

## STATISTICAL BRIEF #183

November 2014

### Trends and Projections in Hospital Stays for Adults With Multiple Chronic Conditions, 2003–2014

*Claudia A. Steiner, M.D., M.P.H., Marguerite L. Barrett, M.S.,  
Audrey J. Weiss, Ph.D., and Roxanne M. Andrews, Ph.D.*

#### Introduction

Approximately one in four American adults and two-thirds of Medicare beneficiaries have multiple chronic conditions (MCC).<sup>1</sup> Patients with MCC are those who have two or more chronic conditions at the same time—for instance, diabetes and hypertension, or arthritis and osteoporosis. The U.S. Department of Health and Human Services (HHS) has established an initiative specifically focused on the prevention and management of MCC.<sup>2</sup>

Steiner and Friedman (2013) reported that nearly three-fourths of adult patients hospitalized in the United States in 2009 had MCC.<sup>3</sup> Patients with MCC had higher in-hospital mortality rates, longer lengths of stay in the hospital, and higher average hospital costs compared with patients without MCC. The researchers also found that hospitalizations involving MCC differed by age, with older adults substantially more likely to have MCC (68 percent of patients aged 45–64 years and 87 percent of patients aged 65 years and older) compared with younger adults (37 percent of patients aged 18–44 years).

In this Healthcare Cost and Utilization Project (HCUP) Statistical Brief, we use historical inpatient data from 2003 through 2012 along with early 2013 data from nine HCUP States to develop national quarterly projections of nonmaternal hospital inpatient stays and average hospital costs among adult patients with and without MCC through 2014. For patients with MCC, the percentage of stays and average hospital costs are presented by patient age group and sex, along with the average annual percentage change over time. Differences greater than 10 percent between annual weighted estimates are noted in the text. Because analyses in this Statistical Brief are based on all discharges from all States weighted to a national level, the values may differ slightly from results reported from the HCUP National (Nationwide) Inpatient Sample (NIS).

#### Highlights

- Between 2003 and 2014, nonmaternal hospital stays among adults were two to three times more likely to involve multiple chronic conditions (MCC) than no MCC.
- The percentage of stays for adults with MCC increased from 63.5 percent in 2003 to a projected 78.1 percent in 2014, whereas adults without MCC decreased from 36.5 percent in 2003 to a projected 22.0 percent in 2014.
- The percentage of hospital stays for adults with MCC increased with patient age; the percentage was lowest among patients aged 18–44 years and highest among patients aged 65 years and older. However, the percentage of stays for adults with MCC increased most rapidly for those aged 18–44 years.
- Hospital stays for adults with MCC cost nearly 20 percent more on average than stays for adults without MCC. Average inflation-adjusted hospital costs for stays of adults with MCC increased from \$12,000 in 2003 to a projected \$14,500 in 2014, compared with an increase from \$9,800 to \$12,200 over this time period for stays without MCC.
- The average cost of stays for adults with MCC was about 20 to 25 percent higher among patients aged 45 years and older than among those aged 18–44 years.

<sup>1</sup> U.S. Department of Health & Human Services. HHS Initiative on Multiple Chronic Conditions. Washington, DC: U.S. Department of Health and Human Services. <http://www.hhs.gov/ash/initiatives/mcc/>. Accessed January 23, 2014.

<sup>2</sup> Ibid.

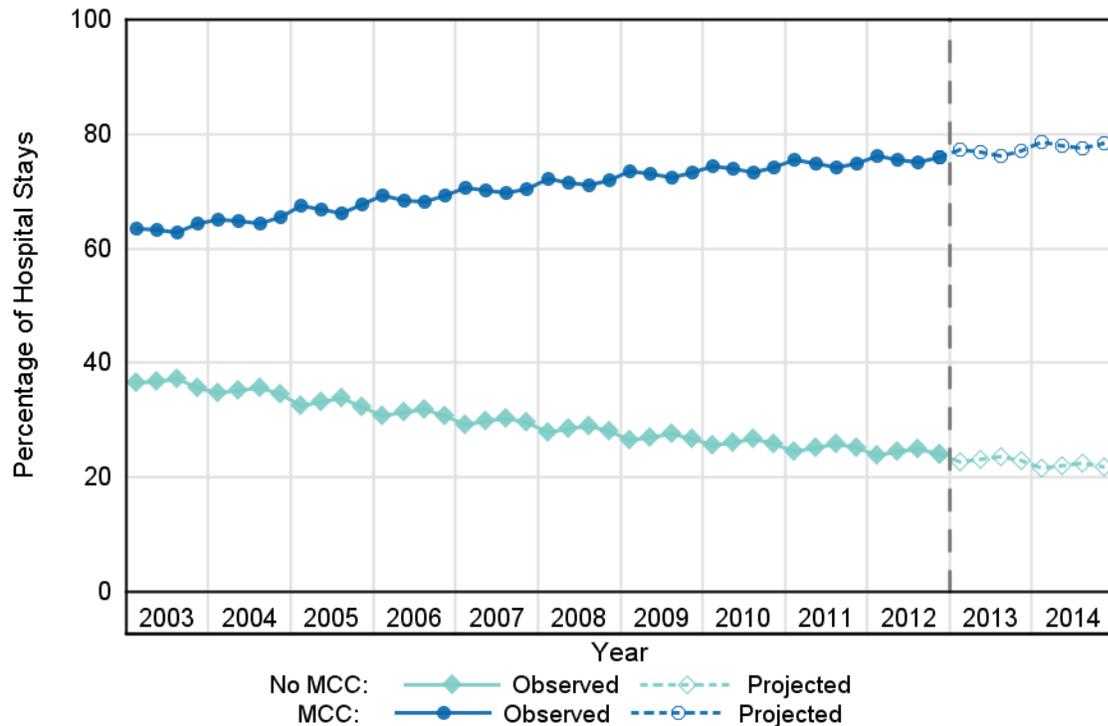
<sup>3</sup> Steiner CA, Friedman VF. Hospital utilization, costs, and mortality for adults with multiple chronic conditions, Nationwide Inpatient Sample, 2009. [Erratum appears in Preventing Chronic Disease. 2013;10.] Preventing Chronic Disease. 2013;10:120292.

## Findings

### *Hospital utilization and costs for adults with and without MCC, 2003–2014*

Figure 1 presents trends in the percentage of nonmaternal hospital inpatient stays among adult patients with and without multiple chronic conditions (MCC) for 2003–2012 (actual values) and for 2013 and 2014 (projected values).

**Figure 1. Percentage of hospital inpatient stays by presence of multiple chronic conditions, 2003–2014**



Abbreviation: MCC, multiple chronic conditions.

Note: The denominator used to calculate the percentages was all nonmaternal, adult hospital stays. For any given point in time, the sum of the percentages with and without MCC equals 100.

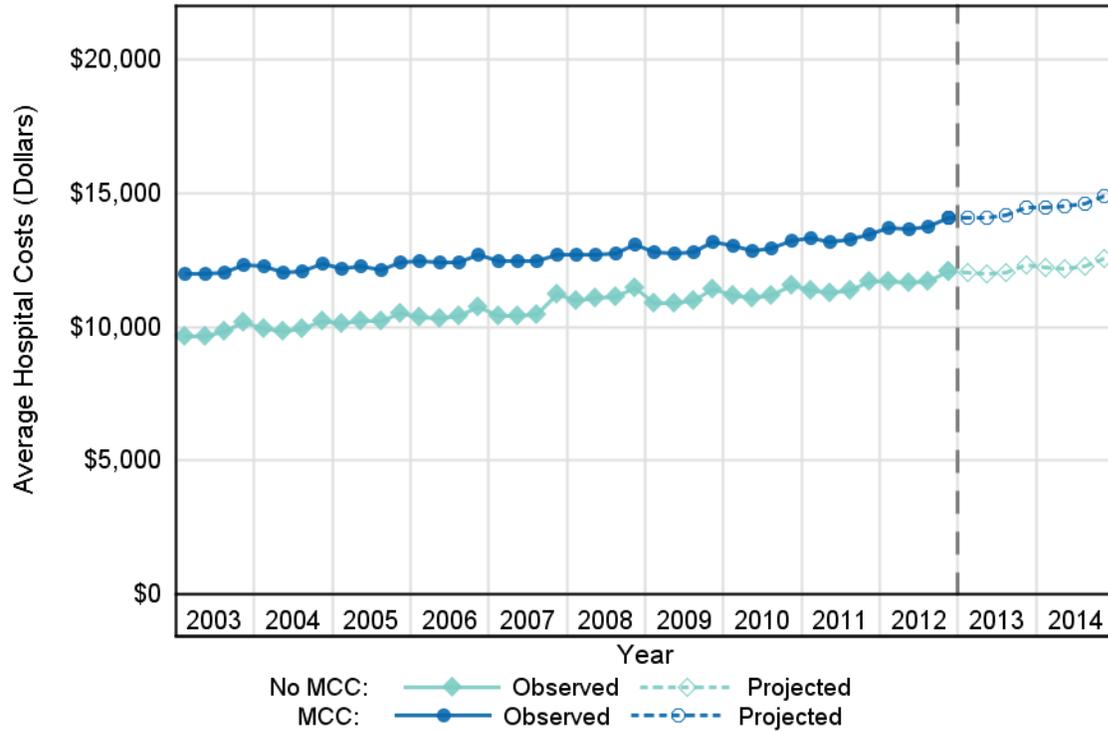
Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2003–2012, and early State discharge data, 2013

- **The percentage of nonmaternal hospital stays for adults with MCC increased over time and was substantially higher than the percentage of stays for adults without MCC.**

In 2003, 63.5 percent of nonmaternal, adult stays were for patients with MCC, about 1.7 times higher than stays for patients without MCC (36.5 percent). By 2014, the percentage of stays for patients with MCC is projected to be 3.5 times higher than the percentage of stays for patients without MCC (78.1 vs. 22.0 percent).

Figure 2 presents trends in the cost of nonmaternal hospital inpatient stays among adult patients with and without MCC for 2003–2012 (actual values) and for 2013 and 2014 (projected values). All costs are inflation adjusted to 2014 dollars.

**Figure 2. Average inflation-adjusted hospital costs by presence of multiple chronic conditions, 2003–2014**



Abbreviation: MCC, multiple chronic conditions.

Note: Inflation-adjusted costs are presented in 2014 dollars.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2003–2012, and early State discharge data, 2013

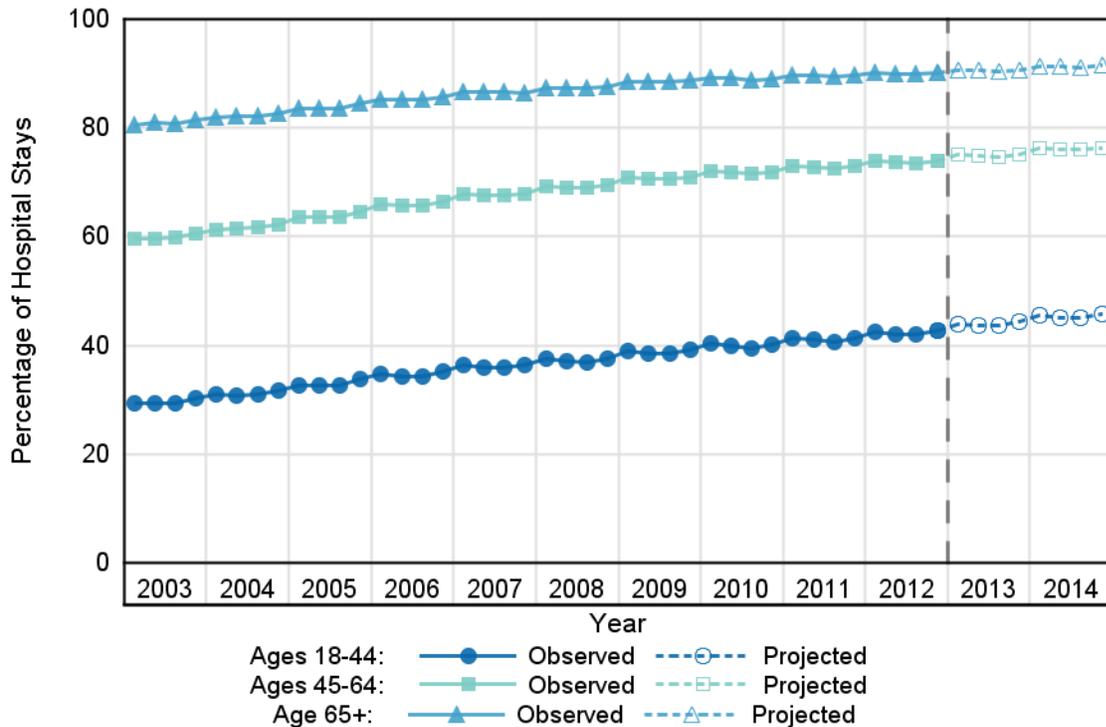
- **Hospital stays for adults with MCC were consistently more expensive than stays for adults without MCC, and the difference remained stable over time.**

Average inflation-adjusted hospital costs for nonmaternal stays of adults with MCC were approximately \$2,000, or 18 percent, higher than for stays of adults without MCC throughout the 2003–2014 time period. Average hospital costs for adults with MCC were about \$12,000 in 2003 (in 2014 dollars) and were projected to increase to \$14,500 in 2014. Average hospital costs for adults without MCC were about \$9,800 in 2003 and were projected to increase to \$12,200 in 2014.

*Hospital utilization and costs for adults with MCC by patient age, 2003–2014*

Figure 3 presents trends in the percentage of nonmaternal hospital inpatient stays among adult patients with MCC by patient age group for 2003–2012 (actual values) and for 2013 and 2014 (projected values).

**Figure 3. Percentage of hospital inpatient stays among adults with multiple chronic conditions by patient age, 2003–2014**



Note: The denominator used to calculate each age-specific percentage with multiple chronic conditions (MCC) was all nonmaternal, adult hospital stays for that age group. For any given point in time, the sum of the percentages with MCC across all age groups does not equal 100 because only the percentages of stays for patients with MCC are presented for each age group (the percentages of stays for patients without MCC are not shown).

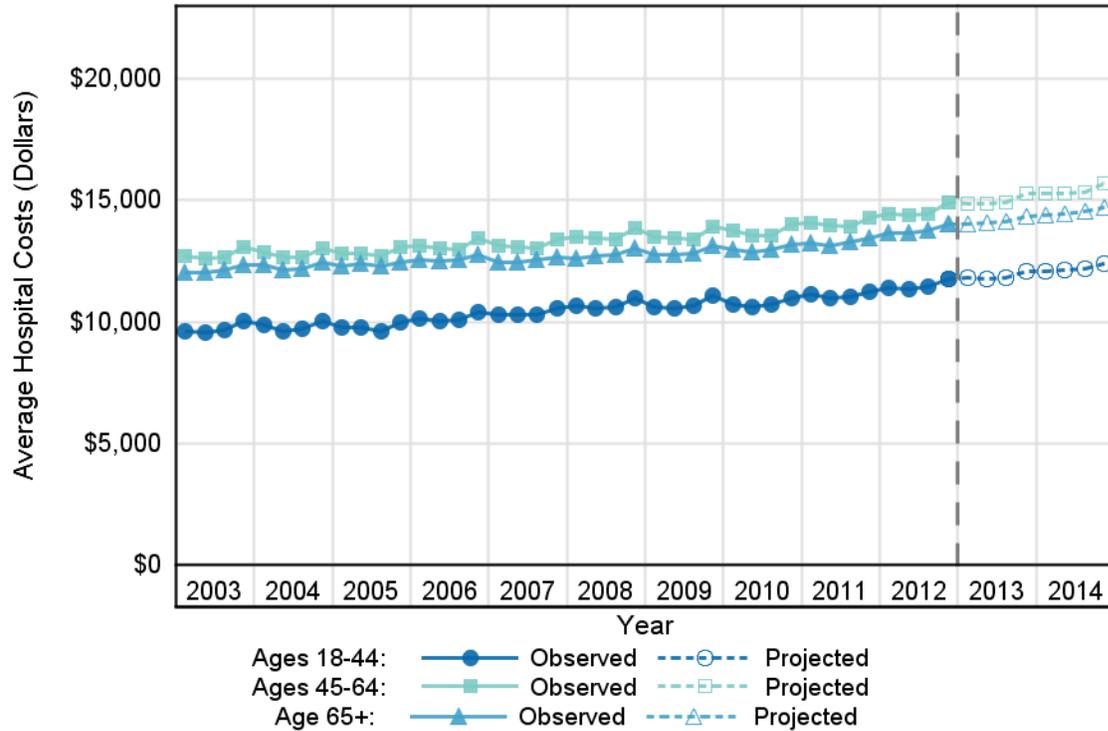
Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2003–2012, and early State discharge data, 2013

■ **The percentage of hospital stays for adults with MCC increased with age and over time for each age group.**

The percentage of nonmaternal hospital stays that were for adults with MCC was lowest among patients aged 18–44 years at 29.6 percent in 2003 and was projected to increase to 45.4 percent in 2014 (a 53.3 percent increase). The percentage of stays that were for adults with MCC was about 1.8 times higher among patients aged 45–64 years than among those aged 18–44 years, at 59.9 percent in 2003 and projected to increase to 76.2 percent in 2014 (a 27.2 percent increase). Finally, the percentage of stays that were for adults with MCC was about 1.3 times higher among patients aged 65 years and older than among those aged 45–64 years (and 2.3 times higher than among those aged 18–44 years), at 81.0 percent in 2003 and projected to increase to 91.3 percent in 2014 (a 12.7 percent increase).

Figure 4 presents trends in the cost of nonmaternal hospital inpatient stays for adults with MCC by patient age group for 2003–2012 (actual values) and for 2013 and 2014 (projected values). All costs are inflation adjusted to 2014 dollars.

**Figure 4. Average inflation-adjusted hospital costs among adults with multiple chronic conditions by patient age, 2003–2014**



Note: Inflation-adjusted costs are presented in 2014 dollars.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2003–2012, and early State discharge data, 2013

■ **Among hospital stays for adults with MCC, patients aged 45 years and older had higher average hospital costs than those aged 18–44 years.**

Average inflation-adjusted costs for nonmaternal hospital stays of adults with MCC were more than \$2,000 higher for patients in the two older age groups (45–64 years and 65 years and older) than those in the youngest age group (18–44 years) across the entire 2003–2014 time period. Average hospital costs for patients aged 45–64 years with MCC were \$12,700 in 2003 (in 2014 dollars) and were projected to increase to \$15,300 in 2014. Average hospital costs for patients aged 65 years and older with MCC were \$12,100 in 2003 and were projected to increase to \$14,400 in 2014. Average hospital costs for patients aged 18–44 years with MCC were \$9,700 in 2003 and were projected to increase to \$12,100 in 2014.

*Hospital utilization and costs for adults with MCC by patient age and sex, 2003–2014*

Table 1 presents the percentage of nonmaternal hospital stays and average hospital costs among adult patients with MCC by patient age group (as presented in Figures 3 and 4) and by patient sex and age group in 2003 and 2012 (actual values) and in 2014 (projected values). The average annual percentage change from 2003 to 2012 (actual change) and from 2012 to 2014 (projected change) is provided.

**Table 1. Percentage of hospital stays and inflation-adjusted average hospital costs among adults with multiple chronic conditions by patient age and sex, 2003–2014**

Outcome by patient characteristic	2003 (actual)	2012 (actual)	Average annual % change 2003–2012	2014 (projected)	Average annual % change 2012–2014
<b>Hospital stays, %<sup>a</sup></b>					
All adults	63.5	75.7	2.0	78.1	1.6
Age group, years, both sexes					
18–44	29.6	42.4	4.1	45.4	3.5
45–64	59.9	73.8	2.3	76.2	1.6
65+	81.0	90.0	1.2	91.3	0.7
Age group, years, male					
18–44	33.2	45.0	3.5	47.8	3.0
45–64	63.7	76.2	2.0	78.3	1.4
65+	81.5	90.6	1.2	91.8	0.7
Age group, years, female					
18–44	26.6	39.9	4.6	42.9	3.7
45–64	56.3	71.3	2.7	74.0	1.8
65+	80.5	89.6	1.2	90.1	0.7
<b>Average hospital costs, inflation-adjusted \$<sup>b</sup></b>					
All adults	12,000	13,700	1.5	14,500	2.9
Age group, years					
18–44	9,700	11,400	1.9	12,100	3.1
45–64	12,700	14,500	1.5	15,300	2.9
65+	12,100	13,700	1.4	14,400	2.6
Age group, years, male					
18–44	10,100	11,800	1.8	12,500	2.9
45–64	13,500	15,100	1.3	15,900	2.6
65+	13,200	14,700	1.3	15,400	2.2
Age group, years, female					
18–44	9,300	11,000	1.9	11,700	3.0
45–64	11,800	13,700	1.7	14,700	3.3
65+	11,300	12,900	1.5	13,600	2.8

<sup>a</sup> The denominator used to calculate each age-specific and sex/age-specific percentage with multiple chronic conditions (MCC) was all nonmaternal, adult hospital stays for that age or sex/age group. For any given point in time, the sum of the percentages with MCC across all age or sex/age groups does not equal 100 because only the percentages of stays for patients with MCC are presented for each age or sex/age group (the percentages of stays for patients without MCC are not shown).

<sup>b</sup> Inflation-adjusted costs are presented in 2014 dollars.

Note: Data from 2012 were used as end points in both the 2003–2012 and 2012–2014 analyses.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2003–2012, and early State discharge data, 2013

- **Growth in the percentage of hospital stays among adults with MCC has slowed in recent years, and this slower rate of growth is projected to continue through 2014.**

The percentage of nonmaternal hospital stays among adult patients with MCC increased by an average of 2.0 percent per year between 2003 and 2012, but the growth rate varied during that time span. Between 2003 and 2008, the percentage of hospital stays among adult patients with MCC increased by at least 2.0 percent per year, but beginning in 2009 the growth rate slowed to less than 2.0 percent per year. The percentage of stays among adults with MCC is projected to continue to increase from 2012 to 2014 at an average rate of 1.6 percent per year. This slowdown in growth of the projected percentage of stays for adults with MCC is expected for both sexes and all age groups.

Overall, the percentage of nonmaternal hospital stays for adults with MCC grew fastest for younger adults. From 2003 to 2012, average annual growth in the percentage of hospital stays among adults with MCC was 1.8 times higher for patients aged 18–44 years than for patients aged 45–64 years and 3.4 times higher than for patients aged 65 years and older. Although projected growth between 2012 and 2014 in the percentage of stays for adults with MCC is lower than was actual growth between 2003 and 2012, it continues to reflect more rapid growth among the youngest age group (3.5 percent average annual increase among patients aged 18–44 years vs. 1.6 and 0.7 percent average annual increase among patients aged 45–64 years and 65 years and older, respectively).

Although the overall percentage of hospital stays for adults with MCC was lowest for females aged 18–44 years, the average annual percentage increase was highest for this group compared with the other sex and age groups.

- **Growth in average hospital costs has fluctuated over time but has generally increased in recent years, and this faster rate of growth is projected to continue through 2014.**

Mean hospital costs for nonmaternal stays among adults with MCC, adjusted for inflation, increased by an average of 1.5 percent per year between 2003 and 2012. Average hospital costs for this group grew relatively slowly (about 1.0 percent or less per year) from 2003 to 2005, moderately (around 2.0–4.0 percent per year, depending on the age/sex group) from 2006 to 2008 (with a slowdown in 2007), and slowly again in 2009 and 2010. Since 2011, the rate of growth in average hospital costs for adult patients with MCC has been moderate, and growth is projected to continue at a moderate pace from 2012 to 2014 (at an average annual rate of 2.9 percent). This moderate growth in projected costs is expected for all sex and age groups.

## Data Source

The estimates in this Statistical Brief are based upon data from the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 2003 through 2012. The SID from 2003 through 2012 include about 341 million inpatient discharges from 47 States. At the time that these statistics were generated, we had early quarterly data for nine States for 2013. The 2013 projections incorporated observed rates for these nine States and rates estimated from time-series models for the remaining States. For 2014, the projections were based entirely on rates estimated from time-series models.

National quarterly projections for 2013 and 2014 were generated using the SAS Time Series Forecasting System™ (Version 9.2).<sup>4</sup> Projections were first calculated by State and then weighted proportionally to the nine census divisions and the nation. For each State, the software automatically selected from among 40 different time-series models the model with the lowest mean absolute percentage error (MAPE) for that State. National quarterly trends were calculated as a weighted average of the State-level quarterly trends within each division. Each State's weight was proportional to its total number of discharges (excluding newborns) as reported in the American Hospital Association (AHA) Annual Survey of Hospitals. These AHA-based weights were used throughout the 2003–2013 time period.

This analysis was limited to nonmaternal hospital stays for adults aged 18 years and older.

## 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. *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 approximately 14,000 ICD-9-CM diagnosis codes.

CCS categorizes ICD-9-CM diagnoses into a manageable number of clinically meaningful categories.<sup>5</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.

### *Case definition*

For this report, *hospital stays for patients with multiple chronic conditions* (MCC) were defined as those with two or more chronic conditions. Chronic conditions were identified using the set of chronic conditions developed by the U.S. Department of Health and Human Services (HHS) Interagency Workgroup on MCC and the Office of the Assistant Secretary of Health.<sup>6</sup> As reported by Goodman and colleagues (2013), 20 chronic conditions were identified with definitions for five selected HHS health data systems, including the HCUP Nationwide Inpatient Sample (NIS). For the HCUP inpatient databases, the 20 chronic conditions were defined using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classifications Software (CCS), which groups together highly related diagnoses of the same condition. One condition, autism spectrum disorder, was defined for the NIS using ICD-9-CM diagnosis codes rather than CCS categories. Steiner and Friedman (2013) implemented these chronic condition definitions in a

---

<sup>4</sup> SAS Institute Inc. Large-Scale Automatic Forecasting Using Inputs and Calendar Events. White Paper. Rockville, MD: SAS Institute Inc.; 2009.

<sup>5</sup> Agency for Healthcare Research and Quality. HCUP Clinical Classifications Software (CCS). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated July 2014. <http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>. Accessed September 11, 2014.

<sup>6</sup> Goodman RA, Posner SF, Huang ES, Parekh AK, Koh HK. Defining and measuring chronic conditions: imperatives for research, policy, program and practice. *Preventing Chronic Disease*. 2013;10:120239.

recent analysis of MCC using the 2009 NIS.<sup>7</sup> The 20 chronic conditions and corresponding clinical coding criteria are provided in Table 2.

Consistent with Steiner and Friedman (2013), we identified chronic conditions on the basis of the clinical coding criteria (listed in Table 2) indicated in either a principal or a secondary diagnosis code field on the discharge record. A chronic condition was counted only once per discharge regardless of the number of diagnosis codes (principal and secondary) that indicated the condition.

**Table 2. Chronic conditions and clinical coding criteria**

Chronic condition	Clinical coding criteria
Hypertension	CCS 98, 99
Hyperlipidemia	CCS 53
Congestive heart failure	CCS 108
Coronary artery disease (CAD) (includes acute myocardial infarction, which indicates chronic underlying CAD)	CCS 100, 101
Diabetes	CCS 49, 50
Stroke (includes acute stroke but indicates underlying cerebrovascular disease)	CCS 109–112
Cardiac arrhythmias	CCS 105, 106
Arthritis	CCS 202, 203
Cancer	CCS 11–43
Depression	CCS 657
Dementia (includes Alzheimer’s and other senile dementias)	CCS 653
Substance abuse disorders	CCS 660, 661
Chronic obstructive pulmonary disease	CCS 127
Asthma	CCS 128
Chronic kidney disease	CCS 156, 158
HIV	CCS 5
Hepatitis	CCS 6
Autism spectrum disorder	ICD-9-CM 29900, 29901
Schizophrenia	CCS 659
Osteoporosis	CCS 206

Maternal discharges were excluded from the analysis. Maternal discharges were identified as those with a major diagnostic category (MDC) code of 14, pregnancy, childbirth, and puerperium.

*Average annual percentage change*

Average annual percentage change was calculated using the following formula:

$$\text{Average annual percentage change} = \left[ \left( \frac{\text{End value}}{\text{Beginning value}} \right)^{\frac{1}{\text{change in years}}} - 1 \right] \times 100$$

<sup>7</sup> Steiner CA, Friedman BF. Hospital utilization, costs, and mortality for adults with multiple chronic conditions, Nationwide Inpatient Sample, 2009. [Erratum appears in Preventing Chronic Disease 2013;10.] Preventing Chronic Disease. 2013;10:120292. Note that the original Goodman article contained two erroneous definitions of chronic conditions as applied to the NIS: Chronic kidney disease was misidentified as CCS 108 (Congestive heart failure), and Depression was misidentified as CCS 567 (does not exist). Steiner and Friedman corrected these two definitions in the chronic conditions definition table in their article: Chronic kidney disease (CCS 156 and 158) and Depression (CCS 657).

### *Types of hospitals included in the HCUP State Inpatient Databases*

This analysis used State Inpatient Databases (SID) limited to 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). Community hospitals include obstetrics and gynecology, otolaryngology, orthopedic, cancer, pediatric, public, and academic medical hospitals. Excluded for this analysis are long-term care facilities such as 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 was included in the analysis.

### *Unit of analysis*

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

### *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>8</sup> *Costs* reflect the actual expenses incurred in the production of hospital services, such as wages, supplies, and utility costs; *charges* represent the amount a hospital billed for the case. For each hospital, a hospital-wide cost-to-charge ratio is used. Hospital charges reflect the amount the hospital billed for the entire hospital stay and do not include professional (physician) fees. For the purposes of this Statistical Brief, costs are reported to the nearest hundred.

Quarterly cost data were weighted to produce annual costs. Quarterly and annual costs were adjusted for inflation using the Gross Domestic Product (GDP) from the U.S. Department of Commerce, Bureau of Economic Analysis (BEA), with 2014 as the index base.<sup>9</sup> That is, all costs are expressed in 2014 dollars.

## About HCUP

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

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

**Alaska** State Hospital and Nursing Home Association

**Arizona** Department of Health Services

**Arkansas** Department of Health

**California** Office of Statewide Health Planning and Development

**Colorado** Hospital Association

---

<sup>8</sup> Agency for Healthcare Research and Quality. HCUP Cost-to-Charge Ratio (CCR) Files. Healthcare Cost and Utilization Project (HCUP). 2001–2011. Rockville, MD: Agency for Healthcare Research and Quality. Updated August 2014. <http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp>. September 11, 2014.

<sup>9</sup> U.S. Bureau of Economic Analysis. National Income and Product Account Tables, Table 1.1.4. Price Indexes for Gross Domestic Product. <http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=1&isuri=1>. Accessed June 12, 2014. Inflation adjustment figures for Quarters 2, 3, and 4 in 2014 were not available at the time of this analysis. These values were extrapolated on the basis of the average increase in the inflation adjustment factor over the 5 quarters encompassing 2013 and Quarter 1 of 2014. The 2014 annual inflation adjustment factor also was not available at the time of this analysis. This value was calculated as the average of the four 2014 quarterly inflation factors.

**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** Revenue and Fiscal Affairs Office  
**South Dakota** Association of Healthcare Organizations  
**Tennessee** Hospital Association  
**Texas** Department of State Health Services  
**Utah** Department of Health  
**Vermont** Association of Hospitals and Health Systems  
**Virginia** Health Information  
**Washington** State Department of Health  
**West Virginia** Health Care Authority  
**Wisconsin** Department of Health Services  
**Wyoming** Hospital Association

## About Statistical Briefs

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

## About the SID

The HCUP State Inpatient Databases (SID) are hospital inpatient databases from data organizations participating in HCUP. The SID contain the universe of the inpatient discharge abstracts in the participating HCUP States, translated into a uniform format to facilitate multistate comparisons and analyses. Together, the SID encompass more than 95 percent of all U.S. community hospital discharges. The SID can be used to investigate questions unique to one State, to compare data from two or more

States, to conduct market-area variation analyses, and to identify State-specific trends in inpatient care utilization, access, charges, and outcomes.

### 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, refer to the following HCUP Statistical Briefs located at <http://www.hcup-us.ahrq.gov/reports/statbriefs/statbriefs.jsp>:

- Statistical Brief #180, Overview of Hospital Stays in the United States, 2012
- Statistical Brief #181, Costs for Hospital Stays in the United States, 2012
- Statistical Brief #162, Most Frequent Conditions in U.S. Hospitals, 2011
- Statistical Brief #165, Most Frequent Procedures Performed in U.S. Hospitals, 2011

For a detailed description of HCUP and more information on the State Inpatient Databases (SID), please refer to the following database documentation:

Agency for Healthcare Research and Quality. Overview of the State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated September 2014. <http://www.hcup-us.ahrq.gov/sidoverview.jsp>. Accessed September 11, 2014.

### Suggested Citation

Steiner CA (AHRQ), Barrett ML (M.L. Barrett, Inc.), Weiss AJ (Truven Health Analytics), Andrews RM (AHRQ). Trends and Projections in Hospital Stays for Adults With Multiple Chronic Conditions (MCC), 2003–2014. HCUP Statistical Brief #183. November 2014. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb183-Hospitalizations-Multiple-Chronic-Conditions-Projections-2014.pdf>.

### Acknowledgments

The authors would like to acknowledge the contributions of Clare Sun of Truven Health Analytics.

\* \* \*

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:

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