

## SECTION 4 COSTS FOR INPATIENT HOSPITAL STAYS

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### HIGHLIGHTS

- In 2009, the aggregate cost for all hospital stays was \$361.5 billion.
- The top three conditions with the highest aggregate costs—septicemia, osteoarthritis, and coronary atherosclerosis—accounted for more than 11 percent of all hospital costs in 2009.
- When conditions were grouped by diagnostic category, the circulatory system accounted for the largest share of hospital costs (20 percent).
- Medicare, the single largest payer for hospitalizations in 2009, accounted for 46 percent of aggregate inpatient costs.
- Medicaid stays accounted for 15 percent of in-hospital costs.
- Private insurance was responsible for 30 percent of aggregate costs; the uninsured were responsible for 5 percent.
- The majority of costs for circulatory conditions (60 percent) were billed to Medicare. One-quarter of circulatory system costs (25 percent) were covered by private insurance.
- Between 1997 and 2009, inflation-adjusted aggregate costs for community hospital stays rose from \$229.6 billion to \$361.5 billion.
- Overall, growth in intensity of services accounted for 72 percent of the growth in aggregate costs, while population growth was responsible for 27 percent of total growth and an increased number of stays per population accounted for only 1.2 percent of growth.

## EXHIBIT 4.1 Cost by Diagnosis

### Aggregate Costs for Hospital Stays by Principal Diagnosis, 1997, 2003, and 2009

PRINCIPAL CCS DIAGNOSIS	TOTAL INFLATION-ADJUSTED <sup>†</sup> HOSPITAL COSTS IN BILLIONS: 2009 DOLLARS			COST PER STAY			AVERAGE ANNUAL GROWTH IN AGGREGATE COSTS 1997-2009
	1997	2003	2009	1997	2003	2009	
All diagnoses	\$229.6	\$324.3	\$361.5	\$6,600	\$8,500	\$9,200	3.9%
Septicemia	\$4.3	\$5.7	\$15.4	\$10,300	\$14,800	\$18,500	11.3%
Osteoarthritis	\$4.9	\$8.2	\$13.6	\$11,800	\$14,000	\$14,800	8.8%
Coronary atherosclerosis	\$15.3	\$18.2	\$13.4	\$10,900	\$14,500	\$16,100	-1.1%
Liveborn (newborn infant)	\$8.3	\$10.7	\$11.6 ‡	\$2,200	\$2,600	\$2,800	2.8%
Acute myocardial infarction	\$9.6	\$13.1	\$11.5	\$13,100	\$17,500	\$18,200	1.5%
Complication of device, implant or graft	\$5.8	\$9.5	\$11.4	\$11,800	\$16,000	\$17,000	5.8%
Congestive heart failure	\$7.0	\$11.4	\$10.7 ‡	\$7,000	\$10,200	\$10,400	3.6%
Pneumonia	\$9.3	\$11.5	\$10.5	\$7,600	\$8,800	\$9,000	1.0%
Spondylosis, intervertebral disc disorders, and other back problems	\$3.6	\$7.1	\$9.9	\$6,700	\$10,900	\$15,100	8.8%
Respiratory failure	\$3.5	\$5.3	\$8.1	\$17,400	\$22,000	\$21,400	7.4%
Cardiac dysrhythmias	\$3.7	\$6.9	\$7.5 ‡	\$6,500	\$9,800	\$9,300	6.1%
Acute cerebrovascular disease	\$5.7	\$7.0	\$7.4 ‡	\$9,200	\$12,500	\$13,400	2.3%
Complication of surgical procedures or medical care	\$3.0	\$5.1	\$6.1	\$8,600	\$11,200	\$11,800	5.9%
Chronic obstructive pulmonary disease and bronchiectasis	\$3.5	\$4.6	\$5.4	\$6,300	\$7,400	\$7,400	3.8%
Biliary tract disease	\$3.5	\$4.6	\$4.8 ‡	\$7,600	\$10,000	\$10,100	2.8%
Rehabilitation care, fitting of prostheses, and adjustment of devices	\$3.9	\$4.9 ‡	\$4.8 ‡	\$10,000	\$10,700	\$11,800	1.8%
Diabetes mellitus with complications	\$2.9	\$4.3	\$4.6 ‡	\$7,000	\$8,900	\$8,700	3.9%
Fracture of neck of femur (hip)	\$3.3	\$4.0	\$4.4	\$10,100	\$13,000	\$14,300	2.3%
Mood disorders	\$3.3	\$4.2	\$4.3 ‡	\$5,100	\$5,200	\$4,900	2.4%
Heart valve disorders	\$2.6	\$3.4	\$4.2 ‡	\$27,200	\$35,400	\$36,700	4.2%

<sup>†</sup> Adjusted for inflation using the GDP deflator (<http://www.bea.gov/national/nipaweb/SelectTable.asp>, Table 1.1.4. Price Indexes for Gross Domestic Product).

<sup>‡</sup> Inflation-adjusted hospital costs are not statistically different from previously reported year shown on table at p<0.05.

Note: Aggregate costs for residual codes and those not elsewhere classified are not shown here. As a result, aggregate costs for all body systems may be larger than the sum of the component parts.

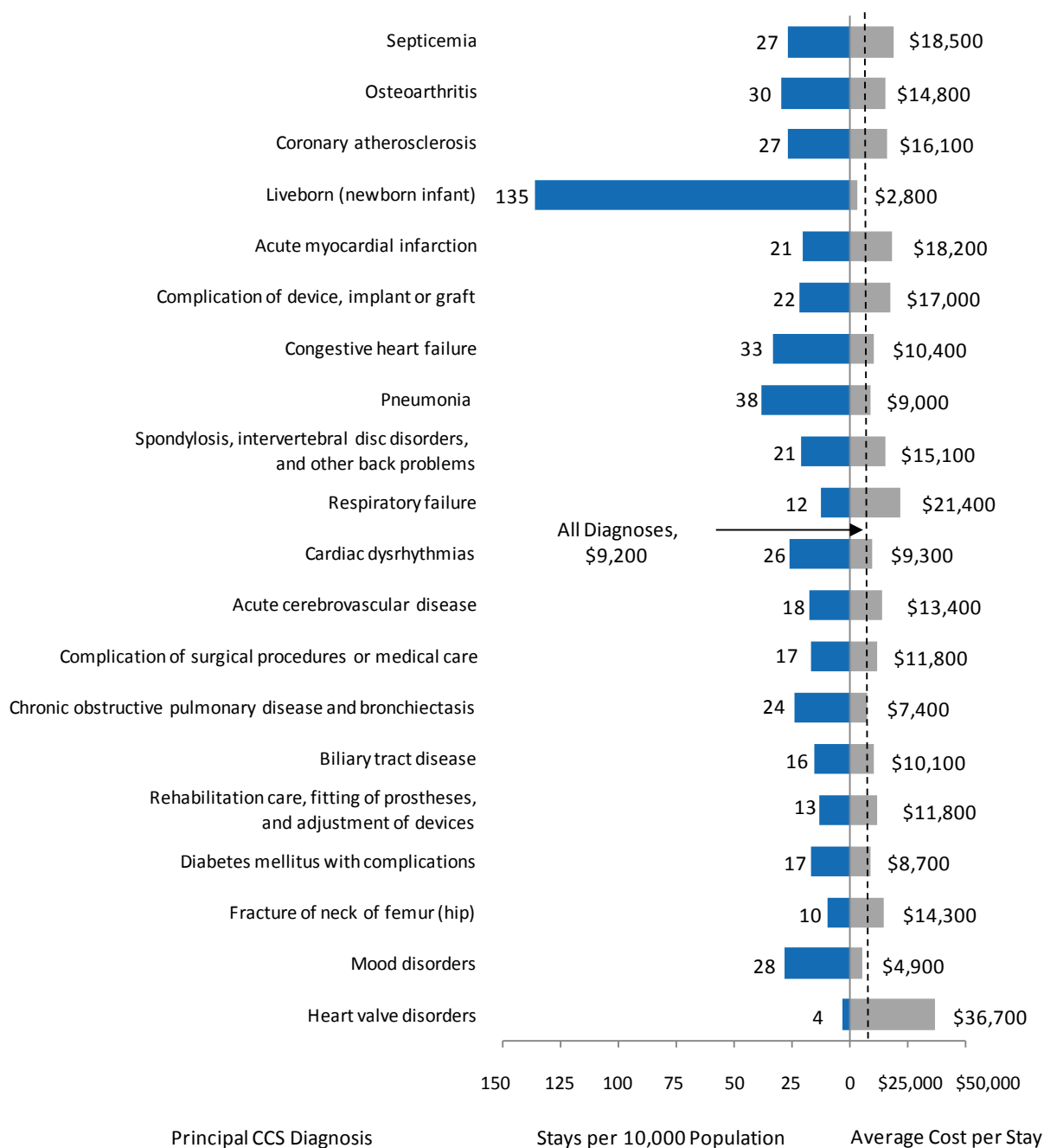
Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1997, 2003, and 2009.

This table presents the twenty conditions with the highest total costs in 2009. For each condition, the aggregate cost and the cost per stay are shown for 1997, 2003, and 2009; the average annual growth in aggregate costs between 1997 and 2009 is also provided.

- Inflation-adjusted aggregate costs for community hospital stays for all diagnoses rose from \$229.6 billion in 1997 to \$361.5 billion in 2009.
- The top three conditions with the highest aggregate costs—septicemia, osteoarthritis, and coronary atherosclerosis—accounted for more than 11 percent of all hospital costs in 2009.
  - Septicemia was the most expensive condition in 2009, and among these most expensive conditions, its costs grew the fastest between 1997 and 2009.
- Five of the twenty most expensive conditions were cardiovascular: coronary atherosclerosis, acute myocardial infarction, congestive heart failure, acute cerebrovascular disease, and cardiac dysrhythmias.
  - With the exception of costs of stays for congestive heart failure and cardiac dysrhythmias, the costs for these cardiovascular diagnoses grew at a slower pace than total hospital costs between 1997 and 2009.

- Three of the twenty most expensive conditions were musculoskeletal: osteoarthritis, spondylosis, intervertebral disc disorders, and other back problems, and fracture of neck of femur (hip).
  - Costs for osteoarthritis and spondylosis grew at more than twice the pace of total hospital costs between 1997 and 2009.
- Between 1997 and 2009, costs for septicemia, osteoarthritis and spondylosis grew at two to three times the rate of total hospital costs. Costs for coronary atherosclerosis, acute myocardial infarction and pneumonia grew at a slower pace than overall costs.

### Hospital Stays per 10,000 Population and Cost per Stay by Principal Diagnosis, 2009



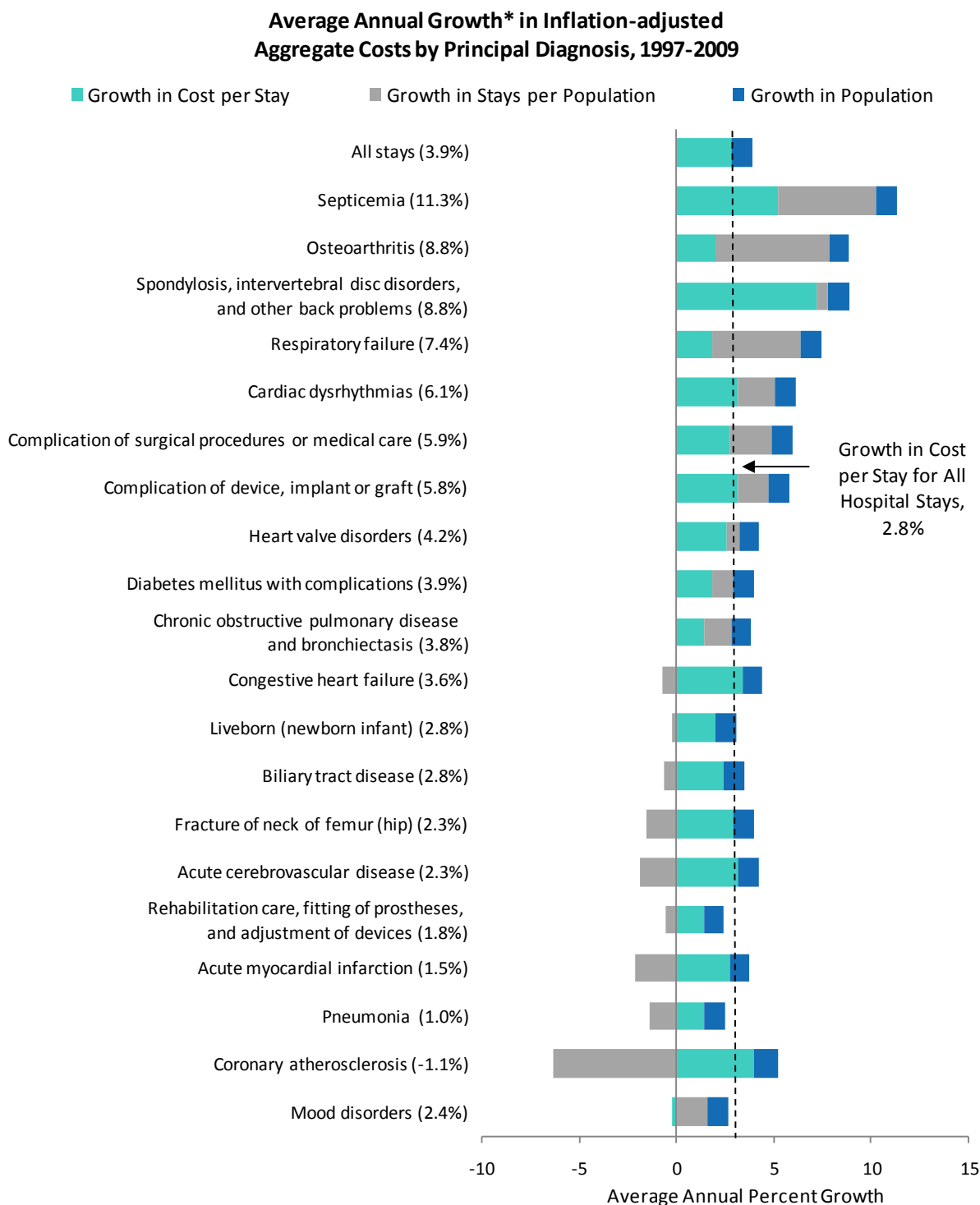
Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2009.

The figure above shows the rate of hospital stays and the average cost per stay for the twenty conditions with the highest total inpatient costs in 2009. Conditions are ordered by the aggregate costs of inpatient stays.

- Hospital stays for septicemia cost a total of \$15.4 billion and occurred at a rate of 27 stays per 10,000 population. The average cost per stay was \$18,500, about twice as much as the average cost for all stays.
- There were 135 hospital stays for liveborn (newborn infants) for every 10,000 population. These stays were responsible for \$11.6 billion in hospital costs; each stay cost an average of \$2,800.

- Stays for mood disorders cost a total of \$4.3 billion; there were 28 of these stays per 10,000 population. This diagnosis had the lowest average cost per stay (\$4,900) after liveborn (newborn infants).

**EXHIBIT 4.2 Cost Factors Accounting for Growth by Diagnosis**



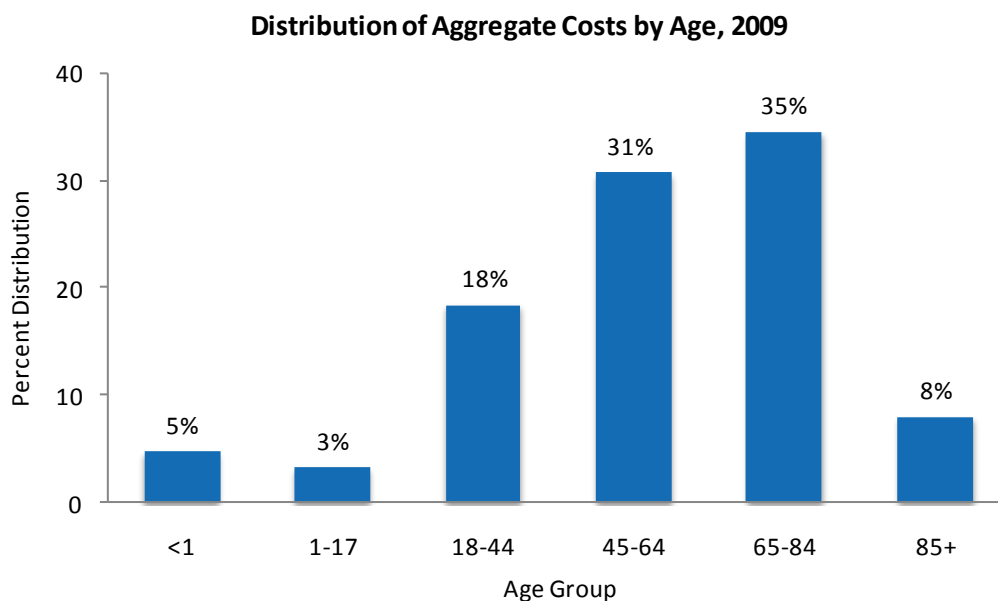
\* Bar segments depict the portion of growth attributable to each of the factors listed in the key. The net average annual growth is noted in the axis label.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1997 and 2009.

Exhibit 4.2 shows the average annual growth in aggregate costs for the twenty most costly reasons for hospitalization. The contribution of the growth in the number of stays, the growth in the cost per stay and population growth to the growth in aggregate costs of each condition are also indicated.

- Aggregate costs for stays in community hospitals grew 3.9 percent annually between 1997 and 2009. The factors that comprised this overall growth were:
  - Greater intensity of services (cost per stay) provided during the hospital stay (averaging 2.8 percent annually),
  - Population growth (up 1.0 percent annually), and
  - Growth in the number of stays per person remained stable.
- Overall, growth in intensity of services accounted for 72 percent of the growth in aggregate costs, while population growth was responsible for 27 percent of total growth and an increased number of stays per population accounted for only 1.2 percent of growth.
- Higher than average growth in cost per stay, indicating greater intensity of service utilization and more expensive interventions, accounted for 81 percent of the growth in the costs of stays for spondylosis, while population growth and growth in stays per population accounted for 12 percent and 7 percent, respectively.
- Growth in stays per person made up the majority of the growth in costs for stays for:
  - osteoarthritis,
  - respiratory failure, and
  - mood disorders.
- The increase in number of stays per person was a relatively more important factor in cost growth for the following stays than it was for stays overall:
  - septicemia,
  - cardiac dysrhythmias,
  - complication of surgical procedures or medical care,
  - complication of device, implant or graft,
  - diabetes mellitus with complications, and
  - chronic obstructive pulmonary disease and bronchiectasis.
- The decline in hospitalizations per population dampened increases in the net cost of hospital stays for:
  - coronary atherosclerosis,
  - congestive heart failure,
  - acute cerebrovascular disease,
  - fracture of neck of femur (hip),
  - rehabilitation care,
  - acute myocardial infarction, and
  - pneumonia.

### EXHIBIT 4.3 Cost by Age

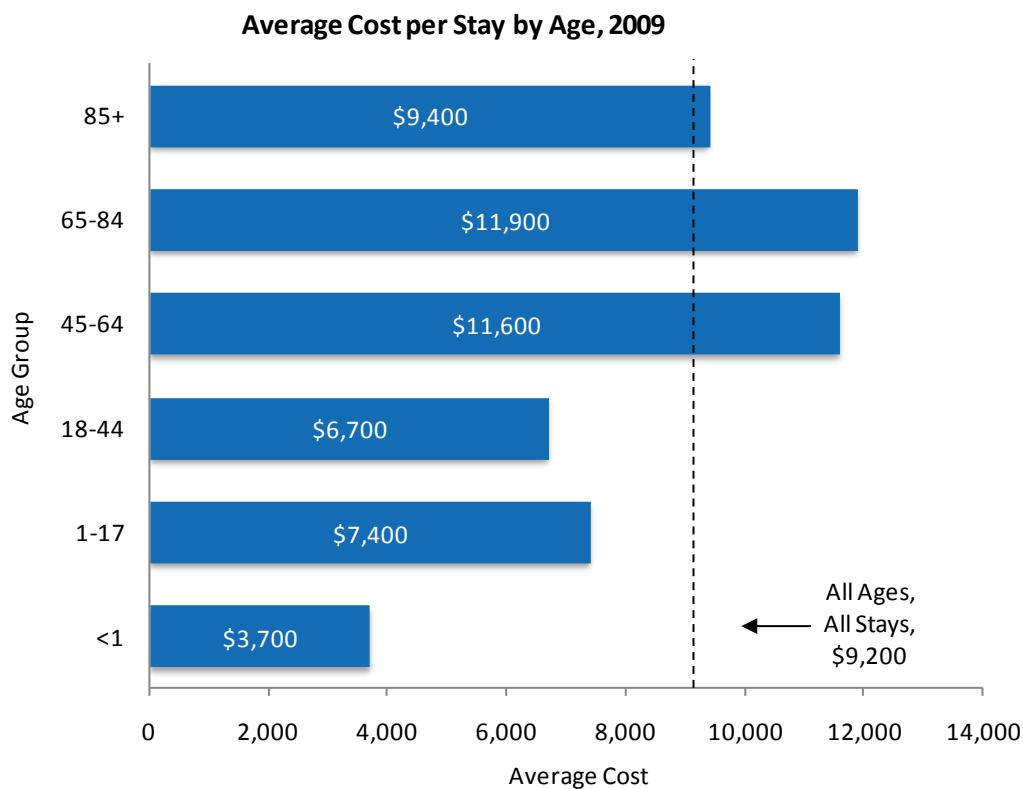


Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2009.

In 2009, the aggregate cost for all hospital stays was \$361.5 billion.

- Non-elderly adult stays accounted for 49 percent of the aggregate cost of all inpatient stays and stays for patients 65 and older accounted for 43 percent of all inpatient costs.
- Stays among patients 45-64 and 65-84 years accounted for larger shares of aggregate costs (31 and 35 percent, respectively) relative to other age groups.

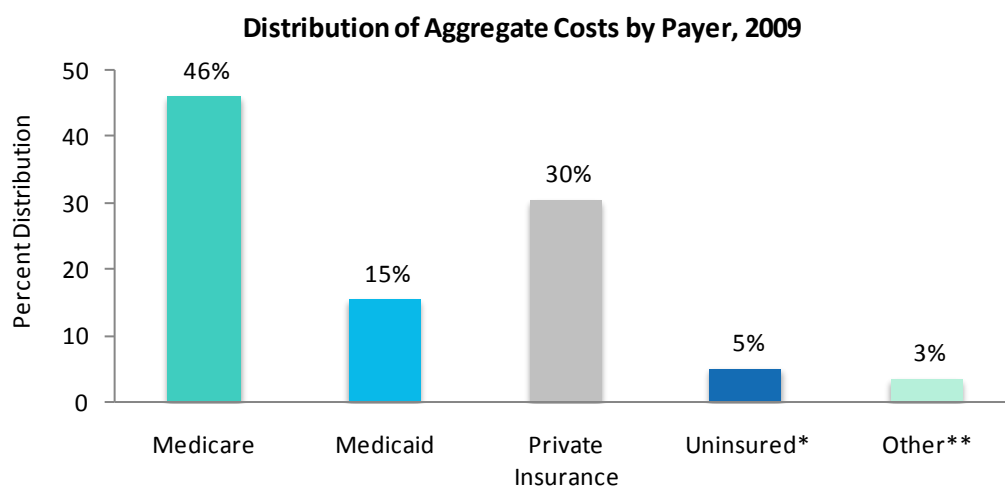




Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2009.

- Stays for patients under one year of age cost \$3,700 on average. The overwhelming majority of these stays were for liveborn infants.
- On average, the costs per stay for all patients 1-17 years (\$7,400) was less than the average cost per stay across all age groups (\$9,200).
- The average cost of a stay for patients 18-44 years was \$6,700.
- The average cost per stay for patients 45-64 years and 65-84 years was similar—\$11,600 and \$11,900, respectively—and was greater than the cost per stay across all age groups (\$9,200).
- The average cost per stay for patients 85 years and over was \$9,400.

## EXHIBIT 4.4 Cost by Payer



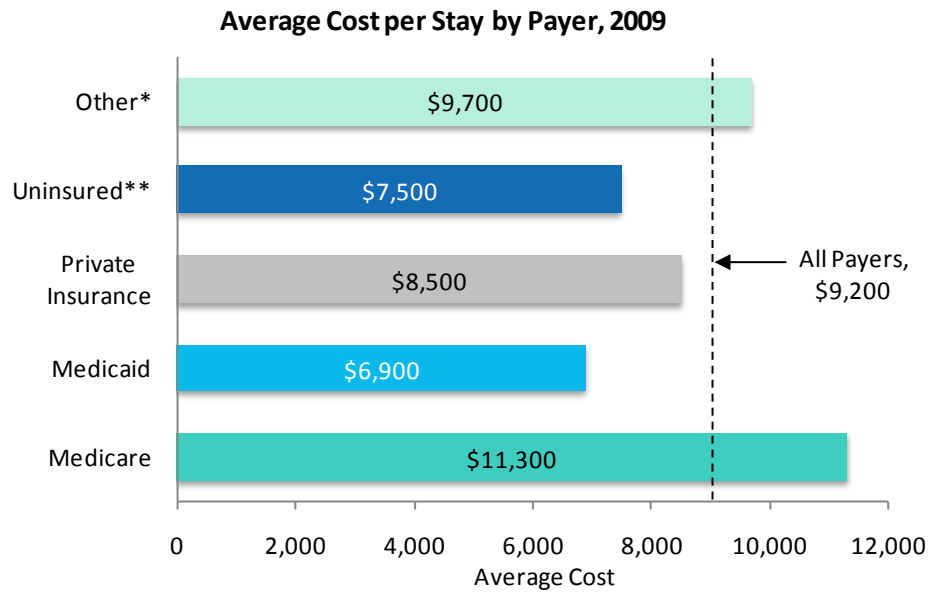
\* Includes stays classified as self-pay or no charge.

\*\* Includes other payers such as Workers' Compensation, TRICARE, CHAMPUS, CHAMPVA, Title V, and other government programs.

Note: Excludes a small number of stays (84,000 or 0.2 percent) with missing payer that have a small sum of missing costs (\$768 million or 0.2 percent).

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2009.

- Medicare, the single largest payer for hospitalizations in 2009, accounted for 46 percent of aggregate inpatient costs.
- Medicaid stays accounted for 15 percent of in-hospital costs.
- Private insurance was responsible for 30 percent of aggregate costs; the uninsured were responsible for 5 percent.



\* Includes other payers such as Workers' Compensation, TRICARE, CHAMPUS, CHAMPVA, Title V, and other government programs.

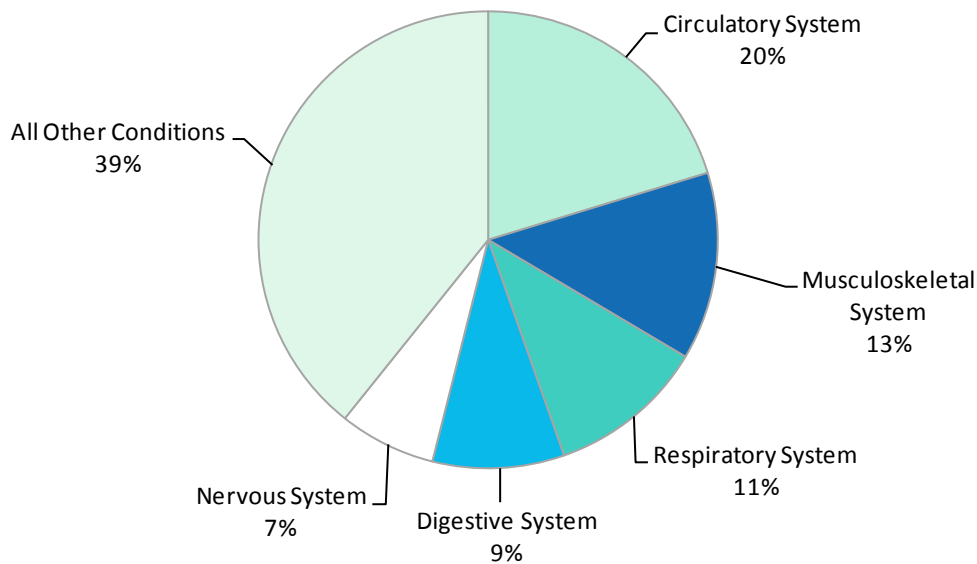
\*\* Includes stays classified as self-pay or no charge.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2009.

- Medicare stays had the highest average cost per hospital stay (\$11,300).
- The average cost per stay billed to private insurance (\$8,500), the uninsured (\$7,500), and Medicaid (\$6,900) was lower than the all payer average cost per stay (\$9,200).

## EXHIBIT 4.5 Cost by Diagnostic Category

Distribution of Aggregate Costs by Diagnostic Category,\* 2009



Total Aggregate Costs: \$361.5 Billion

\* Based on principal diagnosis defined by Major Diagnostic Category (MDC).

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2009.

- Circulatory conditions accounted for the largest share of hospital costs (20 percent) in 2009.
- Additional diagnostic categories responsible for large portions of hospital costs included:
  - Musculoskeletal conditions (13 percent),
  - Respiratory conditions (11 percent),
  - Digestive conditions (9 percent), and
  - Nervous system conditions (7 percent).

### Aggregate Costs and Percent Distribution for Each Payer by Diagnostic Category,† 2009

MAJOR DIAGNOSTIC CATEGORY	MEDICARE	MEDICAID	PRIVATE INSURANCE	UNINSURED*	OTHER**
	COSTS IN BILLIONS (PERCENT)				
Total cost	\$165.7 (100.0%)	\$55.2 (100.0%)	\$109.8 (100.0%)	\$17.8 (100.0%)	\$12.3 (100.0%)
Circulatory system	\$43.6 (26.3%)	\$6.2 (11.2%)	\$18.5 (16.8%)	\$3.2 (17.8%)	\$1.8 (14.7%)
Musculoskeletal system	\$23.3 (14.1%)	\$3.2 (5.7%)	\$17.1 (15.6%)	\$1.3 (7.4%)	\$2.8 (22.7%)
Respiratory system	\$23.0 (13.9%)	\$5.7 (10.3%)	\$8.6 (7.9%)	\$1.7 (9.5%)	\$1.0 (8.3%)
Digestive system	\$16.2 (9.8%)	\$3.8 (6.9%)	\$10.7 (9.8%)	\$1.9 (10.4%)	\$1.0 (7.8%)
Nervous system	\$11.4 (6.9%)	\$3.5 (6.4%)	\$7.4 (6.7%)	\$1.5 (8.3%)	\$0.9 (7.2%)
All other conditions	\$48.2 (29.1%)	\$32.9 (59.6%)	\$47.4 (43.2%)	\$8.3 (46.5%)	\$4.8 (39.3%)

† Based on principal diagnosis defined by Major Diagnostic Category (MDC).

\* Includes stays classified as self-pay or no charge.

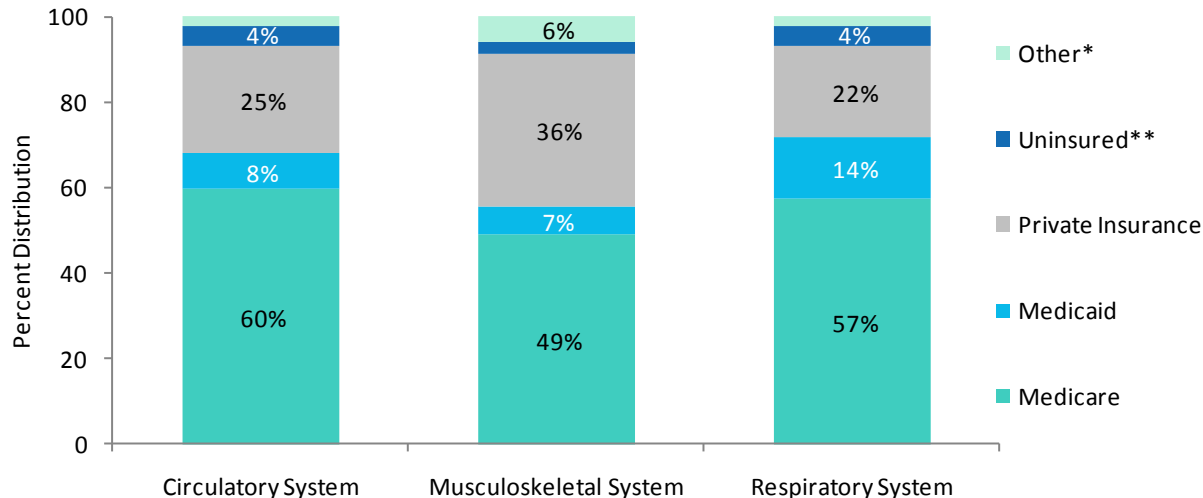
\*\* Includes other payers such as Workers' Compensation, TRICARE, CHAMPUS, CHAMPVA, Title V, and other government programs.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2009.

Costs by diagnostic category varied by payer, as did the distribution of costs.

- Stays for circulatory conditions accounted for the largest share of hospital costs for Medicare (26.3 percent), private insurance (16.8 percent), and the uninsured (17.8 percent).
- Stays for musculoskeletal conditions accounted for larger shares of hospital costs for Medicare (14.1 percent) and private insurance (15.6 percent) than for Medicaid (5.7 percent) and the uninsured (7.4 percent).

**Distribution of Aggregate Costs by Payer for Selected Diagnostic Categories, † 2009**



† Based on principal diagnosis defined by Major Diagnostic Category (MDC).

\* Includes other payers such as Workers' Compensation, TRICARE, CHAMPUS, CHAMPVA, Title V, and other government programs.

\*\* Includes stays classified as self-pay or no charge.

Note: Each diagnostic category excludes a small percentage of stays (0.2 percent) with missing payer that have a small percentage of missing costs (0.2 percent).

Note: Bar segments representing 3 percent or less have not been labeled.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2009.

- The majority of costs for circulatory conditions (60 percent) were billed to Medicare. One-quarter of circulatory system costs (25 percent) were covered by private insurance. Medicaid was billed for 8 percent of the costs and 4 percent were for the uninsured.
- About half (49 percent) of the costs for musculoskeletal conditions were for stays with Medicare as primary expected payer. Stays covered by private insurance accounted for 36 percent of these costs while just 7 percent of the costs were for stays covered by Medicaid.
- The majority of costs for respiratory conditions (57 percent) were billed to Medicare. Private insurance and Medicaid were respectively billed for 22 percent and 14 percent of the aggregate costs.