

## STATISTICAL BRIEF #203

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### Emergency Department Visits for Children and Young Adults With Diabetes, 2012

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#### Introduction

Diabetes is an important public health concern in the United States, affecting an estimated 29.1 million people, or 9.3 percent of the population.<sup>1</sup> Among children and young adults, diabetes is one of the most common chronic diseases, and prevalence increases with age. Recent data estimate that 208,000 people under the age of 20 years have a diagnosis of diabetes.<sup>1</sup> In 2011, of adults newly diagnosed with diabetes, 4.3 percent were aged 18–29 years.<sup>2</sup>

In both children and adults, diabetes is optimally managed in the outpatient setting. However, the emergency department (ED) represents a point of health care access for those with acute symptoms related to chronic conditions. A large number of ED visits are nonurgent and potentially preventable with optimal access to quality primary care.<sup>3</sup> Patients presenting to the ED can be treated and released or admitted to the hospital.

Undetected or poorly controlled diabetes can lead to increased ED utilization and subsequent hospitalization due to serious complications (including cardiovascular disease, kidney damage, blindness, and lower-limb amputations due to peripheral vascular disease). In adults, diabetes and related complications account for around \$176 billion in direct medical costs, which is 2.3 times higher than medical costs of adults without diabetes.<sup>1</sup> Data have shown significant increases in diabetes-related hospitalizations in young adults aged 20–29 years.<sup>4</sup>

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief presents 2012 data on diabetes-related ED visits among children and young adults aged 0–29 years. Variations in overall ED visits, treat-and-release ED visits, and ED visits resulting in

#### Highlights

- In 2012, 587,300 diabetes-related ED visits were for children and young adults aged 0–29 years. Most of these patients were treated and released (76.5 percent), and the remaining 23.5 percent were admitted to the hospital.
- Diabetes-related ED visit rates were higher among young adults aged 18–29 years (905 per 100,000 U.S. population) compared with children aged 0–17 years (149 per 100,000 U.S. population).
- Diabetes-related ED visits were higher among patients from the lowest income communities (278 per 100,000 U.S. population) than from the highest income communities (94 per 100,000 U.S. population).
- Medicaid was the primary expected payer for 40 percent of diabetes-related ED visits.
- Ketoacidosis was the most common complication among children and young adults in the ED with uncontrolled diabetes, accounting for approximately one out of seven diabetes-related ED visits in this age group.
- One out of five diabetes-related ED visits by children and young adults was coded as uncontrolled diabetes, and over two-thirds of these visits resulted in hospital admission.

<sup>1</sup> Centers for Disease Control and Prevention. National Diabetes Statistics Report, 2014: Estimates of Diabetes and Its Burden in the United States. Centers for Disease Control and Prevention; 2014. <http://www.cdc.gov/diabetes/pdfs/data/2014-report-estimates-of-diabetes-and-its-burden-in-the-united-states.pdf>. Accessed February 19, 2016.

<sup>2</sup> Centers for Disease Control and Prevention, National Center for Health Statistics, Division of Health Interview Statistics. Distribution of Age at Diagnosis of Diabetes Among Adult Incident Cases Aged 18-79 Years, United States, 2011. Atlanta, GA: Centers for Disease Control and Prevention. <http://www.cdc.gov/diabetes/statistics/age/fig1.htm>. Accessed February 19, 2016.

<sup>3</sup> Uscher-Pines L, Pines J, Kellermann A, Gillen E, Mehrotra A. Deciding to visit the emergency department for non-urgent conditions: a systematic review of the literature. *American Journal of Managed Care*. 2013;19(1):47–58.

<sup>4</sup> Lee JM, Okumura MJ, Freed GL, Menon RK, Davis MM: Trends in hospitalizations for diabetes among children and young adults: United States, 1993–2004. *Diabetes Care*. 2007;30:3035–9.

hospital admission are presented by demographic, regional, and payer characteristics, and diagnostic-specific differences are also presented. All differences between estimates noted in the text are statistically significant at the .05 level or better.

## Findings

### *Overall diabetes-related ED visits in children and young adults, 2012*

Table 1 presents characteristics of children and young adults with diabetes who were seen in the ED in 2012. Children and young adults accounted for over 587,000 diabetes-related ED visits (defined as having a diabetes diagnosis listed in the patient's discharge record).

**Table 1. Diabetes-related<sup>a</sup> emergency department visits for children and young adults aged 0–29 years, by patient and hospital characteristics and expected primary payer, 2012**

Characteristic	All diabetes-related ED visits			
	n	%	Rate per 100,000 population	
<b>Overall total</b>	587,300	100	464.5	
<b>Patient characteristics</b>				
Age group, years	<5	9,500	1.6	47.3
	6–9	15,500	2.6	95.1
	10–13	31,800	5.4	192.6
	14–17	52,900	9.0	316.5
	18–21	108,800	18.5	606.6
	22–25	157,200	26.8	888.8
	26–29	211,500	36.0	1235.6
Sex	Male	219,800	37.4	355.2
	Female	367,500	62.6	569.1
Community-Level income	1 <sup>st</sup> quartile (lowest)	222,500	38.5	278.0
	2 <sup>nd</sup> quartile	158,200	27.4	211.7
	3 <sup>rd</sup> quartile	121,600	21.0	155.4
	4 <sup>th</sup> quartile (highest)	75,500	13.1	94.3
Patient residence	Large metropolitan	278,500	47.6	165.5
	Medium and small metropolitan	201,800	34.5	213.6
	Micropolitan	70,600	12.1	227.0
	Rural	34,400	5.9	169.2
<b>Hospital characteristics</b>				
Hospital region	Northeast	83,200	14.2	149.2
	Midwest	149,200	25.4	221.7
	South	246,800	42.0	210.5
	West	107,900	18.4	146.8
<b>Insurance</b>				
Expected primary payer <sup>b</sup>	Medicaid	234,000	40.0	-
	Private insurance	156,600	26.7	-
	Uninsured	118,400	20.2	-
	Other (including Medicare)	76,800	13.1	-

Abbreviation: ED, emergency department

<sup>a</sup>Diabetes mellitus is listed as a diagnosis on the discharge record.

<sup>b</sup>Population-level rates for expected primary payer are not calculated because available population denominators related to this measure (using the Current Population Survey) capture the health insurance coverage of the population (where a respondent can have multiple types of coverage). Because the categories for expected primary payer are mutually exclusive in HCUP, they cannot be reliably translated to insurance coverage data.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2012

- **There was a higher rate of diabetes-related ED visits among young adults than among children.**

Of all diabetes-related ED visits, 109,700 were among children aged 0–17 years (149 per 100,000 U.S. population) and 477,500 were among young adults aged 18–29 years (905 per 100,000 U.S. population).

- **The rate of diabetes-related ED visits among children and young adults was higher in females than in males.**

In 2012, 62.6 percent of all diabetes-related ED visits for children and young adults were among females and 37.4 percent were among males. The visit rate per 100,000 U.S. population was 569 for females compared with 355 for males.

- **The rate of diabetes-related ED visits among children and young adults was highest in the lowest-income communities.**

The diabetes-related ED visit rate among children and young adults from the lowest income communities (278 per 100,000 U.S. population) was almost 3 times that among children and young adults from the highest-income communities (94 per 100,000 U.S. population).

- **Micropolitan areas and medium and small metropolitan areas had higher diabetes-related ED visit rates among children and young adults than rural areas and large metropolitan areas.**

Among children and young adults, diabetes-related ED visit rates varied by patient residence. The ED visit rate for those living in micropolitan areas was highest at 227 per 100,000 U.S. population, followed by those residing in medium or small metropolitan areas (214 per 100,000 U.S. population). The visit rate among children and young adults living in rural areas was 169 per U.S. population, and the visit rate among those living in large metropolitan areas was 166 per 100,000 U.S. population.

- **Diabetes-related ED visit rates among children and young adults were higher in the Midwest and the South than in the Northeast and the West.**

In 2012, the Midwest had the highest diabetes-related ED visit rate among children and young adults (222 per 100,000 U.S. population). In the South, the visit rate was 211 per 100,000 U.S. population. The Northeast and the West had lower diabetes-related ED visit rates (149 and 147 per 100,000 U.S. population, respectively).

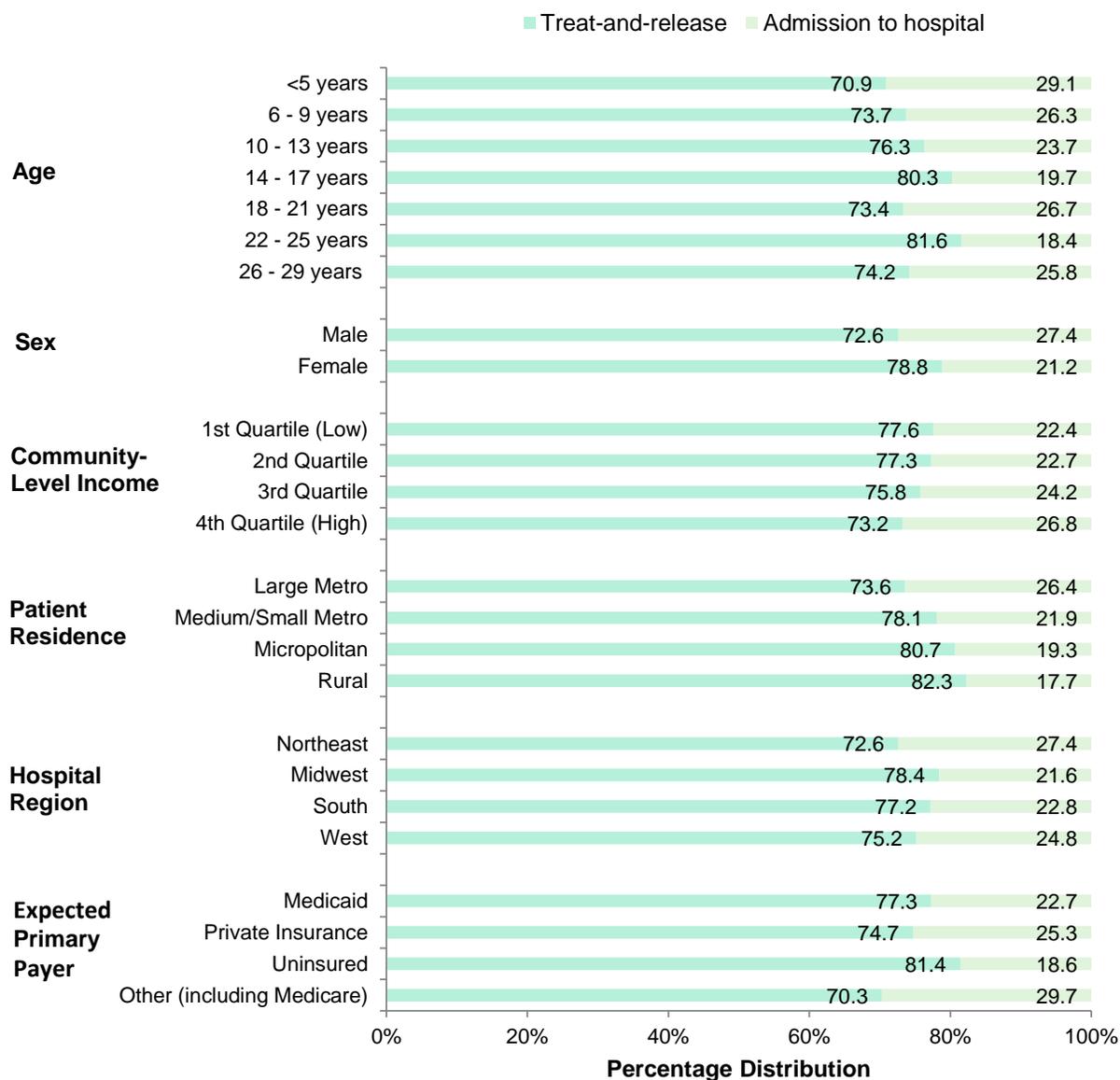
- **Medicaid was the most common expected primary payer for diabetes-related ED visits among children and young adults.**

Among children and young adults, Medicaid was the most common expected primary payer, accounting for 40 percent of all diabetes-related ED visits. Private insurance was the second most common expected primary payer, accounting for 26.7 percent of diabetes-related ED visits overall, and 20.2 percent of visits were made by uninsured children and young adults.

*Differences by ED visit category among children and young adults (age, sex, income, region, and expected primary payer), 2012*

Figure 1 presents the percentage distribution of diabetes-related ED visits resulting in treatment and release compared with visits that resulted in admission to the same hospital. Overall, among diabetes-related ED visits for children and young adults, most resulted in treatment and release (76.5 percent) and the remaining visits (23.5 percent) resulted in admission to the same hospital (data not shown).

**Figure 1. Treatment and release versus admission to hospital<sup>a</sup> for diabetes-related<sup>b</sup> emergency department visits for children and young adults aged 0–29 years by patient and hospital characteristics and expected primary payer, 2012**



<sup>a</sup>Emergency department visits transferred to another facility are included in the treat-and-release category.

<sup>b</sup>Diabetes mellitus appears as a diagnosis on the discharge record.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2012

- **Among children, those under age 5 years were most likely to be admitted to the hospital and those aged 14–17 years were most likely to be treated and released. Among young adults, the proportion of treat-and-release visits was highest among those aged 22–25 years and lowest among those aged 18–21 years.**

Among children, those aged 14–17 years had the highest percentage distribution of treat-and-release ED visits (80.3 percent) compared with visits that resulted in admission to the hospital (19.7 percent), whereas those under 5 years had the highest percentage distribution of visits admitted to the hospital (29.1 percent) compared with treat-and-release visits (70.9 percent). Among young adults, those aged 22–25 years had the highest percentage distribution of treat-and-release ED visits (81.6 percent) compared with visits that resulted in admission to the hospital (18.4 percent), whereas those aged 18–21 years had the highest percentage distribution of visits admitted to the hospital (26.7 percent) compared with treat-and-release visits (73.4 percent).

- **Among children and young adults, females were more likely than males to be treated and released.**

Among children and young adults, a higher percentage distribution of female ED visits resulted in treatment and release (78.8 percent) compared with male ED visits (72.6 percent).

- **Hospital admission rates were highest among patients from the highest-income communities and lowest among patients from the lowest-income communities.**

In the lowest-income communities, a higher percentage distribution of diabetes-related ED visits were treated and released (77.6 percent) compared with visits from the highest-income communities (73.2 percent).

- **The percentage of treat-and-release ED visits was highest in rural areas and in the Midwest. Hospital admission rates were highest in large metropolitan areas and in the Northeast.**

The proportion of diabetes-related treat-and-release ED visits was higher for children and young adults from rural areas (82.3 percent) and micropolitan areas (80.7 percent) compared with those from large metropolitan (73.6 percent) and medium and small metropolitan areas (78.1 percent). A higher percentage of diabetes-related ED visits were admitted in the Northeast (27.4 percent) and the West (24.8 percent) compared with the Midwest (21.6 percent) and the South (22.8 percent).

- **Medicaid and uninsured ED visits among children and young adults were more likely to result in treatment and release than visits covered by private insurance and other payers.**

ED visits were more likely to be treat-and-release visits if they were covered by Medicaid (77.3 percent) or uninsured (81.4 percent), compared with visits covered by private insurance (74.7 percent) and other payers including Medicare (70.3 percent).

*Types of diabetes-related diagnoses for ED visits among children and young adults, 2012*

Table 2 presents the percentage distribution of various diagnoses related to diabetic complications and disease control for ED visits among children and young adults. The distribution of ED visits resulting in treatment and release or hospital admission also is shown.

**Table 2. All-listed diabetes-related<sup>a</sup> diagnoses for ED visits<sup>b</sup> among children and young adults aged 0–29 years by diabetes control and diabetic complications, 2012**

All-listed diabetes condition (ICD-9-CM code 250.XX)		All diabetes-related ED visits		Diabetes-related ED visits: treat-and- release	Diabetes-related ED visits: admitted to the hospital
		n	% distribution	% distribution	% distribution
Not stated as uncontrolled	No mention of complications	418,500	71.1	90.4	9.6
	With complications	49,200	8.4	71.6	28.4
Uncontrolled	No mention of complications	27,500	4.7	55.5	44.5
	With complications	93,400	15.9	22.8	77.2

Abbreviations: ED, emergency department; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification  
 Note: Due to rounding error, the sum total of diabetes-related visits differs from the overall total reported in Table 1.

<sup>a</sup>Diabetes mellitus appears as a diagnosis on the discharge record.

<sup>b</sup>ED visits transferred to another facility are included in the treat-and-release category.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2012

- **Over 20 percent of diabetes-related ED visits by children and young adults were coded as “uncontrolled diabetes.”**

One out of five diabetes-related ED visits among children and young adults were coded as “uncontrolled diabetes.” A majority of these visits had complications. In contrast, among ED visits coded as “diabetes, not stated as uncontrolled” (which constituted 79.5 percent of all diabetes-related ED visits), a majority had no mention of diabetes-specific complications.

- **ED visits for uncontrolled diabetes with complications were most likely to result in hospital admission.**

In 2012, 77.2 percent of ED visits coded as uncontrolled diabetes with complications resulted in admission to the hospital. In contrast, 90.4 percent of ED visits coded as “diabetes, not stated as uncontrolled” and “diabetes with no mention of complications” resulted in treatment and release.

*Types of diabetes-related complications for ED visits among children and young adults, 2012*

Table 3 presents different types of complications among diabetes-related ED visits. In children and young adults, diabetes usually is early in its progression and rarely presents with complications involving the eyes, kidneys, and peripheral circulation, as often noted with older adults. Instead, children and young adults present to the ED for care when they develop signs and symptoms associated with prediabetes or initial presentation of diabetes. Those who already have been diagnosed with diabetes seek care for acute complications due to poor disease management.

**Table 3. Types of diabetes-related<sup>a</sup> complications (all-listed) for emergency department visits among children and young adults aged 0–29 years, 2012**

All-listed diabetes-related complications <sup>b</sup> (ICD-9-CM code 250.XX)	Uncontrolled diabetes		Diabetes, not stated as uncontrolled	
	n	% distribution	n	% distribution
Acute complications	79,900	73.7	7,700	14.9
Ketoacidosis	77,900	71.9	6,500	12.7
Hyperosmolarity and other coma	2,000	1.8	1,200	2.3
Other specified and unspecified complications	9,500	8.8	26,800	52.2
Neurological manifestation	13,300	12.3	10,800	21.1
Renal, ophthalmic, and peripheral circulatory manifestations	5,700	5.3	6,000	11.7

Abbreviations: ED, emergency department; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification

Note: Patients seen in the ED may not have diabetes complications documented in their discharge record if the information on complication status was not collected during the visit. These proportions reflect only those ED visits with complications recorded in the discharge record and do not suggest that patients with no mention of complications have no complications.

<sup>a</sup> Diabetes mellitus appears as a diagnosis on the discharge record.

<sup>b</sup> Not mutually exclusive (i.e., visits may involve more than one complication)

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2012

- **Ketoacidosis was the most common diabetes-related complication among children and young adults with uncontrolled diabetes, followed by neurological complications.**

Among children and young adults presenting to the ED with complications related to uncontrolled diabetes, ketoacidosis was the most common complication, accounting for 71.9 percent of these ED visits. Neurological complications, likely related to central nervous system changes with poor glucose control, represented 12.3 percent of ED visits by children and young adults with uncontrolled diabetes.

- **Complications of the kidneys, eyes, and peripheral circulation were the least common diabetes-related complications among children and young adults presenting to the ED, regardless of diabetes control.**

Renal, ophthalmic, and peripheral circulatory complications were the least common diabetes-related complications among ED visits by children and young adults with diabetes. They accounted for 5.3 percent of the complications among those ED visits coded as uncontrolled diabetes and 11.7 percent of the complications among visits coded as “diabetes, not stated as uncontrolled.”

*Most frequent primary reason for ED visits among children and young adults with diabetes, 2012*

Children and young adults can present to the ED for conditions unrelated to diabetes, particularly if they have not been previously diagnosed or if they are early in the progression of disease. Table 4 presents the most frequent first-listed conditions for ED visits in which diabetes (as defined using the ICD-9-CM) is listed in the discharge record. The first-listed condition can be interpreted as the primary reason for the ED visit.

**Table 4. Most frequent first-listed conditions<sup>a</sup> for diabetes-related emergency department visits for patients aged 0–29 years, 2012**

First-listed condition (CCS)	All diabetes-related ED visits			Diabetes-related ED visits: treat-and-release			Diabetes-related ED visits: admitted to the hospital		
	Number of visits, in thousands	%	Rank	Number of visits, in thousands	%	Rank	Number of visits, in thousands	%	Rank
Diabetes with complications	118.7	20.2	1	45.3	10.1	1	73.4	53.2	1
Diabetes without complications	48.1	8.2	2	42.3	9.4	2	5.8	4.2	2
Abdominal pain	31.2	5.3	3	30.2	6.7	3	1.0	0.7	—
Skin and subcutaneous infections	21.4	3.6	4	17.4	3.9	4	4.0	2.9	3
Sprains and strains	16.4	2.8	5	16.4	3.7	5	1.7	1.2	—
Urinary tract infections	16.0	2.7	6	13.9	3.1	7	2.1	1.5	8
Nausea and vomiting	15.2	2.6	7	14.8	3.3	6	0.4	0.3	—
Other upper respiratory infection	13.5	2.3	8	13.2	2.9	8	0.3	0.2	—
Nonspecific chest pain	13.3	2.3	9	12.7	2.8	9	0.7	0.5	—
Headache; including migraine	12.6	2.1	10	12.4	2.8	10	0.4	0.3	—
Mood disorders	7.9	1.4	—	4.6	1.0	—	3.3	2.4	4
Septicemia (except in labor)	3.4	0.6	—	0.2	0.0	—	3.2	2.4	5
Pancreatic disorders (not diabetes)	3.4	0.6	—	0.8	0.2	—	2.6	1.9	6
Complication of device; implant or graft	3.0	0.5	—	0.8	0.2	—	2.2	1.6	7
Schizophrenia and other psychotic disorders	3.4	0.6	—	1.6	0.4	—	1.8	1.3	9
Pneumonia	3.8	0.6	—	2.0	0.4	—	1.8	1.3	10

Abbreviations: CCS, Clinical Classification Software; ED, emergency department

Note: Dashes indicate that the condition was not ranked in the top 10.

<sup>a</sup>For those ED visits that were treated and released, the first-listed condition can be interpreted as the primary reason for the ED visit. For those admitted to the hospital, the first-listed condition is determined after inpatient evaluation and is defined as the principal diagnosis, or chief reason for the hospital stay.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Emergency Department Sample (NEDS), 2012

- **In all ED visit categories (overall, treat-and-release, and admission to the hospital), diabetes with and without complications were the most common and second most common first-listed conditions.**

In 2012, diabetes with complications accounted for 118,700 (20.2 percent) of diabetes-related ED visits among children and young adults. Diabetes without complications was the second most common first-listed condition for diabetes-related ED visits (8.2 percent). Diabetes with and without complications were the most common and second most common first-listed conditions for both diabetes-related ED visits that were treated and released and those that resulted in admission to the hospital.

- **Skin and subcutaneous infections and urinary tract infections were among the top 10 first-listed conditions for both treat-and-release visits and visits admitted to the hospital. Mood disorders and device complications were among the top 10 first-listed conditions for diabetes-related ED visits resulting in hospital admission.**

Among ED visits that resulted in treatment and release, other top-ranking first-listed conditions were abdominal pain (6.7 percent), skin and subcutaneous infections (3.9 percent), sprains and strains (3.7 percent), nausea and vomiting (3.3 percent), and urinary tract infections (3.1 percent).

Among diabetes-related ED visits that results in admission to the hospital, other top-ranking first-listed conditions were skin and subcutaneous infections (2.9 percent), mood disorders (2.4 percent), septicemia (2.4 percent), nondiabetes pancreatic disorders (1.9 percent), and complications relating to device, implant, or graft (1.6 percent).

Of note, the top 10 first-listed conditions for all diabetes-related ED visits accounted for one-half of these visits.

## Data Source

The estimates in this Statistical Brief are based upon data from the Healthcare Cost and Utilization Project (HCUP) 2012 Nationwide Emergency Department Sample (NEDS). Supplemental sources included population denominator data for use with HCUP databases, derived from information available from the Bureau of the Census.<sup>5</sup>

## Definitions

### *ICD-9-CM and Clinical Classifications Software (CCS)*

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.

For this Statistical Brief, diabetes-related emergency department (ED) visits were identified as having an ICD-9-CM diagnosis code of 250.xx. The following ICD-9-CM codes were used. *All-listed* refers to the occurrence of one or more of these codes in any of the 15 diagnosis fields captured by HCUP NEDS data, and *first-listed* refers to the occurrence of one or more of these codes in the first diagnosis field.

**Table 5. ICD-9-CM diagnosis codes defining diabetes**

Description	ICD-9-CM code
Diabetes mellitus without mention of complications	250.0x
Diabetes with ketoacidosis	250.1x
Diabetes with hyperosmolarity	250.2x
Diabetes with other coma	250.3x
Diabetes with renal manifestations	250.4x
Diabetes with ophthalmic manifestations	250.5x
Diabetes with neurological manifestation	250.6x
Diabetes with peripheral circulatory disorders	250.7x
Diabetes with other specified manifestations	250.8x
Diabetes with unspecified complications	250.9x
Diabetes – not stated as uncontrolled	250.x0 or 250.x1
Diabetes – uncontrolled	250.x2 or 250.x3

CCS categorizes ICD-9-CM diagnosis codes into a manageable number of clinically meaningful categories.<sup>6</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.

CCS categories were used in this Statistical Brief to identify the most common first-listed diagnoses for patients with diabetes. The corresponding CCS codes and descriptions are shown below.

**Table 6. CCS codes defining mental disorders**

CCS code	CCS description
2	Septicemia
49	Diabetes without complications
50	Diabetes with complications
84	Headache; including migraine
102	Nonspecific chest pain
122	Pneumonia

<sup>5</sup> Barrett M, Hickey K, Coffey R, Levit K. Population Denominator Data for Use with the HCUP Databases (Updated with 2014 Population Data). HCUP Methods Series Report #2015-07. September 1, 2015. U.S. Agency for Healthcare Research and Quality. <http://www.hcup-us.ahrq.gov/reports/methods/2015-07.pdf>. Accessed February 17, 2016.

<sup>6</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 June 2015. <http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>. Accessed February 17, 2016.

CCS code	CCS description
126	Other upper respiratory infections
136	Disorders of teeth and jaw
152	Pancreatic disorders (not diabetes)
159	Urinary tract infections
181	Other complications of pregnancy
197	Skin and subcutaneous tissue infection
205	Spondylosis; intervertebral disc disorders; other back problems
232	Sprains and strains
237	Complication of device; implant or graft
239	Superficial injury; contusion
250	Nausea and vomiting
251	Abdominal pain
657	Mood disorders
659	Schizophrenia and other psychotic disorders

*Types of hospitals included in the HCUP Nationwide Emergency Department Sample*

The Nationwide Emergency Department Sample (NEDS) is based on data from community hospitals, which are defined as short-term, non-Federal, general, and other hospitals, excluding hospital units of other institutions (e.g., prisons). The NEDS includes specialty, pediatric, public, and academic medical hospitals. Excluded are long-term care facilities such as rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals. Hospitals included in the NEDS have hospital-owned emergency departments and no more than 90 percent of their ED visits resulting in admission.

*Unit of analysis*

The unit of analysis is the ED encounter, not a person or patient. This means that a person who is seen in the ED multiple times in 1 year will be counted each time as a separate encounter in the ED.

*Location of patients' residence*

Place of residence is based on the urban-rural classification scheme for U.S. counties developed by the National Center for Health Statistics (NCHS):

- Large Metropolitan: Central and fringe counties of metropolitan areas with 1 million or more residents
- Medium and Small Metropolitan: Counties in metropolitan areas of 50,000–999,999 residents
- Micropolitan: Nonmetropolitan counties areas of 10,000 or more residents
- Noncore: Nonmetropolitan and nonmicropolitan counties

In this brief, “Large Central Metropolitan” and “Large Fringe Metropolitan” classifications were collapsed into “Large Metropolitan”.

*Median community-level income*

Median community-level income is the median household income of the patient’s ZIP Code of residence. Income levels are separated into population-based quartiles with cut-offs determined using ZIP Code demographic data obtained from the Nielsen Company. The income quartile is missing for patients who are homeless or foreign.

*Payer*

Payer is the expected payer for the hospital stay. To make coding uniform across all HCUP data sources, payer combines detailed categories into general groups:

- Medicare: includes patients covered by fee-for-service and managed care Medicare
- Medicaid: includes patients covered by fee-for-service and managed care Medicaid
- Private Insurance: includes Blue Cross, commercial carriers, and private health maintenance organizations (HMOs) and preferred provider organizations (PPOs)

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

Hospital stays billed to the State Children's Health Insurance Program (SCHIP) may be classified as Medicaid, Private Insurance, or Other, depending on the structure of the State program. Because most State data do not identify patients in SCHIP specifically, it is not possible to present this information separately.

For this Statistical Brief, when more than one payer is listed for a hospital discharge, the first-listed payer is used.

### *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

### 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  
**Connecticut** Hospital Association  
**District of Columbia** 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** Office of Health Analytics  
**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 NEDS

The HCUP Nationwide Emergency Department Database (NEDS) is a unique and powerful database that yields national estimates of ED visits. The NEDS was constructed using records from both the HCUP State Emergency Department Databases (SEDD) and the State Inpatient Databases (SID). The SEDD capture information on ED visits that do not result in an admission (i.e., treat-and-release visits and transfers to another hospital); the SID contain information on patients initially seen in the emergency department and then admitted to the same hospital. The NEDS was created to enable analyses of ED utilization patterns and support public health professionals, administrators, policymakers, and clinicians in their decisionmaking regarding this critical source of care. The NEDS is produced annually beginning in 2006. Over time, the sampling frame for the NEDS has changed; thus, the number of States contributing to the NEDS varies from year to year. The NEDS is intended for national estimates only; no State-level estimates can be produced.

## For More Information

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

For additional HCUP statistics, visit HCUP Fast Stats at <http://www.hcup-us.ahrq.gov/faststats/landing.jsp> for easy access to the latest HCUP-based statistics for health information topics, or 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 #186, Most Frequent Operating Room Procedures Performed in U.S. Hospitals, 2003–2012
- Statistical Brief #162, Most Frequent Conditions in U.S. Hospitals, 2011

For a detailed description of HCUP and more information on the design of the Nationwide Emergency Department Sample (NEDS), please refer to the following database documentation:

Agency for Healthcare Research and Quality. Overview of the Nationwide Emergency Department Sample (NEDS). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated January 2016. <http://www.hcup-us.ahrq.gov/nedsoverview.jsp>. Accessed February 17, 2016.

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AHRQ welcomes questions and comments from readers of this publication who are interested in obtaining more information about access, cost, use, financing, and quality of health care in the United States. We also invite you to tell us how you are using this Statistical Brief and other HCUP data and tools, and to share suggestions on how HCUP products might be enhanced to further meet your needs. Please e-mail us at [hcup@ahrq.gov](mailto:hcup@ahrq.gov) or send a letter to the address below:

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