HEALTHCARE COST AND UTILIZATION PROJECT

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Circumcisions Performed in U.S. Community Hospitals, 2005

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Highlights

- In 2005, about 56 percent of male newborns were circumcised prior to release from the hospital, resulting in over 1.2 million circumcisions performed at U.S. community hospitals. The frequency of hospital-based circumcisions has remained relatively stable since 1997.
- More than three-quarters of circumcisions were performed in private, not-for-profit hospitals with the remaining being performed nearly equally in government or private, for-profit hospitals.
- The majority of circumcisions, approximately 60 percent, were billed to private insurers. Medicaid was also a key payer being billed for about one-third of circumcisions.
- While the male newborn birth rate did not fluctuate substantially across regions, regional rates of infant circumcision varied greatly.
- Nearly three-quarters of newborn boys were circumcised at the hospital in the Midwest compared to less than a third in the West. In the Northeast, nearly two-thirds (64.5 percent) of newborn boys were circumcised and in the South about 56 percent.

Introduction

In 2005, circumcision was the third most common inpatient surgery performed in the U.S., with over 1.2 million procedures performed at the hospital. Despite its high frequency and strong prevalence within American society, circumcision is performed less often for medical purposes than for cultural, religious, or cosmetic reasons.[1] Research suggests some health benefits may be gained by removing the foreskin of the penis including a slightly decreased risk of developing penile cancer, a lower chance of urinary tract infections in newborns,[2] and a potentially lessened risk of HIV transmission.[3] However, a number of health care organizations, including the American Academy of Pediatrics, have stated there is insufficient evidence to deem routine circumcision as medically necessary.[4] Changes in public sentiment, differences in insurance coverage, or fluctuations in immigrant populations can impact the prevalence of the procedure.

This Statistical Brief presents data from the Healthcare Cost and Utilization Project (HCUP) on newborn circumcisions performed at U.S. community hospitals in 2005. Specifically, variations in circumcision rates by payer and region are presented. All differences between estimates noted in the text are statistically significant at the 0.05 level or better.

Findings

In 2005, about 56 percent of newborn boys were circumcised before their release from the hospital, resulting in over 1.2 million circumcisions performed at U.S. community hospitals. While the overall percentage of circumcised infants dropped from a high of about 65 percent in 1980,[5] the percentage has remained relatively stable in the last decade. Newborn circumcisions performed outside of the hospital setting, at a physician's office, an ambulatory surgery facility or in private homes, increases the overall

[1] Holman JR, Stuessi, KA. Adult Circumcision. American Family Physician, 1999 (Accessed September 5, 2007.)

[2] American Medical Association. Report 10 of the Council on Scientific Affairs, 2000. (Accessed November 12, 2007.)

[3] National Institute of Allergy and Infectious Diseases. Adult Male Circumcision Significantly Reduces Risk of Acquiring HIV, 2006. (Accessed November 12, 2007.)

[4] American Academy of Pediatrics. Task force on circumcision policy statement. Pediatrics, 116(3):796, 2005

[5] Kozak LJ; Lees KA, and DeFrances CJ. National Hospital Discharge Survey: 2003 annual summary with detailed diagnosis and procedure data. (PDF). Vital Health Statistics 13 (160), 2006. (Accessed December 6, 2007).

prevalence of this procedure. However, the majority of circumcisions in the U.S. continue to be performed during the newborn's hospitalization.[6] The information in this brief is limited to those newborn circumcisions that took place during a hospital stay.

Circumcisions generally are performed in private, not-for-profit hospitals, billed to private insurance, and are most common in the Midwest (table 1). In terms of cost, hospital charges for circumcisions commonly are bundled into the hospital's bill for the birth of the child; thus, it is difficult to parcel out the direct cost of the circumcision. In 2005, the mean cost of a hospital stay that included a circumcision was about $2,000 (data not shown). Given that circumcisions were largely performed during a newborn hospitalization, it is expected that the majority of this cost was attributed to newborn care and unrelated to the circumcision itself. While estimates vary, the cost of a circumcision procedure itself is estimated to be under $200.[7]

Differences in number of newborn circumcisions, by expected payer
Coverage for newborn circumcisions varied by insurance type. The majority of circumcisions, approximately 60 percent, were billed to private insurers (table 1). Medicaid, the public payer for low-income individuals, was also a key payer being billed for about one-third of circumcisions despite a recent decline in its coverage of non-therapeutic infant circumcision. Of the remaining circumcisions, nearly 3 percent were billed to other insurance programs, such as TRICARE and other government programs, and about 4 percent were uninsured.

Private insurance was disproportionately billed for more circumcisions relative to its responsibility for all newborn hospital stays. While private insurance was billed for about half of all male newborn stays, it was billed for about 60 percent of circumcisions (figure 1). The reverse pattern was true with Medicaid, which was billed for about 42 percent of male newborn stays, but for less than one-third of circumcisions.

Differences in number of newborn circumcisions, by region
Regional rates of newborn circumcision varied greatly (figure 2). When adjusted for the population of each region, the percentage of newborn boys circumcised in the Midwest or Northeast was more than two times greater than in the West. In the Midwest about three-fourths of newborn boys (74.9 percent) were circumcised at the hospital and in the Northeast nearly two-thirds (64.5 percent) were circumcised. In contrast, less than a third were circumcised in the West (31.1 percent) and 56.3 percent in the South.

Rates of circumcision were not influenced by overall birth rates in each region. Figure 3 shows that while the birth rate of newborn boys did not vary greatly by region, the rate of circumcisions varied significantly. In fact, the region with the lowest birth rate of male babies, the Midwest, had the highest circumcision rate.

The regional differences in circumcision rates may be explained by variations in racial, ethnic, and immigrant populations within each region, as these factors are known to influence decisions surrounding infant circumcision. For example, Hispanic parents are much less likely to circumcise their infant boys for cultural reasons compared to non-Hispanic Caucasians.[8] The impact of this is most evident in the western region of the U.S. where the circumcision rates were over 60 percent in 1980[5] compared to about 31 percent in 2005. This two-fold decrease in the circumcision rate has been partly attributed to increased Hispanic birth rate in the West.[8]

Data Source

The estimates in this Statistical Brief are based upon data from the HCUP 2005 Nationwide Inpatient Sample (NIS).

Supplemental source included data on regional population estimates from Population change and estimated components of population change: April 1, 2000 to July 1, 2006 (NST_EST2006_ALLDATA), Population Division, U.S. Census Bureau. (http://www.census.gov/popest/national/files/NST_EST2006_ALLDATA.csv)

[6] Based on select HCUP State Inpatient Databases (SID) and State Ambulatory Surgery Databases (SASD), an additional 6 percent of circumcisions are performed in ambulatory surgery facilities in 2005 (excluding physician offices).

[7] Schoen EJ, Colby CJ, To TT. Cost analysis of neonatal circumcision in a large health maintenance organization. The Journal of Urology, 175 (1): 1111-1115, 2006.

[8] National Center for Health Statistics. Trends in circumcisions among newborns, 2007. Health E-Stats. (Accessed December 6, 2007.)

Definitions

Procedures, Diagnoses, ICD-9-CM, and Clinical Classifications Software (CCS)
The principal procedure is the procedure that was performed for definitive treatment rather than one performed for diagnostic or exploratory purposes (i.e., the procedure that was necessary to take care of a complication). If two procedures appear to meet this definition, the procedure most related to the principal diagnosis was selected as the principal procedure.

The principal diagnosis is that condition established after study to be chiefly responsible for the patient's admission to the hospital. Secondary diagnoses are concomitant conditions that coexist at the time of admission or that develop during the stay. All-listed diagnoses include the principal diagnosis plus these additional secondary conditions.

ICD-9-CM is the International Classification of Diseases, Ninth Revision, Clinical Modification, which assigns numeric codes to diagnoses. There are about 3,500 procedure codes and 12,000 ICD-9-CM diagnosis codes.

CCS categorizes ICD-9-CM diagnosis and procedure codes into clinically meaningful categories.[9] This "clinical grouper" makes it easier to quickly understand patterns of procedure use.

Case Definition
Circumcision procedures were defined as all-listed CCS procedure category:
– 115: Circumcision

Male newborn births were defined as principal CCS diagnosis category:
– 218: Liveborn

Types of hospitals included in HCUP
HCUP is based on data from community hospitals, defined as short-term, non-Federal, general and other hospitals, excluding hospital units of other institutions (e.g., prisons). HCUP data include OB-GYN, ENT, orthopedic, cancer, pediatric, public, and academic medical hospitals. They exclude long-term care, rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals, but these types of discharges are included if they are from community hospitals.

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

Costs and charges
Total hospital charges were converted to costs using HCUP cost-to-charge ratios based on hospital accounting reports from the Centers for Medicare and Medicaid Services (CMS).[10] Costs will tend to reflect the actual costs of production, while charges represent what the hospital billed for the case. For each hospital, a hospital-wide cost-to-charge ratio is used because detailed charges are not available across all HCUP States. Hospital charges reflect the amount the hospital charged for the entire hospital stay and does not include professional (physician) fees. All costs are reported to the nearest hundred.

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

– Medicare includes fee-for-service and managed care Medicare patients.
– Medicaid includes fee-for-service and managed care Medicaid patients. Patients covered by the State Children's Health Insurance Program (SCHIP) may be included here. Because most state data do not identify SCHIP patients specifically, it is not possible to present this information separately.

[9] U.S. Agency for Healthcare Research and Quality. HCUP CCS. Healthcare Cost and Utilization Project (HCUP). Rockville, MD. August 2006. http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

[10] Agency for Healthcare Research and Quality. HCUP Cost-to-Charge Ratio Files (CCR). Healthcare Cost and Utilization Project (HCUP). 2001–2004. Rockville, MD. http://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp.

– Private insurance includes Blue Cross, commercial carriers, and private HMOs and PPOs.
– Other includes Worker's Compensation, TRICARE/CHAMPUS, CHAMPVA, Title V, and other government and non-government programs.
– Uninsured includes an insurance status of "self-pay" and "no charge."

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

Hospital ownership/control
Hospital ownership/control was obtained from the American Hospital Association (AHA) Annual Survey of Hospitals and includes categories for government nonfederal (public), private not-for-profit (voluntary) and private investor-owned (proprietary). These types of hospitals tend to have different missions and different responses to government regulations and policies.

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

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

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

Arizona Department of Health Services
Arkansas Department of Health & Human Services
California Office of Statewide Health Planning & Development
Colorado Health & Hospital Association
Connecticut Integrated Health Information (Chime, Inc.)
Florida Agency for Health Care Administration
Georgia GHA: An Association of Hospitals & Health Systems
Hawaii Health Information Corporation
Illinois Health Care Cost Containment Council and Department of Public Health
Indiana Hospital & Health Association
Iowa Hospital Association
Kansas Hospital Association
Kentucky Cabinet for Health and Family Services
Maryland Health Services Cost Review Commission
Massachusetts Division of Health Care Finance and Policy
Michigan Health & Hospital Association
Minnesota Hospital Association
Missouri Hospital Industry Data Institute
Nebraska Hospital Association
Nevada Division of Health Care Financing and Policy, Department of Human Resources

New Hampshire Department of Health & Human Services
New Jersey Department of Health & Senior Services
New York State Department of Health
North Carolina Department of Health and Human Services
Ohio Hospital Association
Oklahoma Health Care Information Center for Health Statistics
Oregon Association of Hospitals and Health Systems
Rhode Island Department of Health
South Carolina State Budget & Control Board
South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
Texas Department of State Health Services
Utah Department of Health
Vermont Association of Hospitals and Health Systems
Virginia Health Information
Washington State Department of Health
West Virginia Health Care Authority
Wisconsin Department of Health & Family Services

About the NIS

The HCUP Nationwide Inpatient Sample (NIS) is a nationwide database of hospital inpatient stays. The NIS is nationally representative of all community hospitals (i.e., short-term, non-Federal, non-rehabilitation hospitals). The NIS is a sample of hospitals and includes all patients from each hospital, regardless of payer. It is drawn from a sampling frame that contains hospitals comprising about 90 percent of all discharges in the United States. The vast size of the NIS allows the study of topics at both the national and regional levels for specific subgroups of patients. In addition, NIS data are standardized across years to facilitate ease of use.

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, allowing for tables and graphs to be generated on national and regional statistics, as well as trends for community hospitals in the U.S. HCUPnet generates statistics using data from HCUP's Nationwide Inpatient Sample (NIS), the Kids' Inpatient Database (KID), the State Inpatient Databases (SID) and the State Emergency Department Databases (SEDD).

For More Information

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

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

For information on other hospitalizations in the U.S., download *HCUP Facts and Figures: Statistics on Hospital-based Care in the United States in 2005*, located at http://www.hcup-us.ahrq.gov/reports.jsp.

For a detailed description of HCUP, more information on the design of the NIS, and methods to calculate estimates, please refer to the following publications:

Steiner, C., Elixhauser, A., Schnaier, J. The Healthcare Cost and Utilization Project: An Overview. *Effective Clinical Practice* 5(3):143–51, 2002.

Design of the HCUP Nationwide Inpatient Sample, 2005. Online. June 13, 2007. U.S. Agency for Healthcare Research and Quality.
http://www.hcup-us.ahrq.gov/db/nation/nis/reports/NIS_2005_Design_Report.pdf

Houchens, R., Elixhauser, A. *Final Report on Calculating Nationwide Inpatient Sample (NIS) Variances, 2001*. HCUP Methods Series Report #2003-2. Online. June 2005 (revised June 6, 2005). U.S. Agency for Healthcare Research and Quality.
http://www.hcup-us.ahrq.gov/reports/CalculatingNISVariances200106092005.pdf

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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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Center for Delivery, Organization, and Markets
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Rockville, MD 20850

Table 1. Characteristics of male newborn stays involving circumcision compared to all male newborn stays, 2005

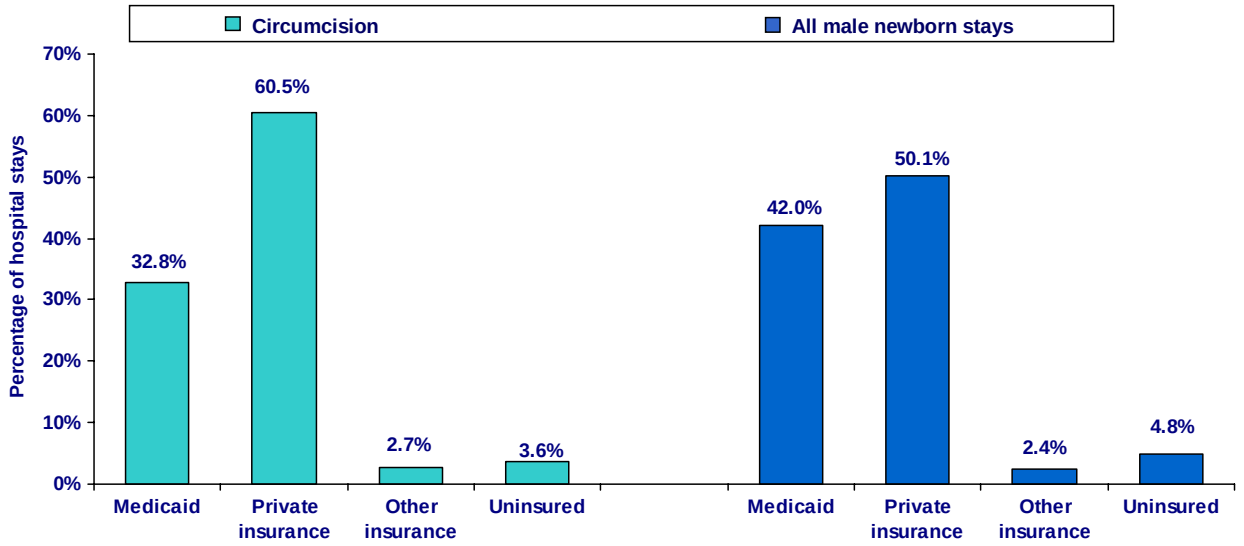
	All male newborn stays involving circumcision	All male newborn hospital stays
Number of hospital stays (percent of all male newborn hospital stays)	1,208,100 (55.9%)	2,160,400 (100.0%)
Mean length of stay, days	3.1 days	3.2 days
Expected Payer, percent of hospital stays*		
Medicaid	32.8%	42.0%
Private Insurance	60.5%	50.6%
Other Insurance	2.7%	2.4%
Uninsured	3.6%	4.8%
Type of hospital, percent of hospital stays		
Government	11.9%	14.8%
Private, not-for-profit	76.7%	70.2%
Private, for-profit	11.1%	15.0%

Note: Circumcisions are based on all-listed procedure code of 115 and male newborn stays are based on principal CCS diagnosis code of 218.

*Medicare is not reported as a separate category because it is not an expected payer for newborn hospital stays.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample (NIS), 2005.

Figure 1. Private insurance was the expected payer for a greater portion of circumcisions compared to its share of male newborn stays, 2005*

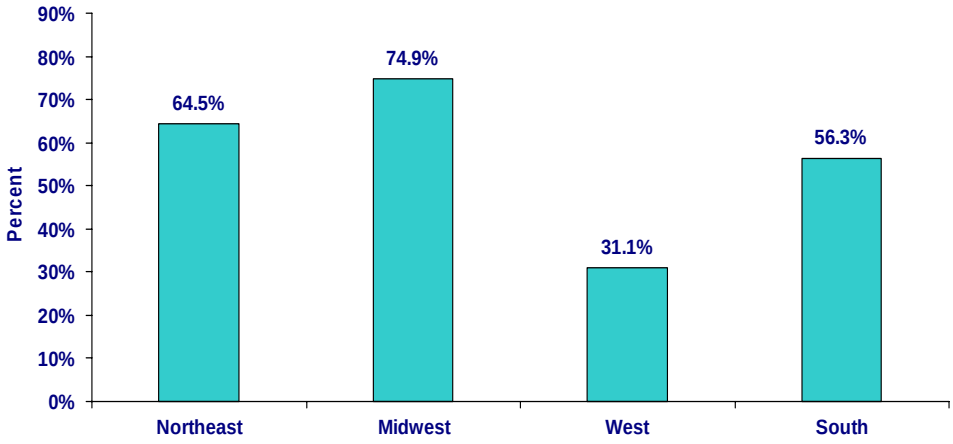


*Circumcisions are based on all-listed CCS procedure code of 115; male newborn stays are based on principal CCS diagnosis code of 218.

**Other insurance includes TRICARE/CHAMPUS, Title V, and other government programs.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2005.

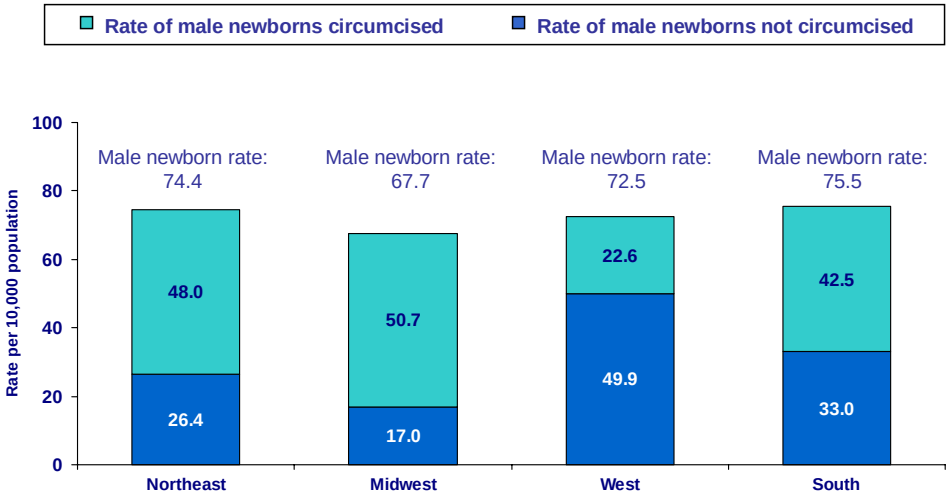
Figure 2. Percentage of newborns circumcised was more than two times greater in the Midwest and the Northeast compared to the West, 2005*



*Circumcisions are based on all-listed CCS procedure code of 115; male newborn stays are based on principal CCS diagnosis code of 218.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2005.

Figure 3. Circumcision rates were greater in the Midwest and the Northeast even though the male newborn rate did not vary substantially by region, 2005*



*Circumcisions are based on all-listed CCS procedure code of 115; male newborn stays are based on principal CCS diagnosis code of 218.
Note: The denominator for the rates is the total U.S. population. U.S. Census Bureau, Population Division, Census 2005.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2005.