Hospitalizations for Women with Circulatory Disease, 2003

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Introduction

Circulatory diseases—conditions including heart disease and stroke—are the most common reason for admission to the hospital for both men and women, excluding pregnancy and childbirth. These conditions are also the most costly reasons for hospitalization. Although heart disease and stroke are leading causes of death and disability among both women and men, there is continued misunderstanding of the impact of this condition on women.* Campaigns, such as Heart Truth by the National Heart, Lung, and Blood Institute, have been conducted recently to raise awareness of heart disease among women.†

This Statistical Brief presents data from the Healthcare Cost and Utilization Project (HCUP) on hospital stays for women with circulatory disease in 2003. All differences between estimates noted in the text are statistically significant at the 0.05 level or better.

Findings

In 2003, there were about 6.5 million hospital stays in the United States to treat diseases of the circulatory system, with a total hospital bill of $187 billion. About 48.3 percent of hospital stays for circulatory disease were for women, who accounted for 42.8 percent of the national bill for these conditions.

Specific circulatory diseases among women

Six specific conditions were responsible for more than 80 percent of circulatory diseases in U.S. hospitals. As shown in table 1, over the seven-year time period from 1997 to 2003, there were no significant shifts in the percentage of women treated in U.S. hospitals for these conditions. Although only 40 percent of hospital stays for myocardial infarction and coronary atherosclerosis were for women, more than half of stays for nonspecific chest pain, congestive heart failure, and stroke were for women. There was no difference between men and women in hospitalizations for cardiac dysrhythmias.

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**Age-related differences in hospitalization for specific circulatory disorders**

Most hospitalized patients over 65 are women. While the distribution of men and women in the hospital was roughly equal among 45 to 64 year olds (48.9 percent men and 50.9 percent women), this situation changed for older age groups. Specifically, for 65 to 84 year olds, 55 percent of all stays were for women and by age 85 and older, 68.0 percent of all stays were for women.

Table 2 shows that women accounted for less than half of hospital stays for most circulatory conditions in younger age groups, while older women, particularly those 85 years or older, accounted for the majority of hospital stays for each condition. Figure 1 illustrates these findings graphically. The pattern of fewer stays for women in younger age groups and more stays for women among older age groups is most pronounced in two conditions. For myocardial infarction, 28.4 percent of hospital stays for 45 to 64 year olds were for women, but 63.7 percent of stays for those 85 and older were for women. Similarly, for coronary atherosclerosis, 32.7 percent of stays were for women among 45 to 64 year olds; this figure increased to 60.7 percent of stays among those 85 and older.

On the other hand, men and women accounted for roughly the same number of hospital stays for stroke in the 18 to 44 age group. But beyond age 65, women were the majority. For 65 to 84 year olds, 54.5 percent of stroke inpatients were women while among the oldest age group, women constituted 69.7 percent of all stroke patients.

Only for nonspecific chest pain were women more numerous than men among patients younger than 65. About 54.4 percent of hospital stays for nonspecific chest pain were for women age 45 to 64. Women constituted 73.9 percent of nonspecific chest pain stays among patients 85 and older—higher than for any other condition examined.

**In-hospital mortality among men and women for specific circulatory disorders**

As shown in figure 2, mortality rates for myocardial infarction and stroke were substantially higher than for other circulatory disorders. For most conditions, there were no significant differences between men and women in in-hospital mortality. However, for acute myocardial infarction, one-third more women than men died in the hospital—9.3 percent of women died in the hospital compared with 6.2 percent of men.

**Data Source**

The estimates in this Statistical Brief are based upon data from the HCUP 2003 Nationwide Inpatient Sample (NIS).

**Definitions**

*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.

*Region*

– 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
Diagnoses, ICD-9-CM, and Clinical Classifications Software (CCS)

The principal diagnosis is that condition established after study to be chiefly responsible for the patient’s admission to the hospital. ICD-9-CM is the International Classification of Diseases, Ninth Revision, Clinical Modification, which assigns numeric codes to diagnoses. There are about 12,000 ICD-9-CM diagnosis codes. CCS categorizes ICD-9-CM diagnoses into 260 clinically meaningful categories. This "clinical grouper" makes it easier to quickly understand patterns of diagnoses and procedures.

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 it includes all patients from each hospital, regardless of payer. It is drawn from a sampling frame that contains hospitals comprising 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 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.

For more information about HCUP, visit [http://www.hcup-us.ahrq.gov/](http://www.hcup-us.ahrq.gov/).

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

- Arizona Department of Health 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 Department for Public Health
- Maine Health Data Organization
- 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
Oregon Office for Oregon Health Policy and Research and Oregon Association of Hospitals and Health Systems
Pennsylvania Health Care Cost Containment Council
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

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

References

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


Suggested Citation


*A R Q 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:

Irene Fraser, Ph.D., Director
Center for Delivery, Organization, and Markets
Agency for Healthcare Research and Quality
540 Gaither Road
Rockville, MD 20850*
Table 1. The most common specific reasons for hospitalization for conditions related to the circulatory system, 1997 and 2003

<table>
<thead>
<tr>
<th>Principal diagnosis</th>
<th>Number of hospital stays, overall, 2003</th>
<th>Percent women 1997</th>
<th>Percent women 2003</th>
<th>Significant difference between men and women, 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>All circulatory disease</td>
<td>6,460,800</td>
<td>47.8</td>
<td>48.3</td>
<td>ns</td>
</tr>
<tr>
<td>Myocardial infarction (heart attack)</td>
<td>750,700</td>
<td>39.5</td>
<td>40.9</td>
<td>*</td>
</tr>
<tr>
<td>Coronary atherosclerosis (hardening of the arteries of the heart)</td>
<td>1,256,500</td>
<td>40.9</td>
<td>39.1</td>
<td>*</td>
</tr>
<tr>
<td>Nonspecific chest pain</td>
<td>862,100</td>
<td>54.1</td>
<td>56.2</td>
<td>*</td>
</tr>
<tr>
<td>Cardiac dysrhythmias (irregular heartbeat)</td>
<td>708,000</td>
<td>51.9</td>
<td>51.4</td>
<td>ns</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>1,119,900</td>
<td>54.5</td>
<td>53.8</td>
<td>*</td>
</tr>
<tr>
<td>Acute cerebrovascular disease (stroke)</td>
<td>559,700</td>
<td>54.7</td>
<td>54.6</td>
<td>*</td>
</tr>
</tbody>
</table>

* Test of statistical significance in differences between men and women in 2003, p < 0.05.


Table 2. Hospital stays for the most common cardiovascular conditions, by age and sex, number of discharges (percent), 2003

<table>
<thead>
<tr>
<th>Condition</th>
<th>Age</th>
<th>Men</th>
<th>Women</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocardial infarction (heart attack)</td>
<td>18–44</td>
<td>32,444 (75.8)</td>
<td>10,328 (24.1)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>45–64</td>
<td>185,132 (71.5)</td>
<td>73,511 (28.4)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>65–84</td>
<td>189,701 (54.3)</td>
<td>159,695 (45.7)</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>85+</td>
<td>36,079 (36.3)</td>
<td>63,427 (63.7)</td>
<td>*</td>
</tr>
<tr>
<td>Coronary atherosclerosis (hardening of the arteries of the heart)</td>
<td>18–44</td>
<td>43,371 (68.6)</td>
<td>19,855 (31.4)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>45–64</td>
<td>348,247 (67.3)</td>
<td>168,950 (32.7)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>65–84</td>
<td>348,778 (56.8)</td>
<td>264,726 (43.1)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>85+</td>
<td>24,414 (39.3)</td>
<td>37,683 (60.7)</td>
<td>*</td>
</tr>
<tr>
<td>Nonspecific chest pain</td>
<td>18–44</td>
<td>90,774 (54.7)</td>
<td>74,858 (45.1)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>45–64</td>
<td>180,596 (45.4)</td>
<td>216,599 (54.4)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>65–84</td>
<td>95,766 (37.2)</td>
<td>161,746 (62.8)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>85+</td>
<td>10,134 (26.1)</td>
<td>28,639 (73.9)</td>
<td>*</td>
</tr>
<tr>
<td>Cardiac dysrhythmias (irregular heartbeat)</td>
<td>18–44</td>
<td>27,910 (54.7)</td>
<td>19,592 (45.1)</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>45–64</td>
<td>102,201 (59.6)</td>
<td>68,824 (40.2)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>65–84</td>
<td>180,442 (46.8)</td>
<td>204,810 (53.2)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>85+</td>
<td>31,212 (31.6)</td>
<td>67,477 (68.4)</td>
<td>*</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>18–44</td>
<td>24,768 (60.1)</td>
<td>16,423 (39.8)</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>45–64</td>
<td>132,578 (55.7)</td>
<td>105,393 (44.3)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>65–84</td>
<td>284,986 (46.9)</td>
<td>322,369 (53.1)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>85+</td>
<td>74,870 (32.3)</td>
<td>156,996 (67.7)</td>
<td>*</td>
</tr>
<tr>
<td>Acute cerebrovascular disease (stroke)</td>
<td>18–44</td>
<td>14,451 (50.7)</td>
<td>13,979 (49.1)</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>45–64</td>
<td>75,416 (55.1)</td>
<td>61,394 (44.8)</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>65–84</td>
<td>132,051 (45.5)</td>
<td>158,120 (54.5)</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>85+</td>
<td>30,761 (30.3)</td>
<td>70,860 (69.7)</td>
<td>*</td>
</tr>
</tbody>
</table>

* p < 0.05.

Figure 1. Hospital stays for the most frequent cardiovascular conditions, by age and sex, 2003

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

Figure 2. In-hospital mortality for the most frequent cardiovascular conditions, by sex, 2003

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