

STATISTICAL BRIEF #65

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Hospitalizations for Gastrointestinal Bleeding in 1998 and 2006

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Introduction

Gastrointestinal (GI) bleeding involves any bleeding in the gastrointestinal tract from the mouth, esophagus, stomach, small intestines, large intestines, to the anus. The degree of bleeding can range from microscopic levels detected only by lab tests, to noticeable amounts of bleeding that can be seen in the stool or vomit. However, any level of bleeding can lead to serious problems. Microscopic levels of bleeding can lead to anemia over time, and more massive amounts of bleeding can lead to death.¹ Upper GI bleeding involves bleeding from the mouth to the duodenum, the portion of the small intestine just beyond the stomach. Common causes of upper GI bleeding include ulcers, gastroesophageal reflux disease (GERD), use of aspirin and other non-steroidal anti-inflammatory oral medications, and alcoholism. Lower GI bleeding involves bleeding from the small intestines to the anus and can be caused by hemorrhoids, cancer, polyps, and colitis, among other causes.²

In this Statistical Brief we examine the trend in hospitalizations for GI bleeding between 1998 and 2006. The trend in GI bleeding may have been influenced by two countervailing factors. First, since obesity has been linked to gastroesophageal reflux disease (GERD),³ the recent rise in the obesity epidemic may have led to an increase in GERD hospitalizations and subsequent upper GI bleeding hospitalizations. In fact, a recent Healthcare Cost and Utilization Project Statistical Brief shows that between 1998 and 2005, hospitalizations with either a primary or secondary GERD diagnosis increased by 216 percent from 995,402 in 1998 to 3,141,965 in 2005.⁴ Second, in contrast, recent medical advances may have helped to decrease upper GI bleeding. For example,

¹ Gastrointestinal Bleeding. University of Maryland, Medical Center.

<http://www.umm.edu/ency/article/003133.htm>

² Bleeding in the Digestive Tract. The National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.

<http://digestive.niddk.nih.gov/ddiseases/pubs/bleeding/>

³ Brian C. Jacobson et al. Body Mass Index and Symptoms of Gastroesophageal Reflux in Women. *The New England Journal of Medicine*. 2006, 354:22, 2340–2348.

⁴ Zhao, Y., and Encinosa, W. *Gastroesophageal Reflux Disease (GERD) Hospitalizations in 1998 and 2005*. HCUP Statistical Brief #44. January, 2008.

Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb44.pdf>

Highlights

- From 1998 to 2006, the number of hospitalizations for upper GI bleeding per 100,000 people decreased 14 percent while hospitalizations for lower GI bleeding increased 8 percent for patients with either a principal or secondary GI bleed diagnosis. Thus, overall, the hospitalization rate per 100,000 people for GI bleeding declined 4 percent.
- From 1998 to 2006, GI bleed-related hospitalizations per 100,000 people decreased for the elderly with an 18.4 percent decline for patients aged 85 and older and a 7.8 percent decline for patients aged 65–84.
- On the other hand, GI bleed-related hospitalizations per 100,000 people among patients under 20 increased 8.6 percent.
- The largest decreases in the rate of hospital stays for GI bleeding between 1998 and 2006 were seen for upper GI ulcers (decreased 25 percent) and gastritis/duodenitis (decreased 31 percent). The largest increases were seen for hemorrhage associated with angiodysplasia, a relatively uncommon cause of GI hemorrhage (up 38 percent), and hemorrhage of the rectum and anus (up 41 percent).
- From 1998 to 2006, the number of inpatient deaths declined from 20,013 in 1998 to 16,344 in 2006 for the patients with a principal diagnosis of a GI bleed. Overall, the inpatient death rate declined 23 percent from 3.9 percent in 1998 to 3.0 percent in 2006.
- The GI bleed inpatient death rate declined 31 percent for patients aged 30–44, from 1.6 percent in 1998 to 1.1 percent in 2006.

infections such as *Helicobacter pylori* (*H. pylori*) have begun to be treated more aggressively since 1994, when the National Institutes of Health published an opinion stating that most recurrent duodenal and gastric ulcers were caused by *H. pylori* and recommended that antibiotics be included in the treatment regimen.⁵ In addition, GERD has been treated widely with medications, such as proton pump inhibitors, which may have helped to decrease bleeding. In 2004, 27 percent of elderly Medicare patients used GERD medications such as antacids and antisecretory agents, spending a total of \$5.6 billion.⁶ Moreover, the recent increase in use of cyclooxygenase-2 (COX-2) inhibitor pain medications may cause less bleeding than the older COX-1 inhibitor Nonsteroidal Anti-inflammatory Drugs (NSAID) medications. Thus, in the face of these two countervailing trends—obesity and GERD versus new medications—we examine the overall trend in upper and lower GI bleeding hospitalizations.

This Statistical Brief presents national estimates of GI bleeding hospitalizations from the Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), for 1998 and 2006. First, national estimates of GI bleeding discharges are provided for 1998 and 2006. Differences in trends for GI bleeding among age, sex, and payer are analyzed. Next, we investigate trends in the level of severity of GI bleeding in terms of in-hospital death rates. Finally, the trend between upper and lower GI bleeding is distinguished.

Findings

GI bleed discharges per 100,000 capita by site of bleeding and age

Table 1 estimates nationwide discharges for GI bleeding in 1998 and 2006 per 100,000 people (thus adjusting for the increase in the U.S. population). The first three columns in this table estimate hospitalizations with a principal diagnosis of GI bleeding. The last three columns in this table estimate hospitalizations with any principal or secondary diagnosis of GI bleeding.

For both principal diagnosis of GI bleeding and any diagnosis of GI bleeding, the hospitalization rate per 100,000 people declined nearly 4 percent overall from 1998 to 2006.

Discharges for upper GI bleeding per 100,000 people decreased 14 percent from 1998 to 2006 for both principal and all-listed diagnoses. Hospitalizations for a principal diagnosis of unspecified GI bleeding increased 11 percent while lower GI bleeding as a principal diagnosis increased 2 percent per 100,000 people from 1998 to 2006. For patients with any diagnosis of a GI bleed, lower GI bleeding hospitalizations per 100,000 people increased 8 percent from 1998 to 2006.

Hospital discharges with a diagnosis of 'blood in stool' were coded as unspecified GI bleeding. 'Blood in stool' could be associated with either upper GI bleeding or lower GI bleeding depending on the presence of bright red blood (generally lower GI) or digested/dark blood (melena, generally upper GI). There were 167,448 hospital stays for unspecified GI bleeding. About 23 percent of these discharges had a diagnosis of 'blood in stool' (not shown in tables).

In the first three columns of table 1, hospitalizations with a principal diagnosis of GI bleeding declined for all age groups except for children. Children and adolescents younger than 20 years old had a 1.5 percent increase in GI bleeding hospitalizations from 1998 to 2006.

As shown in the last three columns, hospitalizations with any GI bleeding diagnosis decreased for the elderly, with an 18.4 percent decrease for patients aged 85 and older and a 7.8 percent decrease for the patients aged 65–85. Among patients younger than 20 years old, the number of GI bleeding-related hospitalizations per 100,000 people increased 8.6 percent when all-listed diagnoses are considered.

⁵ NIH Consensus Statement Online Jan 7–9;12(1):1–23.

⁶ Stagnitti, M.N. *The Top Five Therapeutic Classes of Outpatient Prescription Drugs Ranked by Total Expense for the Medicare Population Age 65 and Older in the U.S. Civilian Noninstitutionalized Population, 2004*. Statistical Brief #153. December 2006. Agency for Healthcare Research and Quality, Rockville, MD, http://www.meps.ahrq.gov/mepsweb/data_files/publications/st153/stat153.pdf

GI Bleed Discharges by Bleeding Site, Age, Sex, and Payer

Table 2 provides estimates of hospital stays for GI bleeding as a principal diagnosis, by bleeding site, age, sex and payer in 1998 and 2006. The discharge numbers and the within-group distributions are provided.

As shown in table 2, in both 1998 and 2006, upper GI bleeding accounted for the largest number of cases, but decreased from 51 percent of all GI bleeds in 1998 to 45 percent in 2006. Lower GI bleeding accounted for 23 percent of all GI bleeding hospitalizations in 1998 and 24 percent in 2006. Unspecified GI bleeding accounted for the remaining 27 percent of GI bleeds in 1998 and 31 percent in 2006.

Across age groups, we focused on the percentage distribution in 2006. (Trends of discharges for GI bleeding from 1998 to 2006 across age groups are shown in table 1). In 2006, the elderly (65–84 years and 85 years or older) accounted for 65 percent of the hospitalizations for GI bleeding. Patients aged 45–64 accounted for 25 percent of the GI bleeding hospitalizations. Patients younger than 45 years accounted for only 10 percent of hospitalizations for GI bleeding. In terms of the gender distribution, 51 percent of GI bleeding hospitalizations occurred among women and 49 percent among men in both 1998 and 2006.

In 2006, Medicare patients accounted for 66 percent of hospitalizations for GI bleeding. Privately insured, Medicaid and Self-pay patients accounted for 19, 7, and 5 percent of hospitalizations for GI bleeding, respectively. The remaining 3.0 percent of discharges were paid by other payers, including government sources and charity. From 1998 to 2006, the largest increase in discharges for GI bleeding was for Medicaid, a 17 percent increase. Hospitalizations for GI bleeding among Self-pay and Medicare patients increased 10 and 9 percent respectively. However, privately insured GI bleeding hospitalizations decreased 8 percent from 1998 to 2006.

Underlying Conditions of GI Bleeding

Table 3 investigates the conditions that caused GI bleeding in 1998 and 2006. National estimates of hospitalizations for these specific conditions are provided for patients with a principal diagnosis of the condition or with any diagnosis of the condition. The percentage change columns show the decline and rise of hospital stays for these conditions from 1998 to 2006. The percentage changes, adjusting for the increase in the U.S. population, were shown in the table in addition to the unadjusted percentage changes in numbers of discharges.

The last four columns in table 3 provide estimates of hospital stays for patients with either a principal or secondary diagnosis of GI bleeding and thus represent the total burden of GI bleeding.

As shown previously in table 1, hospitalizations for upper GI bleeding decreased 14 percent from 1998 to 2006. Table 3 shows that among the conditions resulting in upper GI bleeding, hospital stays for hemorrhage due to gastritis and duodenitis declined 31 percent from 1998 to 2006 and hospital stays for upper GI ulcers that resulted in bleeding or perforation declined 25 percent from 1998 to 2006. However, GI bleeding from esophageal conditions increased 11 percent, angiodysplasia of the stomach and duodenum (a relatively uncommon cause of GI hemorrhage involving abnormalities of small blood vessels in the walls of the stomach and duodenum) increased 38 percent, and vomiting of blood increased 11 percent.

Overall, hospitalizations for lower GI bleeding increased 8 percent (table 1). Table 3 shows that hemorrhage associated with diverticulosis/diverticulitis of the colon and small intestine declined 7 percent and 8 percent from 1998 to 2006, respectively. On the other hand, rectal and anal hemorrhage increased 41 percent and perforation of the intestines increased 15 percent.

Among patients with a nonspecific diagnosis of GI bleeding, there was a slight (one percent) overall increase in hospital stays (table 1). Table 3 shows that hospital stays for patients with any diagnosis of blood in the stool declined 4 percent while other unspecified GI bleeding increased 4 percent.

Inpatient Death Rate for GI bleeding

Table 4 examines mortality during hospitalizations for GI bleeding in 1998 and 2006. Estimates in this table were based on hospital discharges with a principal diagnosis of GI bleeding.

From 1998 to 2006, the number of inpatient deaths for hospitalizations related to GI bleeding declined from 20,013 in 1998 to 16,344 in 2006. Overall, the inpatient death rate for GI bleeding declined 23 percent from 3.9 percent in 1998 to 3.0 percent in 2006.

The inpatient death rate declined for all three groups of the GI bleeding sites. The death rate in unspecified GI bleeding hospitalizations decreased 28 percent, while upper and lower GI bleeding hospitalizations decreased 23 percent and 17 percent, respectively.

The inpatient death rate for hospitalizations for GI bleeding declined among inpatients aged 30 and older (The death rate in age groups 0–19 and 20–29 for 1998 and 2006 are not shown in the table since the numbers are too small to provide reliable estimates). The age groups 30–44 and 65–84 are the age groups with the largest declines in the GI bleed hospitalization death rate. The GI bleed inpatient death rate declined 31 percent for patients aged 30–44 from 1.6 percent in 1998 to 1.1 percent in 2006. Patients aged 65–84 had a decline in the in-hospital death rate of 27 percent from 4.1 percent in 1998 to 3.0 percent in 2006.

The inpatient death rate for GI bleeding hospitalizations among both women and men decreased from 1998 to 2006, with a 25 percent decline for women and a 21 percent decrease for men.

Data Source

The estimates in this Statistical Brief are based upon data from the HCUP 1998 and 2006 Nationwide Inpatient Sample (NIS).

Supplemental sources included data from the U.S. Census Bureau, Population Division, Annual Estimates of the Population for the United States, Regions, and Divisions and U.S. Census Bureau, Current Population Reports.

Definitions

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

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

ICD-9-CM is the International Classification of Diseases, Ninth Revision, Clinical Modification, which assigns numeric codes to diagnoses. There are about 13,600 ICD-9-CM diagnosis codes.

Case Definition

The ICD-9-CM codes defining gastrointestinal bleeding include diagnosis codes in the following range:

Upper gastrointestinal bleeding.

Esophageal varices, ulcers, perforation, and other hemorrhage:

Esophageal varices with bleeding: 456.0

Esophageal varices in diseases classified elsewhere with bleeding: 456.20

Ulcer of esophagus with bleeding: 530.21

Perforation of esophagus: 530.4

Gastroesophageal laceration-hemorrhage syndrome: 530.7

Esophageal hemorrhage: 530.82

Gastric, duodenal, peptic, or gastrojejunal ulcers or perforation:

Acute gastric ulcer with hemorrhage without obstruction: 531.00
 Acute gastric ulcer with hemorrhage with obstruction: 531.01
 Acute gastric ulcer with perforation without obstruction: 531.10
 Acute gastric ulcer with perforation with obstruction: 531.11
 Acute gastric ulcer with hemorrhage and perforation without obstruction: 531.20
 Acute gastric ulcer with hemorrhage and perforation with obstruction: 531.21
 Acute duodenal ulcer with hemorrhage without obstruction: 532.00
 Acute duodenal ulcer with hemorrhage with obstruction: 532.01
 Acute duodenal ulcer with perforation without obstruction: 532.10
 Acute duodenal ulcer with perforation with obstruction: 532.11
 Acute duodenal ulcer with hemorrhage and perforation without obstruction: 532.20
 Acute duodenal ulcer with hemorrhage and perforation with obstruction: 532.21
 Acute peptic ulcer of unspecified site with hemorrhage without obstruction: 533.00
 Acute peptic ulcer of unspecified site with hemorrhage with obstruction: 533.01
 Acute peptic ulcer of unspecified site with perforation without obstruction: 533.10
 Acute peptic ulcer of unspecified site with perforation with obstruction: 533.11
 Acute peptic ulcer of unspecified site with hemorrhage and perforation without obstruction: 533.20
 Acute peptic ulcer of unspecified site with hemorrhage and perforation with obstruction: 533.21
 Acute gastrojejunal ulcer with hemorrhage without obstruction: 534.00
 Acute gastrojejunal ulcer with hemorrhage with obstruction: 534.01
 Acute gastrojejunal ulcer with perforation without obstruction: 534.10
 Acute gastrojejunal ulcer with perforation with obstruction: 534.11
 Acute gastrojejunal ulcer with hemorrhage and perforation without obstruction: 534.20
 Acute gastrojejunal ulcer with hemorrhage and perforation with obstruction: 534.21
 Chronic or unspecified gastric ulcer with hemorrhage without obstruction: 531.40
 Chronic or unspecified gastric ulcer with hemorrhage with obstruction: 531.41
 Chronic or unspecified gastric ulcer with perforation without obstruction: 531.50
 Chronic or unspecified gastric ulcer with perforation with obstruction: 531.51
 Chronic or unspecified gastric ulcer with hemorrhage and perforation without obstruction: 531.60
 Chronic or unspecified gastric ulcer with hemorrhage and perforation with obstruction: 531.61
 Chronic or unspecified duodenal ulcer with hemorrhage without obstruction: 532.40
 Chronic or unspecified duodenal ulcer with hemorrhage with obstruction: 532.41
 Chronic or unspecified duodenal ulcer with perforation without obstruction: 532.50
 Chronic or unspecified duodenal ulcer with perforation with obstruction: 532.51
 Chronic or unspecified duodenal ulcer with hemorrhage and perforation without obstruction: 532.60
 Chronic or unspecified duodenal ulcer with hemorrhage and perforation with obstruction: 532.61
 Chronic or unspecified peptic ulcer of unspecified site with hemorrhage without obstruction: 533.40
 Chronic or unspecified peptic ulcer of unspecified site with hemorrhage with obstruction: 533.41
 Chronic or unspecified peptic ulcer of unspecified site with perforation without obstruction: 533.50
 Chronic or unspecified peptic ulcer of unspecified site with perforation with obstruction: 533.51
 Chronic or unspecified peptic ulcer of unspecified site with hemorrhage and perforation without obstruction: 533.60
 Chronic or unspecified peptic ulcer of unspecified site with hemorrhage and perforation with obstruction: 533.61
 Chronic or unspecified gastrojejunal ulcer with hemorrhage without obstruction: 534.40
 Chronic or unspecified gastrojejunal ulcer with hemorrhage with obstruction: 534.41
 Chronic or unspecified gastrojejunal ulcer with perforation without obstruction: 534.50
 Chronic or unspecified gastrojejunal ulcer with perforation with obstruction: 534.51
 Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation without obstruction: 534.60
 Chronic or unspecified gastrojejunal ulcer with hemorrhage and perforation with obstruction: 534.61

Gastritis and duodentitis with hemorrhage:
 Acute gastritis with hemorrhage: 535.01
 Atrophic gastritis with hemorrhage: 535.11
 Other specified gastritis with hemorrhage: 535.41

Unspecified gastritis and gastroduodenitis with hemorrhage: 535.51
Duodenitis with hemorrhage: 535.61

Angiodysplasia of stomach and duodenum with hemorrhage: 537.83

Hematemesis: 578.0

Lower gastrointestinal bleeding.

Perforation of intestine: 569.83

Hemorrhage of rectum and anus: 569.3

Diverticulosis of colon with hemorrhage: 562.12

Diverticulitis of colon with hemorrhage: 562.13

Diverticulosis of small intestine with hemorrhage: 562.02

Diverticulitis of small intestine with hemorrhage: 562.03

Angiodysplasia of intestine with hemorrhage: 569.85

Dieulafoy lesion (hemorrhagic) of intestine: 569.86

Unspecified gastrointestinal bleeding.

Blood in stool (Hematochezia/Melena): 578.1

Hemorrhage of gastrointestinal tract unspecified: 578.9

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.

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 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.
- 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 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.

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
California Office of Statewide Health Planning and Development
Colorado Hospital Association
Connecticut Integrated Health Information (Chime, Inc.)
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
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 Department of Health and Human Services
New Hampshire Department of Health & Human Services
New Jersey Department of Health and Senior Services
New York State Department of Health
North Carolina Department of Health and Human Services
Ohio Hospital Association
Oklahoma State Department of Health
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 and 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.

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.

Introduction to the HCUP Nationwide Inpatient Sample, 2006. Online. May 14, 2008. U.S. Agency for Healthcare Research and Quality. <http://www.hcup-us.ahrq.gov/db/nation/nis/2006NISDocs.pdf>

Houchens RL, Elixhauser A. *Using the HCUP Nationwide Inpatient Sample to Estimate Trends. (Updated for 1988-2004)*. HCUP Methods Series Report #2006-05 Online. August 18, 2006. U.S. Agency for Healthcare Research and Quality. http://www.hcup-us.ahrq.gov/reports/2006_05_NISTrendsReport_1988-2004.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:

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: National Estimates of GI Bleed Discharges in 1998 and 2006

	1998	2006	Percent Change	1998	2006	Percent Change
	Principal Diagnosis			All Diagnoses		
<i>Total Number of Discharges Per 100,000 Capita</i>	189	182	-3.8%	390	375	-3.7%
<i>By Bleeding Site Per 100,000 Capita</i>						
UPPER	96	82	-14%	170	146	-14%
LOWER	43	44	2%	75	82	8%
UNSPECIFIED	50	56	11%	156	158	1%
<i>By Age Per 100,000 Capita</i>						
Under 20	7.4	7.5	1.5%	23	25	8.6%
20–29	25	23	-7.0%	55	59	6.1%
30–44	65	59	-8.3%	139	140	0.6%
45–64	187	181	-3.4%	399	396	-0.9%
65–84	854	806	-5.6%	1,731	1,596	-7.8%
85+	2,207	1,871	-15.2%	4,257	3,475	-18.4%

Note: Percent changes are based on unrounded numbers.

Percent changes are statistically different from zero at the 95% level.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1998 and 2006. Census population data in 1998 and 2006.

Table 2: National Estimates of GI Bleed Discharges

	1998	2006
	Principal Diagnosis	
Number of Discharges	511,909	545,452
By Bleeding Site		
UPPER	259,299 (51%)	246,297 (45%)
LOWER	116,576 (23%)	131,708 (24%)
UNSPECIFIED	136,035 (27%)	167,448 (31%)
By Age		
Under 20	5,727 (1%)	6,138 (1%)
20–29	9,048 (2%)	9,709 (2%)
30–44	41,724 (8%)	37,504 (7%)
45–64	106,974 (21%)	135,181 (25%)
65–84	259,026 (51%)	257,745 (47%)
>=85	89,390 (17%)	99,094 (18%)
By Sex		
Female	259,808 (51%)	276,663 (51%)
Male	252,060 (49%)	268,589 (49%)
By Payer		
Medicare	331,143 (65%)	361,645 (66%)
Medicaid	30,551 (6%)	35,670 (7%)
Private Insurance	114,821 (23%)	105,542 (19%)
Self-pay	22,971 (5%)	25,319 (5%)

Note: Percentages in parentheses are the within-group distribution.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1998 and 2006.

Table 3: Underlying Conditions of GI Bleeding in 1998 and 2006

	1998	2006	Discharge Percentage Change	Discharge Percent Change (Population Adjusted)	1998	2006	Discharge Percentage Change	Discharge Percentage Change (Population Adjusted)
	Principal Diagnosis				All Diagnoses			
Upper GI Bleeding								
Esophageal varices, ulcers, perforation, and other hemorrhage	23,007 (4%)	35,058 (6%)	52%	38%	84,382 (8%)	103,381 (9%)	23%	11%
Gastric, duodenal, peptic, or gastrojejunal ulcers or perforation	156,279 (31%)	131,225 (24%)	-16%	-24%	215,412 (20%)	179,032 (16%)	-17%	-25%
Gastritis and duodenitis with hemorrhage	54,310 (11%)	44,104 (8%)	-19%	-27%	118,333 (11%)	90,635 (8%)	-23%	-31%
Angiodysplasia of stomach and duodenum with hemorrhage	9,237 (2%)	14,679 (3%)	59%	43%	15,061 (1%)	23,032 (2%)	53%	38%
Hematemesis (vomiting of blood)	16,466 (3%)	21,230 (4%)	29%	16%	58,955 (6%)	72,655 (6%)	23%	11%
Lower GI Bleeding								
Perforation of intestine	9,117 (2%)	10,066 (2%)	10%	-0.3%	26,200 (2%)	33,246 (3%)	27%	15%
Hemorrhage of rectum and anus	12,084 (2%)	21,456 (4%)	78%	60%	52,974 (5%)	82,592 (7%)	56%	41%
Diverticulosis and diverticulitis of colon with hemorrhage	80,007 (16%)	83,927 (15%)	5%	-5%	101,000 (10%)	104,516 (9%)	3%	-7%
Diverticulosis and diverticulitis of small intestine with hemorrhage	15,369 (3%)	16,259 (3%)	6%	-5%	26,933 (3%)	27,433 (2%)	2%	-8%
Unspecified GI Bleeding								
Blood in stool (melena)	31,044 (6%)	38,284 (7%)	23%	11%	140,913 (13%)	149,957 (13%)	6%	-4%
Hemorrhage of GI tract, unspecified	104,991 (21%)	129,164 (24%)	23%	11%	283,440 (27%)	325,035 (29%)	15%	4%
All GI Bleeding	511,909 (100%)	545,452 (100%)	107%	-3.8%	1053631 (100%)	1124211 (100%)	107%	-3.7%

Note: Percentage changes are based on unrounded numbers. Percentage changes are statistically different from zero at the 95 percent level. Percentages in parentheses are the condition distributions over all GI bleed discharges. For All Diagnoses, multiple GI bleeding conditions could be listed during the same hospital stay.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1998 and 2006. Census population data in 1998 and 2006.

Table 4: Death Rate for GI Bleed Inpatients

	1998	2006	Percentage Change
	Principal Diagnosis		
Inpatient Death Number	20,013	16,344	-18%
Inpatient Death Number per 100,000 capita	7	5	-26%
Inpatient Death Rate	3.9%	3.0%	-23%
<i>By Bleeding Site</i>			
UPPER	3.5%	2.7%	-23%
LOWER	3.5%	2.9%	-17%
UNSPECIFIED	5.0%	3.6%	-28%
<i>By Sex</i>			
Female	4.0%	3.0%	-25%
Male	3.8%	3.0%	-21%
<i>By Age</i>			
Under 20	--	--	--
20–29	--	--	--
30–44	1.6%	1.1%	-31%
45–64	2.7%	2.2%	-19%
65–84	4.1%	3.0%	-27%
>=85	6.4%	5.2%	-19%

Note: Percent changes are based on unrounded numbers. The death rate in age groups 0–19 and 20–29 for 1998 and 2006 are too small to provide reliable estimates. Percent changes are statistically different from zero at the 95% level.

Source: AHRQ, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1998 and 2006. Census population data in 1998 and 2006.