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Overview of Hospital Stays for Children in the United States, 2012

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Introduction

Nearly one out of every six discharges from U.S. hospitals in 2012 was for children aged 17 years and younger, the majority of whom were infants, including newborns.[1] Between 2008 and 2012, the rate of hospitalization decreased by 0.6 percent per year among infants and 0.9 percent per year among children aged 1–17 years.[2] During this same time period, average annual growth in mean hospital costs per stay was 6.7 percent for infants and 6.4 percent for children aged 1–17 years, more than three times the rate of cost growth of any other age group.[3]

A variety of factors may explain the recent trends in children's hospitalizations, including changes in the conditions for which children are being treated. One recent study of children's inpatient stays in pediatric hospitals found that the number of patients, aggregate hospital charges, and number of hospital days grew more rapidly between 2004 and 2009 among children with chronic conditions than among those without chronic conditions.[4] Children with multiple chronic conditions also were more likely to be covered by Medicaid than were those without a chronic condition.[5] Understanding the reasons why children are hospitalized and examining trends over time is critical to inform clinical practice and health policy.

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief presents data on hospital inpatient stays among children aged 17 years and younger in 2012. Data were taken from the HCUP Kids' Inpatient Database (KID), which is created once every 3 years. The KID is the only database specifically developed to study hospitalizations among children. This

[1] Weiss AJ, Elixhauser A. Overview of Hospital Stays in the United States, 2012. HCUP Statistical Brief #180. October 2014. Agency for Healthcare Research and Quality, Rockville, MD. http://www.hcup-us.ahrq.gov/reports/statbriefs/sb180-Hospitalizations-United-States-2012.pdf. Accessed October 10, 2014.
[2] Moore B, Levit K, Elixhauser A. Costs for Hospital Stays in the United States, 2012. HCUP Statistical Brief #181. October 2014. Agency for Healthcare Research and Quality, Rockville, MD. http://www.hcup-us.ahrq.gov/reports/statbriefs/sb181-Hospital-Costs-United-States-2012.pdf. Accessed October 27, 2014.
[3] Ibid.
[4] Berry JG, Hall M, Hall DE, et al. Inpatient growth and resource use in 28 children's hospitals. JAMA Pediatrics. 2013;167(2):170–7.
[5] Ibid.

Highlights

- In 2012 there were nearly 5.9 million hospital stays for children in the United States, of which 3.9 million were neonatal stays and 104,700 were maternal stays for pregnant teens.
- Between 2000 and 2012, the number of neonatal stays (births) fluctuated around 4.0 million stays, reaching a high of 4.3 million in 2006. Hospital stays for teen pregnancies decreased by 47 percent over the 12-year period.
- In 2012, Medicaid covered over half (51.6 percent) of nonneonatal and nonmaternal stays for children and about a quarter (26.4 percent) of stays for adults aged 18–44 years. In contrast, 2.7 percent of stays for children were uninsured compared with 16.9 percent of stays for adults aged 18–44 years.
- From 2000 to 2012, the proportion of hospital stays for children paid by Medicaid increased by 33 percent, and the proportion paid by private insurance decreased by 21 percent.
- For most conditions, the rate of hospitalization for children decreased or remained relatively unchanged from 2000 to 2012. Only skin conditions showed an increase in rate of hospitalization (35.6 percent). Substantial decreases in rates of hospitalization over the 12-year period were observed for HIV infection (89.9 percent) and substance abuse (60.1 percent).
- Respiratory diagnoses—pneumonia, acute bronchitis, and asthma; mood disorders; appendicitis; and epilepsy/convulsions were the most common specific conditions for which children were hospitalized.

Statistical Brief updates previously published information[6,7] using the KID and examines trends over time.

In this Statistical Brief, we present characteristics of hospital stays among children aged 0–17 years, in comparison to hospital stays among adults aged 18–44 years. The distribution of hospital stays and aggregate hospital costs by pediatric age group is provided. Trends in the distribution of stays among children by primary payer from 2000 to 2012 also are shown. Finally, the most common types of conditions and operating room (OR) procedures for hospital stays among children are presented. All differences between mean estimates noted in the text are statistically significant at the .001 level or better. Differences between proportions noted in the text differ by at least 10 percent.

Findings

Characteristics of hospital stays among children, 2012
Table 1 presents characteristics of inpatient hospitalizations among children (aged 0–17 years) compared with adults (aged 18–44 years).

Table 1. Characteristics of hospital stays among children aged 0–17 years versus adults aged 18–44 years, 2012

Characteristic	All hospital stays		Nonneonatal and nonmaternal stays	
	Children aged 0–17 years	Adults aged 18–44 years	Children aged 0–17 years	Adults aged 18–44 years
Stays, n	5,850,200	8,996,400	1,848,800	4,943,100
Rate of stays per 100,000 population	7,928	7,888	2,505	4,334
Mean length of stay, days	3.9	3.6	4.2	4.4
Mean hospital costs, $	6,415	7,612	11,143	10,214
Aggregate hospital costs, $ millions	37,400	68,400	20,700	50,500
Expected primary payer, % of stays				
Private insurance	43.6	42.9	40.4	38.1
Medicaid	48.6	34.4	51.6	26.4
Medicare	0.4	6.8	0.4	11.7
Uninsured	3.5	10.5	2.7	16.9

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Kids' Inpatient Database (KID), 2012, and National Inpatient Sample (NIS), 2012

- **In 2012 there were nearly 5.9 million hospital stays for children in the United States.**

  In 2012, children aged 17 years and younger had 5.9 million hospital stays, and adults aged 18–44 years had 9.0 million stays. The rate of all hospital stays was similar for children and adults (7,928 and 7,888 stays per 100,000 population, respectively). Excluding neonatal and maternal stays, adults aged 18–44 years had a 1.7 times higher rate of hospitalization compared with children.

[6] Elixhauser A. Hospital Stays for Children, 2006. HCUP Statistical Brief #56. July 2008. Agency for Healthcare Research and Quality. Rockville, MD. http://www.hcup-us.ahrq.gov/reports/statbriefs/sb56.pdf. Accessed November 3, 2014.
[7] Yu, H, Wier LM, Elixhauser A. Hospital Stays for Children, 2009. HCUP Statistical Brief #118. August 2001. Agency for Healthcare Research and Quality. Rockville, MD. http://www.hcup-us.ahrq.gov/reports/statbriefs/sb118.pdf. Accessed November 3, 2014.

- **More than two-thirds of hospital stays among children were for infants being born (neonatal stays) or teens giving birth (maternal stays).**

  Neonatal and maternal stays constituted a substantial proportion of hospital stays among children (68.4 percent of all stays) as well as adults aged 18–44 years (45.1 percent of all stays). Among children's stays, 3.9 million were for infants being born and 104,700 were for maternal stays.

- **Across all hospitalizations, mean hospital costs were lower for children than for adults; however, excluding newborn and maternal stays, mean hospital costs were higher for children.**

  Across all hospitalizations, children had lower mean hospital costs ($6,415) compared with adults aged 18–44 years ($7,612). However, when neonatal and maternal stays were excluded, children had higher mean hospital costs ($11,143) than did adults ($10,214). Notably, hospital costs were substantially higher among both age groups when neonatal and maternal stays were excluded: children (1.74 times higher) and adult (1.34 times higher).

- **Over half of nonneonatal and nonmaternal hospital stays among children were covered by Medicaid, compared with about one-fourth of stays among adults aged 18–44 years.**

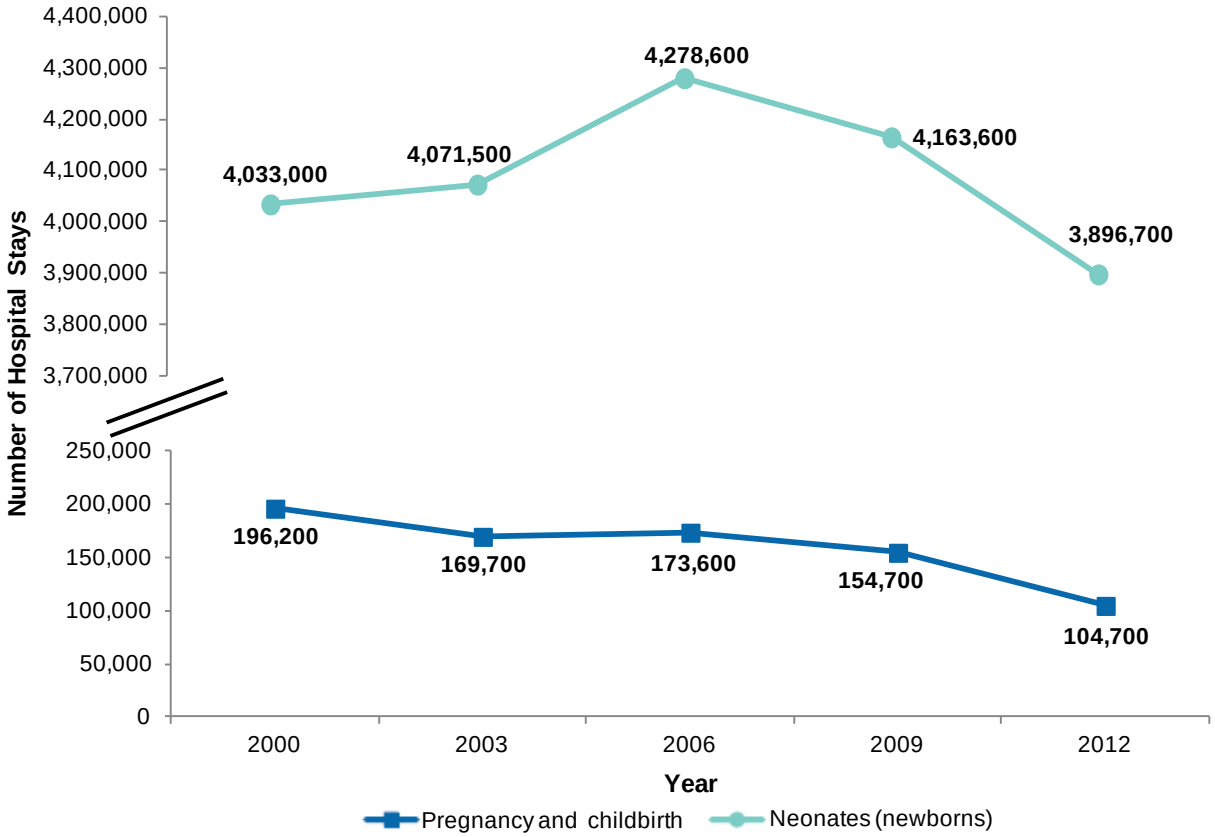
  Among nonneonatal and nonmaternal hospitalizations, Medicaid covered over half (51.6 percent) of stays for children and just over one-fourth (26.4 percent) of stays for adults aged 18–44 years.

- **Hospital stays among children were less likely to be uninsured than hospital stays among adults.**

  Across all hospitalizations, 3.5 percent of stays for children were not covered by insurance compared with 10.5 percent of stays for adults aged 18–44 years. For nonneonatal and nonmaternal hospitalizations, 2.7 percent of stays for children were uninsured compared with 16.9 percent of stays for adults aged 18–44 years.

Figure 1 shows the number of hospital stays for neonates (newborns) and for pregnancy and childbirth among teenagers for the 2000–2012 time period.

Figure 1. Neonatal and maternal hospital stays among children aged 0–17 years, 2000–2012



Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Kids' Inpatient Database (KID), 2000, 2003, 2006, 2009, and 2012

- **Maternal stays for teenagers dropped significantly between 2000 and 2012.**

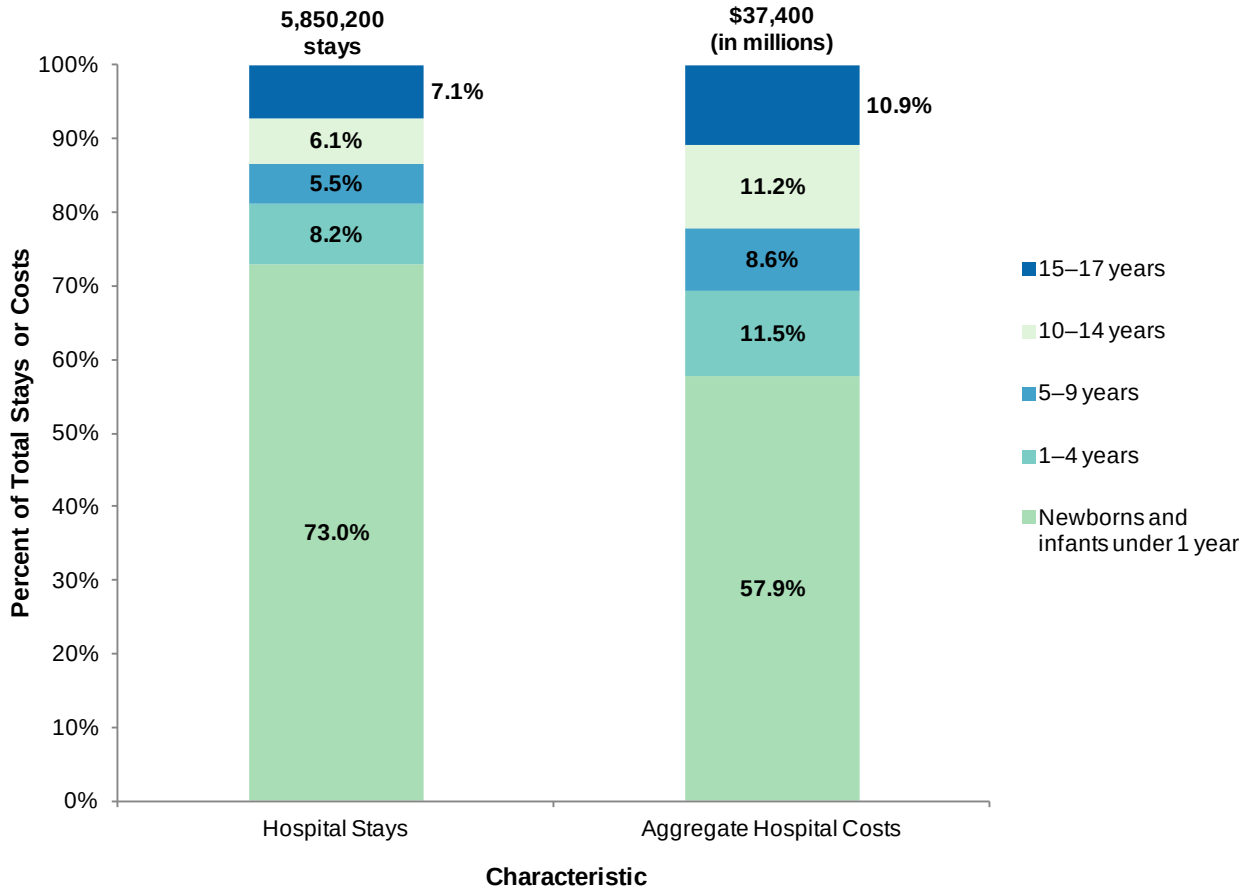
  The number of teen hospital stays for pregnancy, delivery, and postdelivery care decreased from 196,200 in 2000 to 104,700 in 2012—a 47 percent decline over the 12-year time period.

- **The number of neonatal stays—births and newborn care—fluctuated during the same time period.**

  Neonatal hospital stays fluctuated around 4 million between 2000 and 2012, increasing somewhat from 4.0 million in 2000 to 4.3 million in 2006 and then decreasing somewhat to 3.9 million in 2012.

Figure 2 shows total hospital stays and aggregate hospital costs among children for different age groups in 2012.

Figure 2. Hospital inpatient stays and aggregate hospital costs among children aged 0–17 years by age group, 2012



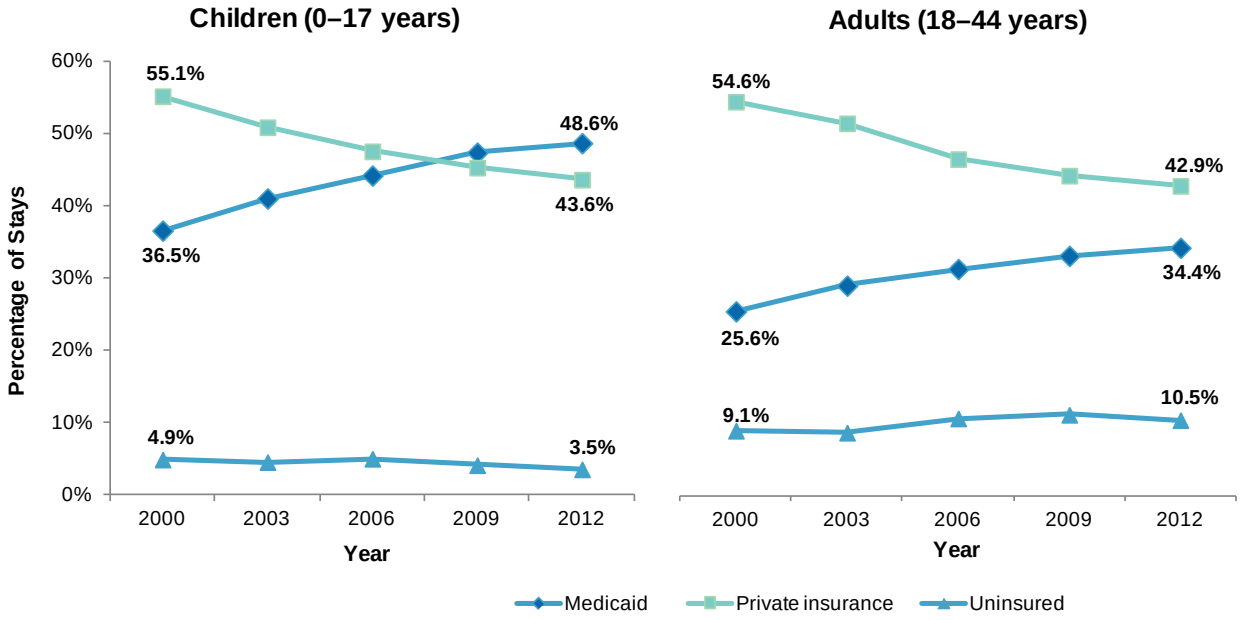
Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Kids' Inpatient Database (KID), 2012

- **Nearly three-fourths of hospital stays for children and more than half of all hospital costs for children were for newborns and infants.**

  Newborns and infants younger than 1 year of age constituted 73.0 percent of all hospital stays for children and 57.9 percent of aggregate hospital costs. Hospital stays and aggregate hospital costs were fairly equally distributed among other pediatric age groups.

Figure 3 examines primary payer for hospital stays among children compared with adults from 2000 to 2012.

Figure 3. Hospital inpatient stays among children aged 0–17 years versus adults aged 18–44 years by expected primary payer, 2000–2012



Note: Hospital stays for children and adults (aged 18–44 years) who were covered by Medicare, were covered by other types of insurance, or were missing primary payer information were excluded from this figure, and thus percentages do not total 100.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Kids' Inpatient Database (KID), 2000, 2003, 2006, 2009, and 2012, and National (Nationwide) Inpatient Sample (NIS), 2000, 2003, 2006, 2009, and 2012

- **The proportion of hospital stays for children covered by Medicaid has increased over time, and the proportion covered by private insurance has decreased. Medicaid now pays for nearly half of all hospitalizations for children.**

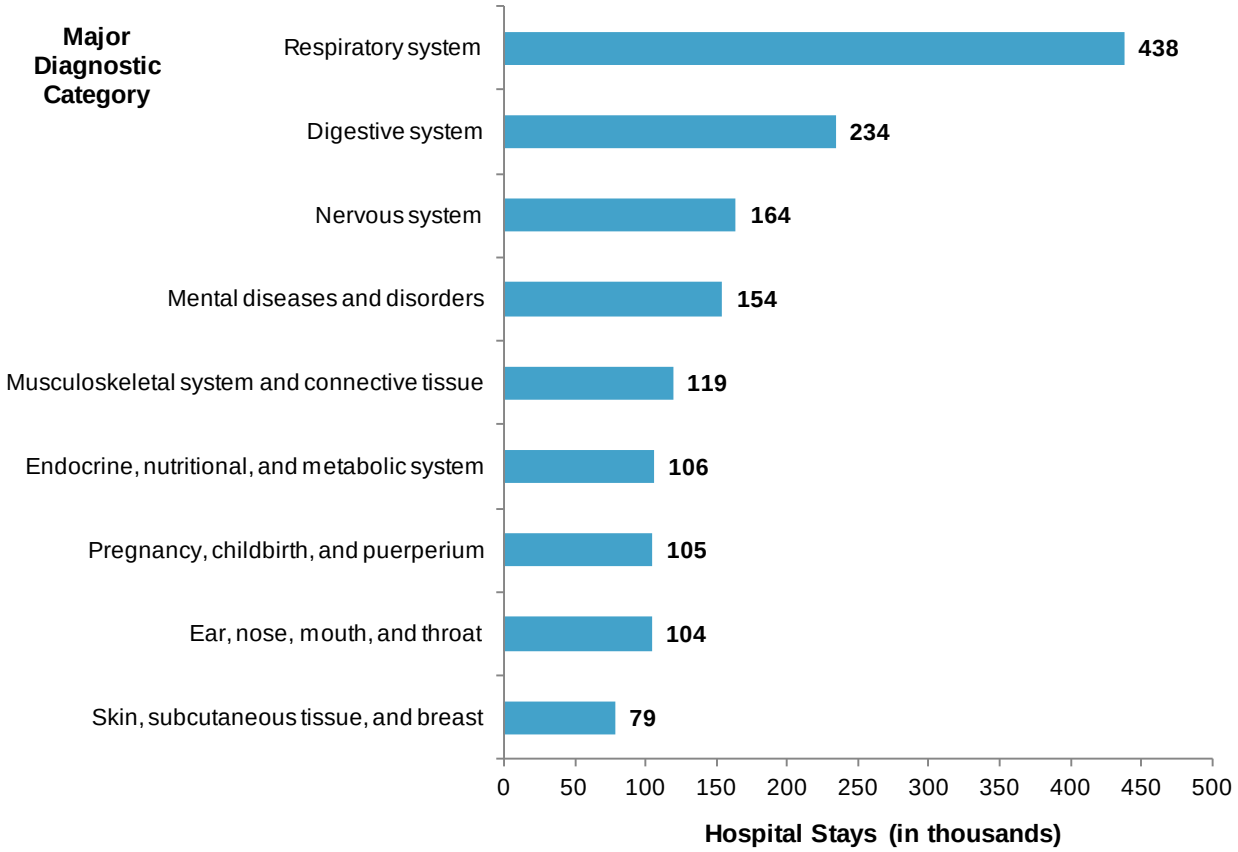
  The proportion of hospital stays for children that were covered by Medicaid increased from 36.5 percent in 2000 to 48.6 percent in 2012, a 33 percent increase. At the same time, the proportion of hospital stays for children covered by private insurance decreased 21 percent from 55.1 percent in 2000 to 43.6 percent in 2012.

  A similar shift occurred among adults aged 18–44 years, although private insurance continued to pay for more stays than Medicaid in 2012. Between 2000 and 2012, the proportion of adult hospital stays covered by Medicaid increased from 25.6 to 34.4 percent, a 34 percent increase, and the proportion covered by private insurance decreased from 54.6 to 42.9 percent, a 21 percent decrease.

  During this same time period, the proportion of stays that were uninsured decreased from 4.9 to 3.5 percent among children and increased from 9.1 to 10.5 percent among adults aged 18–44 years.

Most common types of conditions and procedures for hospitalizations among children, 2012
Figure 4 shows the 10 most common major diagnostic categories (MDCs), excluding newborns, for hospital inpatient stays among children in 2012.

Figure 4. Top 10 major diagnostic categories (MDCs), excluding newborns, for hospital stays among children aged 0–17 years, 2012



Note: This figure includes all hospital stays but excludes MDC code 15, corresponding to Newborns and other neonates with condtn orig in perinatal period, for which there were 3.9 million total hospital stays.

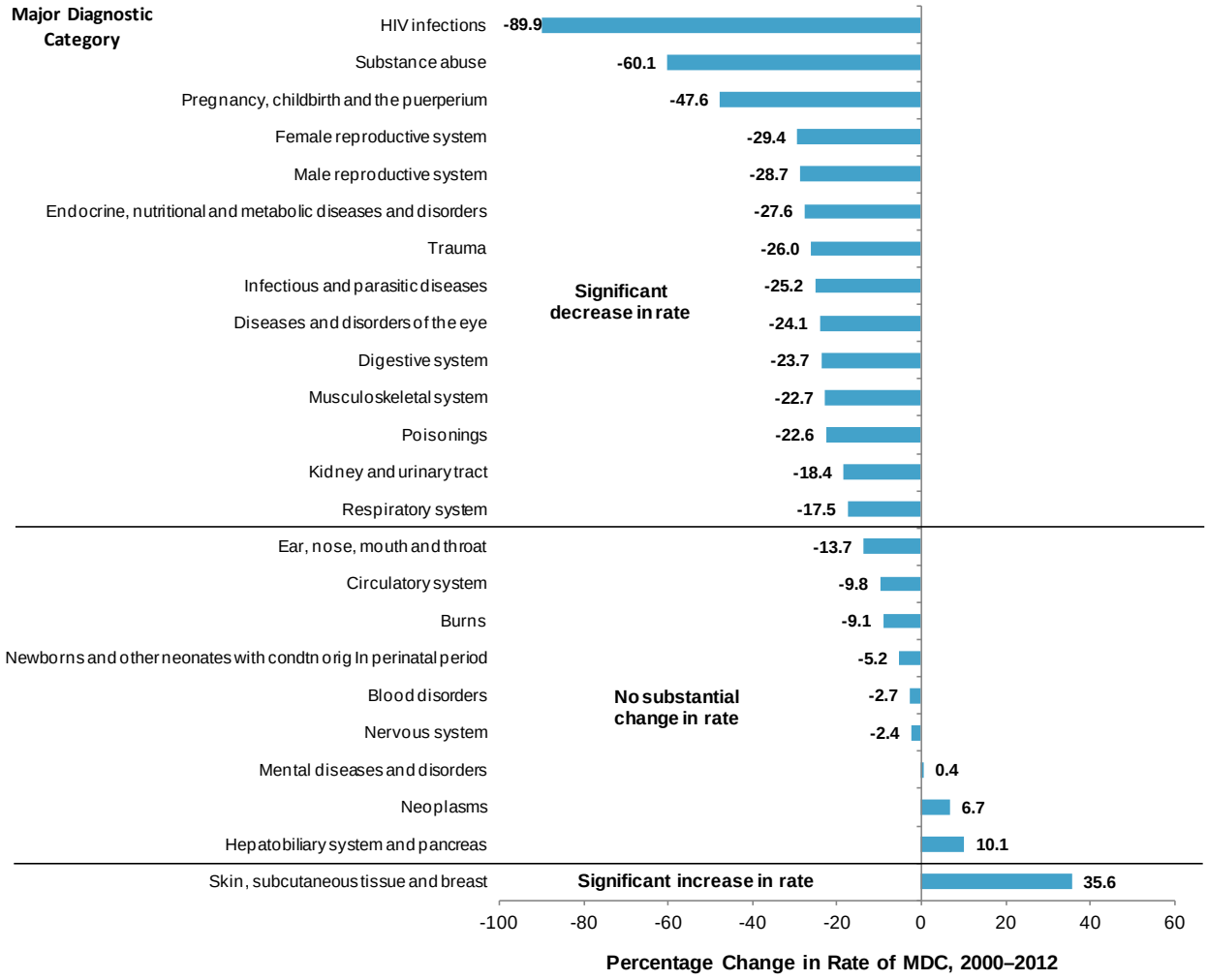
Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Kids' Inpatient Database (KID), 2012

- **Hospital stays among children most commonly involved the respiratory or digestive system.**

  In 2012, excluding newborns, respiratory conditions were the most frequent reason for hospitalization among children, accounting for 438,000 hospitalizations, or 22 percent of all nonneonatal hospital stays. Digestive conditions were the second most common overall reason for pediatric hospitalization, accounting for 234,000 hospitalizations (12 percent of nonneonatal stays). Nervous system conditions ranked third, with 164,000 hospital stays, and mental disorders ranked fourth at 154,000 stays.

The percentage change in rates of hospital stays for major diagnostic categories (MDCs) among children between 2000 and 2012 is shown in Figure 5.

Figure 5. Change in rates of major diagnostic categories (MDCs) for hospital stays among children aged 0–17 years, 2000–2012



Note: MDCs with a change in rate of at least 15 percent between 2000 and 2012 were significantly different at the p<.001 level.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Kids' Inpatient Database (KID), 2000 and 2012

- **For most major diagnostic categories, the rate of hospitalization for children decreased over time or remained relatively unchanged between 2000 and 2012.**

  Of the 24 MDCs among children aged 0–17 years, 14 had a significant decrease in the rate of stays per 100,000 population between 2000 and 2012, 9 showed no substantial change in rate, and 1 showed a significant increase in rate.

  The most substantial decreases were for HIV infections (89.9 percent decrease in rate), substance abuse (60.1 percent decrease), and pregnancy and childbirth (47.6 percent decrease).

- **Conditions of the skin and subcutaneous tissue increased over time for children.**

  Only skin conditions showed a significant increase in rate between 2000 and 2012 (35.6 percent increase).

Table 2 expands on the findings by MDC by presenting the 10 most common principal diagnoses for nonneonatal and nonmaternal stays among children compared with adults in 2012.

Table 2. Most common principal diagnoses for nonneonatal and nonmaternal hospital inpatient stays among children aged 0–17 years versus adults aged 18–44 years, 2012

Children aged 0–17 years				Adults aged 18–44 years			
Rank	**Principal diagnosis**	**Stays, n**	**Rate of stays per 100,000 population**	**Rank**	**Principal diagnosis**	**Stays, n**	**Rate of stays per 100,000 population**
1	Pneumonia (except that caused by tuberculosis and sexually transmitted diseases)	124,900	169.2	1	Mood disorders	412,900	362.0
2	Acute bronchitis	123,600	167.6	2	Schizophrenia and other psychotic disorders	190,700	167.2
3	Asthma	123,100	166.8	3	Skin and subcutaneous tissue infections	162,600	142.6
4	Mood disorders	106,600	144.4	4	Diabetes mellitus with complications	160,500	140.7
5	Appendicitis and other appendiceal conditions	71,900	97.4	5	Biliary tract disease	139,200	122.1
6	Epilepsy, convulsions	69,900	94.7	6	Septicemia (except in labor)	123,500	108.3
7	Skin and subcutaneous tissue infections	59,300	80.4	7	Substance-related disorders	121,000	106.1
8	Fluid and electrolyte disorders	47,600	64.5	8	Spondylosis, intervertebral disc disorders, other back problems	109,100	95.6
9	Maintenance chemotherapy, radiotherapy	41,500	56.3	9	Appendicitis and other appendiceal conditions	104,600	91.7
10	Urinary tract infections	41,200	55.8	10	Pancreatic disorders (not diabetes)	101,300	88.8

Note: This table is limited to nonmaternal and nonneonatal stays in the child and adult populations. Principal diagnosis is identified using Clinical Classifications Software (CCS) diagnosis categories.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Kids' Inpatient Database (KID), 2012, and National Inpatient Sample (NIS), 2012

- **Respiratory conditions were the most frequent reasons for hospital stays among children.**

  Consistent with Figure 4, three respiratory conditions—pneumonia, acute bronchitis, and asthma—were the three top specific reasons for hospitalization among children in 2012, each accounting for over 120,000 hospital stays for children. Each of the three respiratory conditions occurred at a rate of 165 to 170 stays per 100,000 population. Respiratory conditions were not among the 10 most common diagnoses for hospitalized nonmaternal adults aged 18–44 years.

- **Mental illness was among the most common reasons for hospitalization among children, but mental illness was a more common diagnosis among adults.**

  The fourth most common reason for hospitalization among children (excluding neonatal and maternal stays) was mood disorders—144.4 stays per 100,000 population. However, among nonmaternal adults aged 18–44 years, 3 of the top 10 most frequent reasons for hospitalization were mental illness and substance abuse disorders: mood disorders ranked first (362.0 stays per 100,000 population); schizophrenia ranked second (167.2 stays per 100,000 population); and substance-related disorders ranked seventh (106.1 stays per 100,000 population).

- **Appendicitis was among the most common reasons for hospital stays among both children and adults.**

  Figure 4 showed that the second ranked major diagnostic category was digestive conditions. The specific digestive condition in the top 10 was appendicitis—the fifth most common reason for hospitalization among children (97.4 stays per 100,000 population). Appendicitis was the ninth most common reason for hospital stays among adults aged 18–44 years (91.7 stays per 100,000 population).

- **Epilepsy was ranked as the sixth most common reason for hospitalization among children.**

  Figure 4 showed that the third most common major diagnostic category for hospitalized children was nervous system disorders—that result is reflected in the ranking of epilepsy and seizures as the sixth most common specific condition among hospitalized children, with 94.7 stays per 100,000 population.

- **Infections, chemotherapy, and fluid/electrolyte disorders were other top 10 specific reasons for hospitalization among children.**

  Other top 10 conditions among nonmaternal and nonneonatal stays for children were skin and subcutaneous tissue infections (ranked seventh), fluid and electrolyte disorders (ranked eighth), maintenance chemotherapy (ranked ninth), and urinary tract infections (ranked tenth).

Table 3 presents the 10 most common operating room (OR) procedures among children in 2012.

Table 3. Most common operating room (OR) procedures during hospital inpatient stays among children aged 0–17 years, 2012

Rank	All-listed OR procedure	Stays, n	Rate of stays per 100,000 population
1	Circumcision	1,063,200	1,440.8
2	Appendectomy	76,200	103.3
3	Cesarean section	18,300	24.8
4	Partial excision bone	15,400	20.9
5	Treatment, fracture or dislocation of hip and femur	14,600	19.8
6	Tonsillectomy and/or adenoidectomy	14,500	19.7
7	Spinal fusion	12,600	17.0
8	Insertion, replacement, or removal of extracranial ventricular shunt	12,000	16.2
9	Treatment, fracture or dislocation of lower extremity (other than hip or femur)	11,200	15.2
10	Incision and excision of CNS	10,900	14.7

Note: All-listed OR procedures are identified using Clinical Classifications Software (CCS) procedure categories. Procedures designated as "Other" are not reported; these represent miscellaneous procedures that may be difficult to interpret as a group.

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Kids' Inpatient Database (KID), 2012

- **Circumcision was the most frequent OR procedure among hospitalized children in 2012.**

  By far, the most frequent OR procedure performed during pediatric hospital stays was circumcision, which was performed in over 1 million hospital stays in 2012 at a rate of 1,440.8 per 100,000 population.

  The second most common OR procedure performed on children was appendectomy, with 76,200 stays in 2012 at a rate of 103.3 stays per 100,000 population. Notably, the third most common OR procedure among children was Cesarean section, occurring during 18,300 hospital stays at a rate of 24.8 stays per 100,000 population.

  All other OR procedures occurred in fewer than 20,000 hospital stays and at a rate of fewer than 21 stays per 100,000 population.

Data Source

The estimates in this Statistical Brief are based on data from the Healthcare Cost and Utilization Project (HCUP) 2012 Kids' Inpatient Database (KID). Comparative data for adults were taken from the 2012 National Inpatient Sample (NIS). Historical data were drawn from the 2000, 2003, 2006, and 2009 KID and NIS. The statistics were generated from HCUPnet, a free, online query system that provides users with *immediate access* to the largest set of publicly available, all-payer national, regional, and State-level hospital care databases from HCUP.[8] The proportion of nonmaternal and nonneonatal stays by primary payer among adults aged 18–44 years was calculated from the NIS. Supplemental sources included population denominator data for use with HCUP databases, derived from information available from the Bureau of the Census.[9]

This analysis was limited to pediatric discharges from the KID for children aged 0–17 years and adult discharges from the NIS for adults aged 18–44 years.

Definitions

Diagnoses, procedures, ICD-9-CM, Clinical Classifications Software (CCS), diagnosis-related groups (DRGs), and major diagnostic categories (MDCs)
The *principal diagnosis* is that condition established after study to be chiefly responsible for the patient's admission to the hospital.

All-listed procedures were limited to surgical stays with "valid OR procedures" based on DRG coding principles.

ICD-9-CM is the International Classification of Diseases, Ninth Revision, Clinical Modification, which assigns numeric codes to diagnoses and procedures. There are approximately 14,000 ICD-9-CM diagnosis codes and 4,000 ICD-9-CM procedure codes.

CCS categorizes ICD-9-CM diagnoses and procedures into a manageable number of clinically meaningful categories.[10] This clinical grouper makes it easier to quickly understand patterns of diagnoses and procedure use. CCS categories identified as "Other" typically are not reported; these categories include miscellaneous, otherwise unclassifiable diagnoses and procedures that may be difficult to interpret as a group.

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 (procedure), age, and other relevant criteria. Each hospital stay has one assigned DRG.

For this report, major operating room (OR) procedures were defined using procedure classes, which categorize each ICD-9-CM procedure code as either major therapeutic, major diagnostic, minor therapeutic, or minor diagnostic.[11] Major OR procedures are considered to be valid OR procedures based on DRGs. This classification scheme relies on physician panels that classify ICD-9-CM procedure codes according to whether the procedure would be performed in a hospital OR in most hospitals. Major OR procedures were identified using all procedure fields (first-listed and secondary) that were available on the discharge record.

MDCs are derived from the DRG reimbursement system. A patient's hospital record is assigned a single

[8] Agency for Healthcare Research and Quality. HCUPnet web site. http://hcupnet.ahrq.gov/. Accessed September 11, 2014.
[9] Barrett M, Lopez-Gonzalez L, Coffey R, Levit K. Population Denominator Data for Use with the HCUP Databases (Updated with 2013 Population Data). HCUP Methods Series Report #2014-02. August 18, 2014. U.S. Agency for Healthcare Research and Quality. http://www.hcup-us.ahrq.gov/reports/methods/2014-02.pdf. Accessed September 11, 2014.
[10] 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, Rockville, MD. Updated July 2014. http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp. Accessed September 11, 2014.
[11] Agency for Healthcare Research and Quality. HCUP Procedure Classes. Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated March 2014. http://www.hcup-us.ahrq.gov/toolssoftware/procedure/procedure.jsp. Accessed September 30, 2014.

MDC that designates the body system (e.g., respiratory system) or etiology (e.g., trauma) of the principal diagnosis for that hospital stay.

Types of hospitals included in the HCUP Kids' Inpatient Database (KID) and National (Nationwide) Inpatient Sample (NIS)
The Kids' Inpatient Database (KID) and the National (Nationwide) Inpatient Sample (NIS) are 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 KID and NIS include obstetrics and gynecology, otolaryngology, orthopedic, cancer, pediatric, public, and academic medical hospitals. Excluded are long-term care facilities such as rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals. Beginning in 2012, long-term acute care hospitals are also excluded from the NIS. 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 will be included in the KID or NIS.

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).[12] *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.

How HCUP estimates of costs differ from National Health Expenditure Accounts
There are a number of differences between the costs cited in this Statistical Brief and spending as measured in the National Health Expenditure Accounts (NHEA), which are produced annually by the Centers for Medicare & Medicaid Services (CMS).[13] The largest source of difference comes from the HCUP coverage of inpatient treatment only in contrast to the NHEA inclusion of outpatient costs associated with emergency departments and other hospital-based outpatient clinics and departments as well. The outpatient portion of hospitals' activities has been growing steadily and may exceed half of all hospital revenue in recent years. On the basis of the American Hospital Association Annual Survey, 2012 outpatient gross revenues (or charges) were about 44 percent of total hospital gross revenues.[14]

Smaller sources of differences come from the inclusion in the NHEA of hospitals that are excluded from HCUP. These include Federal hospitals (Department of Defense, Veterans Administration, Indian Health Services, and Department of Justice [prison] hospitals) as well as psychiatric, substance abuse, and long-term care hospitals. A third source of difference lies in the HCUP reliance on billed charges from hospitals to payers, adjusted to provide estimates of costs using hospital-wide cost-to-charge ratios, in contrast to the NHEA measurement of spending or revenue. HCUP costs estimate the amount of money required to produce hospital services, including expenses for wages, salaries, and benefits paid to staff as well as utilities, maintenance, and other similar expenses required to run a hospital. NHEA spending or revenue measures the amount of income received by the hospital for treatment and other services provided,

[12] 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, Rockville, MD. Updated August 2014. http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp. Accessed September 11, 2014.
[13] For additional information about the NHEA, see Centers for Medicare & Medicaid Services (CMS). National Health Expenditure Data. Updated May 2014. http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html?redirect=/NationalHealthExpendData/. Accessed October 9, 2014.
[14] American Hospital Association. TrendWatch Chartbook, 2014: Trends Affecting Hospitals and Health Systems. Table 4.2. Distribution of Inpatient vs. Outpatient Revenues, 1992–2012. Washington, DC: American Hospital Association. http://www.aha.org/research/reports/tw/chartbook/2014/table4-2.pdf. Accessed October 9, 2014.

including payments by insurers, patients, or government programs. The difference between revenues and costs include profit for for-profit hospitals or surpluses for nonprofit hospitals.

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 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 Worker's 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.

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

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, private data organizations, and the Federal government to create a national information resource of encounter-level health care data (HCUP Partners). 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
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 KID

The HCUP Kids' Inpatient Database (KID) is a nationwide database of hospital inpatient stays. The KID is the only dataset on hospital use, outcomes, and charges designed to study children's use of hospital services in the United States. The KID is a sample of discharges from all community, nonrehabilitation hospitals in States participating in HCUP. For the 1997 KID, hospital discharges for patients aged 18 years or younger were included in the database. Pediatric discharges are defined as all discharges where the patient was aged 20 years or younger at admission. The KID's large sample size enables analyses of rare conditions (such as congenital anomalies) and uncommon treatments (such as organ transplantation). It can be used to study a wide range of topics including the economic burden of pediatric conditions, access to services, quality of care and patient safety, and the impact of health policy changes. The KID is produced every 3 years; prior databases are available for 1997, 2000, 2003, 2006, 2009, and 2012.

About the NIS

The HCUP National (Nationwide) Inpatient Sample (NIS) is a national (nationwide) database of hospital inpatient stays. The NIS is nationally representative of all community hospitals (i.e., short-term, non-Federal, nonrehabilitation 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 more than 95 percent of all discharges in the United States. The vast size of the NIS allows the study of topics at

the national and regional levels for specific subgroups of patients. In addition, NIS data are standardized across years to facilitate ease of use.

The 2012 NIS was redesigned to optimize national estimates. The redesign incorporates two critical changes:

- Revisions to the sample design—the NIS is now a *sample of discharge records from all HCUP-participating hospitals*, rather than a sample of hospitals from which all discharges were retained.

- Revisions to how hospitals are defined—the NIS now uses the *definition of hospitals and discharges supplied by the statewide data organizations* that contribute to HCUP, rather than the definitions used by the American Hospital Association (AHA) Annual Survey of Hospitals.

The new sampling strategy is expected to result in more precise estimates than those that resulted from the previous NIS design by reducing sampling error: for many estimates, confidence intervals under the new design are about half the length of confidence intervals under the previous design. The change in sample design for 2012 necessitates recomputation of prior years' NIS data to enable analysis of trends that uses the same definitions of discharges and hospitals.

About HCUPnet

HCUPnet is an online query system that offers instant access to the largest set of all-payer health care databases that are publicly available. HCUPnet has an easy step-by-step query system that creates tables and graphs of national and regional statistics as well as data trends for community hospitals in the United States. HCUPnet generates statistics using data from HCUP's National (Nationwide) Inpatient Sample (NIS), the Kids' Inpatient Database (KID), the Nationwide Emergency Department Sample (NEDS), the State Inpatient Databases (SID), and the State Emergency Department Databases (SEDD).

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 design of the Kids' Inpatient Database (KID) or the National (Nationwide) Inpatient Sample (NIS), please refer to the following database documentation:

Agency for Healthcare Research and Quality. Overview of the Kids' Inpatient Database (KID). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated August 2014. http://www.hcup-us.ahrq.gov/kidoverview.jsp. Accessed September 11, 2014.

Agency for Healthcare Research and Quality. Overview of the National (Nationwide) Inpatient Sample (NIS). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated July 2014. http://www.hcup-us.ahrq.gov/nisoverview.jsp. Accessed September 11, 2014.

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

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