,020 (9.18%)	0.65%
45–64	159,392 (20.82%)	8,975,397 (23.15%)	1.74%
65–84	358,486 (46.82%)	9,918,187 (25.58%)	3.49%
85 and over	180,634 (23.59%)	2,772,639 (7.15%)	6.12%
<i>By Sex</i>			
Female	382,052 (49.90%)	22,820,941 (58.85%)	1.65%
Male	383,347 (50.07%)	15,847,241 (40.87%)	2.36%
<i>By Admission Type</i>			
Emergency	548,840 (71.7%)	18,337,863 (47.3%)	2.91%
Elective	89,648 (11.7%)	9,654,710 (24.9%)	0.92%
Trauma	56,535 (7.38%)	2,158,439 (5.57%)	2.55%
Newborn	14,285 (1.87%)	3,930,836 (10.14%)	0.36%
<i>By Median Household Income</i>			
\$1–\$38,999	229,046 (29.9%)	11,274,487 (29.1%)	1.99%
\$39,000–\$47,999	190,888 (24.9%)	9,543,385 (24.6%)	1.96%
\$48,000–\$62,999	169,892 (22.2%)	8,708,495 (22.5%)	1.91%
\$63,000+	155,604 (20.3%)	8,207,319 (21.2%)	1.86%
<i>By Hospital Region</i>			
Northeast	165,174 (21.6%)	7,588,122 (19.6%)	2.13%
Midwest	161,335 (21.1%)	8,968,777 (23.1%)	1.77%
South	299,508 (39.1%)	14,973,789 (38.6%)	1.96%
West	139,635 (18.2%)	7,245,608 (18.7%)	1.89%

Note: Percentages in parentheses are the within-group distribution.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2007

Table 2: Hospital Costs and Length of Stay by Payer in 2007		
	Hospital Stays Ending in Death	Live Discharge
Total Hospital Cost	\$19,934,077,746	\$366,334,788,476
<i>Total Hospital Cost by Payer</i>		
Medicare	\$12,279,159,812 (62%)	\$164,092,487,088 (45%)
Medicaid	2,405,097,134 (12%)	53,099,833,392 (14%)
Private Insurance	3,997,100,292 (20%)	118,488,388,187 (32%)
Uninsured	627,123,760 (3.1%)	14,985,589,212 (4.1%)
Mean Cost per Hospital Stay	\$26,035	\$9,447
<i>Mean Hospital Cost by Payer</i>		
Medicare	\$23,964	\$11,831
Medicaid	38,939	6,986
Private Insurance	29,089	8,724
Uninsured	23,686	7,211
Mean Hospital Length of Stay (days)	8.8	4.5
<i>Mean Hospital Length of Stay by Payer (days)</i>		
Medicare	8.5	5.5
Medicaid	12.7	4.3
Private Insurance	8.5	3.7
Uninsured	6.9	3.9

Note: Percentages in parentheses are the within-group distribution.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2007

Table 3: Top 10 Principal Diagnoses and Procedures among Inpatient Deaths in 2007			
	Number of Discharges	Mean Cost Per Discharge	Inpatient Death Rate
CCS Principal Diagnoses			
Septicemia (except in labor)	116,587 (15.23%)	\$26,237	17.26%
Respiratory failure; insufficiency; arrest (adult)	66,633 (8.70%)	25,603	17.27%
Acute cerebrovascular disease	49,268 (6.43%)	17,289	9.34%
Pneumonia	41,273 (5.39%)	22,021	3.52%
Acute myocardial infarction	38,305 (5.00%)	23,744	6.13%
Congestive heart failure; nonhypertensive	34,010 (4.44%)	19,911	3.32%
Secondary malignancies	23,679 (3.09%)	21,744	8.99%
Aspiration pneumonitis; food/vomitus	23,224 (3.03%)	17,142	12.66%
Acute and unspecified renal failure	20,599 (2.69%)	18,158	5.15%
Cancer of bronchus; lung	17,479 (2.28%)	19,804	11.42%
CCS Principal Procedures			
No Procedure	209,072 (27.31%)	6,716	1.47%
Respiratory intubation and mechanical ventilation	189,863 (24.80%)	24,917	25.18%
Other vascular catheterization (not heart)	39,005 (5.09%)	20,755	6.99%
Blood transfusion	29,072 (3.80%)	17,192	4.19%
Other therapeutic procedures	16,719 (2.18%)	17,881	2.62%
Conversion of cardiac rhythm	14,841 (1.94%)	10,368	21.20%
Incision of pleura; thoracentesis; chest drainage	11,562 (1.51%)	22,612	5.82%
Other OR procedures on vessels other than head and neck	11,440 (1.49%)	60,723	3.75%
Tracheostomy; temporary and permanent	11,061 (1.44%)	116,335	16.97%
Colorectal resection	10,701 (1.40%)	58,040	3.72%
Hemodialysis	9,257 (1.21%)	21,840	2.70%

Note: Percentages in parentheses are the within-group distribution; CCS=AHRQ Clinical Classifications System; OR=operating room.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2007