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Advance Data From Vital and Health Statistics: Numbers 261–270

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Data in this report from health and demographic surveys present statistics by age and other variables on injury-related visits to hospital emergency departments; office visits for glaucoma and office visits to neurologists; the relationship between cigarette smoking and other unhealthy behaviors among our Nation's youth; 1993 summaries of the National Hospital Discharge Survey, National Hospital Ambulatory Medical Care Survey, and the National Ambulatory Medical Care Survey; urban and rural classification of national health providers; and characteristics of prepaid plan visits of office-based physicians. Estimates are based on the civilian noninstitutionalized population of the United States. These reports were originally published in 1995.

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Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Injury-Related Visits to Hospital Emergency Departments: United States, 1992

by Catharine W. Burt, Ed.D., Division of Health Care Statistics

During the 12-month period from January 1992 through December 1992, an estimated 89.8 million visits were made to hospital emergency departments. Of these, 34.0 million visits (37.8 percent) were injury related.

This report summarizes injury data from the 1992 National Hospital Ambulatory Medical Care Survey (NHAMCS), a national probability sample survey conducted by the Division of Health Care Statistics, Centers for Disease Control and Prevention. Statistics are presented on patient and visit characteristics of injury visits to hospital emergency departments in the United States. An earlier report presents a general overview of findings from the first year of the NHAMCS emergency data (1).

The National Center for Health Statistics inaugurated the NHAMCS in December 1991 to gather and disseminate information about the health care provided by hospital emergency and outpatient departments to the population of the United States. The survey, which is endorsed by the American Hospital Association, the Emergency Nurses Association, and the American College of Emergency Physicians, collected data on more than 36,000 visits to emergency departments

(ED) in non-Federal, short-stay and general hospitals.

Because the estimates presented in this report are based on a sample rather than on the entire universe of hospital ED visits, they are subject to sampling variability. The technical notes found at the end of this report include a brief overview of the sample design used in the 1992 NHAMCS and an explanation of sampling errors. A detailed description of the 1992 NHAMCS sample design and survey methodology has been published (2).

The ED Patient Record is used by hospitals participating in the NHAMCS to record information about patient visits. This form is reproduced in figure 1 and is intended to serve as a reference for readers as they review the survey findings presented in this document. For this report, a visit was considered to be injury related if "injury, first visit" or "injury, follow-up" was recorded in item 9 or if a cause of injury was provided in item 10. Data for item 9 were missing on less than 1.5 percent of the records; missing responses to this item were not imputed. Visits not specified as injury related in item 9 but had a cause of injury provided in item 10 accounted for 6.3 percent of the visits in this analysis.

Data highlights

- In 1992, 34 million ED visits (37.8 percent) were injury related.
- There were 13.5 injury visits to hospital emergency departments for every 100 persons in the population.
- Males had a significantly higher rate of injury-related visits than females had.
- Accidental falls and motor vehicle accidents were the leading causes of injuries resulting in visits to an emergency department. Together, they accounted for 41 percent of specified causes of injury. They represent 13 percent of all visits to an emergency department.
- Persons in the age groups under 15 years and 65 years and over had higher rates of visit for accidental falls compared with those 15–24 years, 25–44 years, and 45–64 years of age.
- "Open wound of head" was the most frequent principal diagnosis for injury-related ED visits.
- Wound care was performed at one-third of the injury-related visits.
- Medication was administered or prescribed at the majority of injury-related visits, with general analgesics most commonly mentioned.
- Over 9.2 billion dollars were spent on injury-related ED visits in 1992.



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3. DATE OF VISIT _____/_____/_____ Month Day Year	5. SEX 1 <input type="checkbox"/> Female 2 <input type="checkbox"/> Male	6. RACE 1 <input type="checkbox"/> White 2 <input type="checkbox"/> Black 3 <input type="checkbox"/> Asian/Pacific Islander 4 <input type="checkbox"/> American Indian/Eskimo/Aleut	7. ETHNICITY 1 <input type="checkbox"/> Hispanic 2 <input type="checkbox"/> Not Hispanic	8. EXPECTED SOURCE(S) OF PAYMENT <i>(Check all that apply)</i> 1 <input type="checkbox"/> Medicare 2 <input type="checkbox"/> Medicaid 3 <input type="checkbox"/> Other government 4 <input type="checkbox"/> Private/Commercial 5 <input type="checkbox"/> HMO/Other prepaid 6 <input type="checkbox"/> Patient paid 7 <input type="checkbox"/> No charge 8 <input type="checkbox"/> Other	9. MAJOR REASON FOR THIS VISIT <i>(Check one)</i> 1 <input type="checkbox"/> Injury, first visit 2 <input type="checkbox"/> Injury, follow-up 3 <input type="checkbox"/> Illness, first visit 4 <input type="checkbox"/> Illness, follow-up 5 <input type="checkbox"/> Other reason
4. DATE OF BIRTH _____/_____/_____ Month Day Year	10. CAUSE OF INJURY <i>(Complete if injury is marked in 9. Describe cause and place of injury.)</i> _____ _____ _____		11. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT <i>(In patient's own words)</i> a. Most important: _____ b. Other: _____ c. Other: _____		12. PHYSICIAN'S DIAGNOSES a. Principal diagnosis/problem associated with item 11a. _____ b. Other: _____ c. Other: _____
13. URGENCY OF THIS VISIT <i>(Check only one)</i> 1 <input type="checkbox"/> Urgent/Emergent 2 <input type="checkbox"/> Non-urgent	14. IS PROBLEM ALCOHOL-OR DRUG-RELATED? 1 <input type="checkbox"/> Neither 2 <input type="checkbox"/> Alcohol-related 3 <input type="checkbox"/> Drug-related 4 <input type="checkbox"/> Both		15. DIAGNOSTIC/SCREENING SERVICES <i>(Check all ordered or provided.)</i> 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Blood pressure check 3 <input type="checkbox"/> Urinalysis 4 <input type="checkbox"/> HIV serology 5 <input type="checkbox"/> Other blood test 6 <input type="checkbox"/> EKG 7 <input type="checkbox"/> Mental status exam 7 <input type="checkbox"/> Chest x-ray 9 <input type="checkbox"/> Extremity x-ray 10 <input type="checkbox"/> CT scan/MRI 11 <input type="checkbox"/> Other diagnostic imaging 12 <input type="checkbox"/> Other (Specify) _____ _____ _____		16. PROCEDURES <i>(Check all provided on this visit)</i> 1 <input type="checkbox"/> None 2 <input type="checkbox"/> Endotracheal intubation 3 <input type="checkbox"/> CPR 4 <input type="checkbox"/> IV fluids 5 <input type="checkbox"/> NG tube/gastric lavage 6 <input type="checkbox"/> Wound care 7 <input type="checkbox"/> Eye/ENT care 8 <input type="checkbox"/> Orthopedic care 9 <input type="checkbox"/> Bladder catheter 10 <input type="checkbox"/> Lumbar puncture 11 <input type="checkbox"/> Other(s) (Specify) _____ _____ _____
17. MEDICATION <i>(Record all new or continued medication ordered, administered, or provided at this visit. Use the same brand name or generic name entered on any Rx or medical record. Include immunizations and desensitizing agents.)</i> <input type="checkbox"/> None 1. _____ 2. _____ 3. _____ 4. _____ 5. _____			18. DISPOSITION THIS VISIT <i>(Check all that apply)</i> 1 <input type="checkbox"/> Return to ED PRN 2 <input type="checkbox"/> Return to ED - appointment 3 <input type="checkbox"/> Return to referring physician 4 <input type="checkbox"/> Refer to other physician/clinic 5 <input type="checkbox"/> Admit to hospital 6 <input type="checkbox"/> Transfer to other facility 7 <input type="checkbox"/> DOA/died in ED 8 <input type="checkbox"/> Left AMA 9 <input type="checkbox"/> No follow-up planned 10 <input type="checkbox"/> Other (Specify) _____		19. PROVIDERS SEEN THIS VISIT <i>(Check all that apply)</i> 1 <input type="checkbox"/> Resident/Intern 2 <input type="checkbox"/> Staff physician 3 <input type="checkbox"/> Other physician 4 <input type="checkbox"/> Physician assistant 5 <input type="checkbox"/> Nurse practitioner 6 <input type="checkbox"/> Registered nurse 7 <input type="checkbox"/> Licensed practical nurse 8 <input type="checkbox"/> Nurse's aide

Figure 1. National Hospital Ambulatory Medical Care Survey Emergency Department Patient Record

Patient characteristics

In 1992, an estimated 89.8 million visits were made to emergency departments of non-Federal, short-stay, and general hospitals in the United States—about 35.7 visits per 100 persons. Of these visits, 34.0 million (37.8 percent) were injury related. This results in an annual rate of 13.5 injury visits per 100 persons to a hospital emergency department. Injury-related

visits by patient's age, sex, and race are shown in table 1. Persons 15–24 years of age had the highest ED injury visit rate (20.2 visits per 100 persons) of the six age categories analyzed. Males had a higher rate of injury-related visits than females did, using both crude and age-adjusted rates, and they accounted for 56.4 percent of all ED injury visits. This differs from ED visits in general, where there was no significant difference in the visit rates

for males and females. Figure 2 shows the visit rates by age and sex. Males had significantly higher rates of injury-related visits compared with females for each age group under 45 years.

White persons made 82.9 percent of all injury-related ED visits, with black persons, Asian/Pacific Islanders, and American Indians/Eskimos/Aleuts accounting for 14.7 percent, 1.5 percent, and 0.8 percent, respectively. While the

Table 1. Number, percent distribution, percent that are injury related, and annual rate of injury-related emergency department visits, by selected patient and visit characteristics: United States, 1992

<i>Patient and visit characteristic</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent injury related¹</i>	<i>Number of visits per 100 persons per year²</i>
Patient characteristic				
All injury-related visits	33,950	100.0	37.8	13.5
Age:				
Under 15 years	8,714	25.7	38.7	15.4
15-24 years	6,937	20.4	46.7	20.2
25-44 years	11,277	33.2	41.4	13.9
45-64 years	3,959	11.7	31.6	8.2
65-74 years	1,458	4.3	25.1	7.9
75 years and over	1,605	4.7	23.4	13.0
Sex and age:				
Female	14,812	43.6	31.8	11.5
Under 15 years	3,567	10.5	35.0	12.9
15-24 years	2,670	7.9	33.2	15.4
25-44 years	4,714	13.9	33.6	11.4
45-64 years	1,796	5.3	27.1	7.1
65-74 years	940	2.8	28.1	9.2
75 years and over	1,124	3.3	25.9	14.6
Male	19,138	56.4	44.3	15.7
Under 15 years	5,147	15.2	41.8	17.8
15-24 years	4,267	12.6	62.8	25.0
25-44 years	6,564	19.3	49.7	16.4
45-64 years	2,163	6.4	36.8	9.3
65-74 years	518	1.5	21.1	6.3
75 years and over	480	1.4	19.0	10.4
Race and age:				
White	28,154	82.9	39.9	13.4
Under 15 years	7,227	21.3	42.8	16.1
15-24 years	5,823	17.2	50.2	21.2
25-44 years	8,970	26.4	43.6	13.2
45-64 years	3,331	9.8	32.9	8.0
65-74 years	1,283	3.8	25.6	7.8
75 years and over	1,520	4.5	24.2	13.6
Black	4,987	14.7	29.1	15.9
Under 15 years	1,311	3.9	25.5	14.6
15-24 years	972	2.9	33.8	19.1
25-44 years	1,974	5.8	33.8	20.2
45-64 years	524	1.5	24.8	10.5
65-74 years	138	0.4	20.1	8.4
75 years and over	67	0.2	13.3	6.9
All other races	808	2.4	37.3	7.7
Asian/Pacific Islander	529	1.5	37.8	...
American Indian/Eskimo/Aleut	279	0.8	35.3	...
Emergency department characteristic				
Geographic region:				
Northeast	6,346	20.1	37.4	13.6
Midwest	9,268	29.4	35.9	16.1
South	9,692	30.7	32.8	12.4
West	6,261	19.8	35.7	12.3

¹Percent of all emergency department visits in each category that are injury related.²Based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized population of the United States as of July 1, 1992.

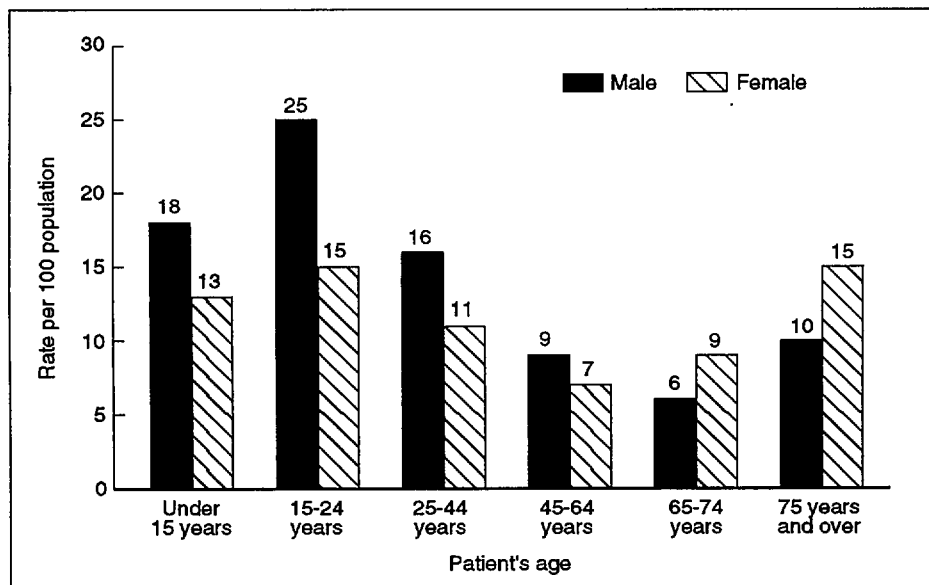


Figure 2. Annual rate of injury-related visits to emergency departments by patient's age and sex: United States, 1993

Table 2. Number, percent distribution, and annual rate of visit to hospital emergency departments by major reason for visit: United States, 1992

Visit characteristic	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year ¹
All ED visits ²	89,796	100.0	35.7
All injury-related visits	33,950	37.8	13.5
Injury—first visit	28,388	31.6	11.3
Injury—follow-up visit	3,178	3.5	1.3
Stated cause of injury ³	2,383	2.7	0.9
Illness—first visit	1,467	1.6	0.6
Illness—follow-up visit	129	0.1	0.1
Other reason ⁴	787	0.9	0.3
All other visits	55,846	62.2	22.2

¹Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.

²ED is emergency department.

³Includes visits not recorded as injury related but had a cause of injury recorded in item 10.

⁴Includes visits with blank or other major reasons recorded in item 9, yet had a cause of injury in item 10.

overall ED visit rate for black persons was significantly higher than for white persons, there was no significant difference between the ED injury visit rates for white and black persons, whether using crude or age-adjusted rates. However, black persons between the ages of 25 and 44 did have a significantly higher injury-related visit rate than did white persons in that age category.

Examining the percent of ED visits that were injury related for each population subgroup in table 1 shows that while overall one-third of the ED

visits were for injuries, almost two-thirds of the ED visits for males aged 15–24 years were for injuries. White persons in all age groups tended to have a higher proportion of ED visits for injuries compared with black persons.

Visit characteristics

Geographic region

There were slight regional differences in the utilization of ED services for injuries. The Midwest had a higher injury visit rate (16 visits per 100

persons) than the South and West (12 visits per 100 persons) did (table 1).

Prior-visit status

The majority of injury-related visits (87.9 percent) were first-time visits. While just 5 percent of illness-related visits to ED's were classified as follow-up visits, 9.7 percent of the injury-related visits were follow-up visits from a previous injury visit. The majority of ED visits (62.2 percent) were made for illness and 37.8 percent were made for injury (table 2).

Urgency of this visit

Almost half of the first-visit injury cases were classified as urgent by hospital staff. In comparison, only 15.8 percent of follow-up injury visits were classified as urgent. Urgency of visit was defined as those visits in which the patient requires immediate attention for an acute illness or injury that threatens life or function and where delay would be harmful to the patient. Hospitals made slightly different interpretations about how they determined urgency for the survey. In some cases, the determination of urgency was based upon the severity of the patient's symptom(s); in other cases, it was based upon the patient's diagnosis or the nature of the treatment provided.

Cause of injury

Up to three external causes of injury were coded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (3)*. Table 3 shows the number of annual injury-related ED visits for the first-listed cause of injury, using the major cause of injury categories specified by the ICD-9-CM (E-codes) along with any subclassification codes that had reliable estimates. E-code data were reported for 84 percent of the injury-related visits. In visits where the place of occurrence was listed as the first cause, the second cause was used for purposes of this analysis. Almost one-third of the injury-related visits

Table 3. Number and percent distribution of injury-related emergency department visits by cause of injury: United States, 1992

Cause of injury and E code ¹	Number of visits in thousands	Percent distribution
All injury-related visits	33,950	100.0
Other accidents E916–E928	10,368	30.5
Struck by falling object E916	639	1.9
Striking against or struck by objects or persons E917	3,018	8.9
Caught in or between objects E918	670	2.0
Machinery E919	488	1.4
Cutting or piercing instruments E920	3,077	9.1
Firearm missile E922	87	0.3
Hot substance, caustic or corrosive material E924	473	1.4
Overexertion E927	1,587	4.7
Other and unspecified causes E928	195	0.6
Accidental falls E880–E888	7,706	22.7
Fall from stairs E880	639	1.9
Fall from ladders E881	201	0.6
Fall from building E882	162	0.5
Fall into hole E883	171	0.5
Other fall from one level to another E884	987	2.9
Fall on same level E885	1,289	0.4
Other and unspecified falls E888	4,223	12.4
Motor vehicle accidents, traffic and non-traffic E810–E825	4,130	12.2
Other motor vehicle accident involving collision with another motor vehicle E812	403	1.2
Motor vehicle accident involving collision with other vehicle E813	62	0.2
Motor vehicle collision with pedestrian E814	178	0.5
Other motor vehicle accident involving collision on highway E815	101	0.3
Motor vehicle accident due to loss of control without collision on highway E816	114	0.3
Noncollision motor vehicle accident while boarding or alighting E817	73	0.2
Other noncollision motor vehicle accident E818	333	1.0
Unspecified motor vehicle accident E819	2,694	7.9
Other motor vehicle nontraffic accident E824	86	0.3
Homicide and injury purposely inflicted by other persons E960–E969	1,554	4.6
Fight, brawl, rape E960	588	1.7
Assault by cutting/piercing instrument E966	173	0.5
Unspecified assault E968	731	2.2
Accidents due to natural and environmental factors E900–E909	1,374	4.0
Venomous animals and plants E905	442	1.3
Other injury caused by animals E906	864	2.5
Accidents caused by submersion, suffocation, and foreign bodies E910–E915	1,040	3.1
Foreign body in eye E914	646	1.9
Foreign body in other orifice E915	324	1.0
Other road vehicle accidents E826–E829	638	1.9
Other road accident E826	547	1.6
Accident involving animal being ridden E828	73	0.2
Surgical and medical procedures as the cause of abnormal reaction of patient or later complication without mention of misadventure at the time of procedure E878–E879	404	1.2
Due to surgical/medical procedure E878	226	0.7
Due to other medical procedure E879	178	0.5
Drugs, medicinal and biological substances causing adverse effects in therapeutic use E930–E949	370	1.1
Due to unspecified drugs E947	118	0.3
Accidental poisoning by drugs, medicinal substances, and biologicals E850–E858	333	1.0
Poisoning by analgesics, antipyretics, and antirheumatics E850	90	0.3
Poisoning by other drugs E858	171	0.5
Accidental poisoning by other solid and liquid substances, gases, and vapors E860–E869	192	0.6
Suicide and self-inflicted injury E950–E959	160	0.5
Attempted suicide by solid or liquid substances E950	90	0.3
Accidents caused by fire and flames E890–E899	127	0.4
Unspecified fires E899	74	0.2
Other ²	202	0.6
Unknown ³	5,351	15.8

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (3)*.²Includes all other major E-code categories where the estimate was too low to be reliable.³Includes uncodable, illegible, and blank E-codes.

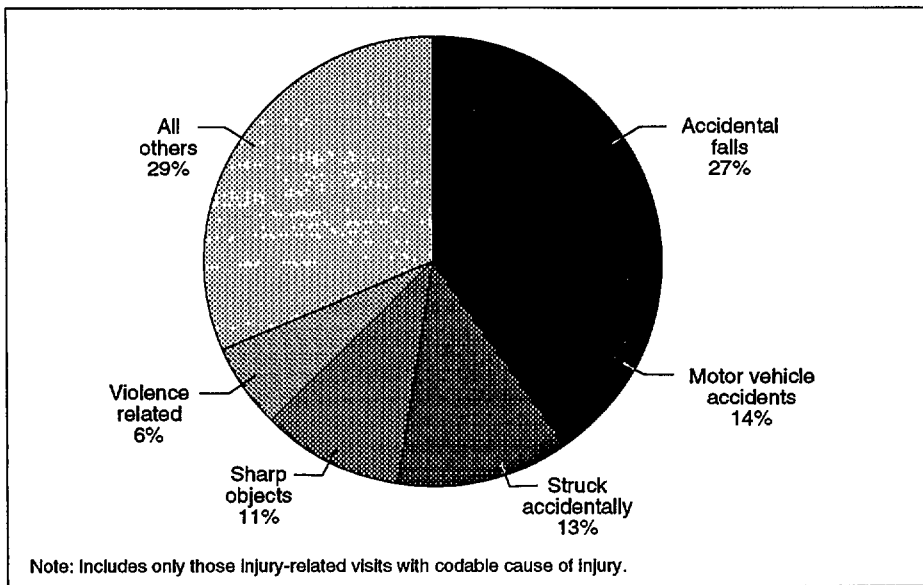


Figure 3. Percent distribution of leading causes of injury treated at emergency department visits: United States, 1992

were under the general category of "Other accidents" (E916–E928) (30.5 percent). "Accidental falls" (E880–E888) (22.7 percent) and "motor vehicle accidents" (E810–E825) (12.2 percent) were the second and third largest categories. Table 3 also presents the estimates for individual 3-digit codes within the larger categories. The codes listed were those for which the numbers of visits were large enough to provide a reliable estimate. The most frequently occurring 3-digit E-code was "unspecified fall" (E888) (12.4 percent of total). The category "other road vehicle accidents" (E826), which includes bicycle accidents, accounted for over half a million ED injury visits. "Unspecified assault" (E968), "fight, brawl, rape" (E960), and "assault by cutting or piercing instruments" (E966) have reliable estimates within the broader category of "homicide and injury purposely inflicted by other persons." Together these 3 codes accounted for 96 percent of the specific causes within the larger category.

Combining various E-code categories at and above the 3-digit level yields interesting results for summarization purposes. The major groupings in table 3 might be combined in a better way because some of the individual E-codes within "other accidents" have a greater frequency of

occurrence than do some of the major categories. Figure 3 presents the top five causes of injury if E-codes are categorized in a slightly different manner. Still, "accidental falls" and "motor vehicle accidents," as defined above, accounted for 41 percent of the injury-related visits with E-codes. However, combining "accidentally struck by persons or objects" (E916) with "struck by falling objects" (E917) places this category, labeled "struck accidentally" in figure 3, among the leading causes. "Accidents caused by cutting or piercing instruments or objects" (E920) alone accounted for 11 percent of the causes of injury-related visits. Combining "homicide and injury purposely inflicted" (E960–E969) with "suicide and self-inflicted injury" (E950–E959), as a measure of injury caused by violence, places it among the top five causes of injury in visits to emergency departments. These five causes accounted for over 70 percent of injury-related visits in 1992 where a cause was specified. It should be noted that although the E-code classification of injury causes includes the terms "homicide" and "suicide," very few visits with these causes ended in death in the emergency department. In fact, there were so few cases observed in the sample that reliable population estimates could not be made. The term

"intentional injury" (either by self or others) is perhaps a better label when using the classification for morbidity purposes.

Table 4 shows the annual visit rates and percent distribution of these top five injury causes by selected patient characteristics. The data show that persons in the age categories under 15 years and 65 years and over had higher rates of visits for accidental falls than the other age categories. Not surprisingly, persons between 15 and 24 years had the highest rate of visits for motor vehicle accidents. The rates of visits related to intentional injuries were highest among persons between 15 and 44 years. The data also show that black persons were more likely than white persons to make an ED visit because of violence (3:1) and motor vehicle accidents (5:3). On the other hand, white persons were more likely to make a visit due to accidental falls than were black persons (3:2). Figure 4 displays ED injury-related visit rates by race for the top five causes of injury.

Using the E-code data at the fourth digit level, the estimates may be combined to provide reliable estimates of certain categories of injuries. For example, table 5 shows the number of visits to ED's related to firearms, pedal cyclists, pedestrians, and motorcyclists.

Place of occurrence information was provided for less than 15 percent of the injury-related visits with appropriate causes of injury (e.g., E850–E869 or E880–E928) and is therefore not discussed in further detail. A separate item for place of occurrence was added to the 1993–94 Patient Record form to improve reporting of this information.

Alcohol- or drug-related problem

The proportion of visits that were alcohol related was higher for injury-related ED visits (3.6 percent) compared with noninjury related visits (2.3 percent). Nelson and Stussman (4) examined E-code data for different responses to item 14, "Is problem alcohol or drug related?", on the ED Patient Record and found that an injury was three times as likely to be classified as "homicide and injury purposely

Table 4. Number, annual rate, and percent distribution of injury-related emergency department visits by selected patient characteristics, according to the top five causes of injury: United States, 1992

Selected characteristic	Total	Cause of injury ¹					Violence	Other ²
		Accidental falls	Motor vehicle accidents	Struck accidentally	Cut by sharp objects			
Number of visits in thousands								
All injury-related visits	33,950	7,706	4,130	3,657	3,077	1,714	13,666	
Rate per 1,000 persons ³								
All injury-related visits	135.0	30.6	16.4	14.5	12.2	6.8	54.3	
Age								
Under 15 years	154.4	44.8	9.4	20.0	12.7	2.9	64.7	
15–24 years	201.7	27.4	36.1	26.0	19.3	15.9	77.0	
25–44 years	138.7	21.5	19.1	13.4	14.3	10.4	59.9	
45–64 years	81.6	20.5	10.2	7.6	8.1	2.9	32.4	
65 years and over	99.5	48.6	10.1	5.8	4.6	*0.6	29.7	
Sex								
Female	114.6	30.8	15.3	10.2	8.1	5.3	44.7	
Male	156.6	30.5	17.6	19.1	16.6	8.4	64.5	
Race								
White	134.4	32.2	15.2	14.8	12.1	5.3	54.7	
Black	158.5	24.7	25.5	15.5	13.5	17.7	61.6	
Other	76.8	17.5	13.1	5.9	10.6	*4.1	25.6	
Percent distribution								
All injury-related visits	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Age								
Under 15 years	25.7	32.8	12.8	30.8	23.2	9.5	26.7	
15–24 years	20.4	12.2	30.1	24.4	21.6	32.0	19.4	
25–44 years	33.2	22.7	37.6	29.9	37.8	49.3	35.7	
45–64 years	11.7	12.9	11.9	10.1	12.8	8.1	11.5	
65 years and over	9.0	19.4	7.5	4.9	4.6	*1.1	6.7	
Sex								
Female	43.6	51.7	48.0	36.1	34.1	40.3	42.3	
Male	56.4	48.3	52.0	63.9	65.9	59.7	57.7	
Race								
White	82.9	87.5	77.2	85.0	82.6	65.0	83.8	
Black	14.7	10.1	19.4	13.3	13.8	32.5	14.2	
Other	2.4	2.4	3.3	1.7	3.6	*2.5	2.0	

¹Based on the *International Classification of Diseases*, 9th Revision, Clinical Modification (3), Accidental falls (E880–E888); Motor vehicle accidents (E810–E825); Struck accidentally (E916–E917); Sharp objects (E920); Violence (E950–E969).

²Other includes visits for causes other than those listed in table plus uncodable causes and blank causes of injury.

³Based on U.S. Bureau of Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.

inflicted” in an alcohol- and drug-related visit in comparison with all other visits. Alcohol and drug use was determined by the hospital staff if the patient indicated or staff suspected that alcohol or drugs played a part in the injury, whether by the patient or another person. Patient’s use of alcohol or drugs was not necessarily verified by blood or urine tests. These data undoubtedly underestimate the role of alcohol and drugs in ED injury visits. Notwithstanding, visits classified as

related to alcohol and/or drugs had a greater likelihood (6:1) of being caused by violence than were visits not so classified.

Reason for visit

In item 11 of the ED Patient Record, the patient’s (or patient surrogate’s) “complaint(s), symptom(s), or other reason(s) for this visit in the patient’s own words” is recorded. Up to three reasons for visit are classified and

coded according to *A Reason for Visit Classification for Ambulatory Care* (RVC) (5). The principal reason is the problem, complaint, or reason listed in item 11a of the ED Patient Record.

The RVC is divided into the eight modules or groups of reasons displayed in table 6. Half of all injury-related visits were made for reasons classified in the injuries and adverse effects module. About 43.2 percent were in the symptoms module with the largest being symptoms referable to the

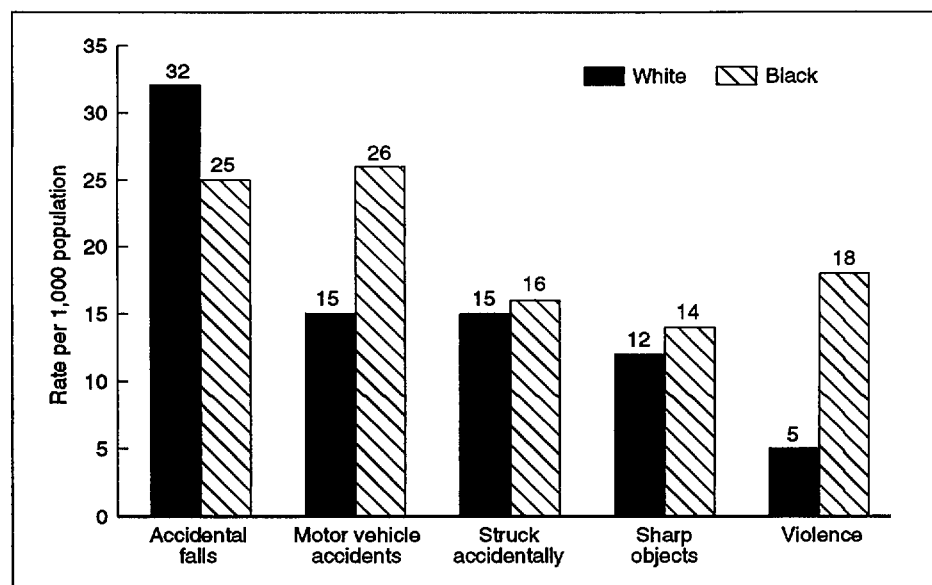


Figure 4. Annual rate of injury-related visits to emergency department by patient's race and leading causes of injury: United States, 1992

Table 5. Number, percent, and rate of visits to emergency departments by selected causes of injury: United States, 1992

Selected cause ¹	Number of visits in thousands	Percent of injury visits	Rate per 1,000 persons ²
Firearms	112	0.3	0.4
Pedal cyclists	321	0.9	1.3
Pedestrians	74	0.2	0.3
Motorcyclists	62	0.2	0.2

¹Based on the *International Classification of Diseases*, 9th Revision, Clinical Modification (3): Firearms (E922, E955.0-4, E965.0-4, E970, and E985.0-4); Pedal cyclists (E800-E807(.3), E810-E825(.6), E826-E829(.1)); Pedestrians in motor vehicle accidents (E810-E825(.7)); Motorcyclists (E810-E825(.2)).

²Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.

musculoskeletal system, accounting for 27.4 percent of the visits.

The 20 most frequently mentioned principal reasons for visit, representing 52.6 percent of all visits, are shown in table 7. It is important to note that the rank ordering presented in this and other tables may not always be reliable because near estimates may not differ from each other due to sampling variability. "Upper extremity lacerations" was the most frequently mentioned specific reason for visit (6.8 percent).

Principal diagnosis

The principal diagnosis or problem associated with the patient's most important reason for visit and any other significant current diagnoses are

recorded in item 12. Up to three diagnoses are coded and classified according to the ICD-9-CM (3). As expected, injury and poisoning (ICD-9-CM codes 800-999) accounted for 81 percent of all visits, and diseases of the musculoskeletal system (710-739) accounted for 5 percent. Supplementary classification diagnoses (those unrelated to injury or illness such as general examination) were made for 4 percent of the injury-related visits. The remaining 10 percent were distributed over all the other major categories.

Within the main ICD-9-CM injury category (N-codes), most of the principal diagnoses were "open wounds" (870-897) (24.1 percent), "sprains and strains of joints and adjacent muscles" (840-848) (14.4 percent), "contusions" (920-924)

(14.0 percent), and "fractures" (800-829) (11.2 percent). There were no sex differences for the principal diagnoses except that males tended to have a higher percent of their diagnoses as "open wounds" compared to females (28.2 and 18.7 percent respectively). There were few race differences in diagnoses although white persons tended to have higher rates of "fractures" and "crushing injuries" (925-929) than black persons had. There were 1.8 million visits that had an injury diagnosis (N-code) that were not indicated by hospital staff to be injury related or to have a cause of injury recorded in item 10 of the Patient Record. These visits are not included in this report as injury visits.

The type of N-code most frequently found for the principal diagnosis differed, as expected, by age of patient and cause of injury. Visits for patients 65 years and over were twice as likely to have a principal diagnosis of "fracture" compared to younger patients. Patients between the ages of 15 and 44 years were twice as likely to have a principal diagnosis of "sprains and strains" compared to other age groups. Children under 15 years were one and a half times more likely to have an open wound diagnosis than were older patients. Similarly, of the top five causes of injury visits to emergency departments, visits resulting from accidental falls were more likely to result in a "fracture" diagnosis than were other causes (2:1). Visits due to motor vehicle accidents more likely resulted in a principal diagnosis of "sprains and strains" compared to other causes (2:1). "Open wounds" was found most often for visits caused by cuts from sharp objects (86.7 percent). "Open wounds" was also the leading principal diagnosis for patients struck accidentally or who were victims of intentional injuries (about 28 percent each).

The 20 most frequently reported principal diagnoses are shown in table 8. These are categorized at the three-digit coding level of the ICD-9-CM and account for 55.5 percent of all injury-related ED visits. The most commonly recorded diagnosis was "open wound of head other than eye or ear" (873),

Table 6. Number and percent distribution of injury-related emergency department visits by patient's principal reason for visit: United States, 1992

<i>Principal reason for visit and RVC code¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>
All visits	33,950	100.0
Symptom module. S001-S999	14,663	43.2
General symptoms S001-S099	1,949	5.7
Symptoms referable to psychological/mental disorders S100-S199	197	0.6
Symptoms referable to the nervous system (excluding sense organs) S200-S259	1,016	3.0
Symptoms referable to the cardiovascular/lymphatic system S260-S299	42	0.1
Symptoms referable to the eyes and ears S300-S399	704	2.1
Symptoms referable to the respiratory system S400-S499	403	1.2
Symptoms referable to the digestive system S500-S639	606	1.8
Symptoms referable to the genitourinary system S640-S829	120	0.4
Symptoms referable to the skin, hair, and nails S830-S899	327	1.0
Symptoms referable to the musculoskeletal system S900-S999	9,298	27.4
Disease module D001-D999	84	0.2
Diagnostic/screening and preventive module X100-X599	151	0.4
Treatment module T100-T899	1,276	3.8
Injuries and adverse effects module J001-J999	17,061	50.3
Injury by type and/or location J001-J799	14,691	43.3
Injury, NOS J800-J899	1,965	5.8
Poisoning and adverse effects. J900-J999	405	1.2
Test results module R100-R700	*24	*0.1
Administrative module A100-A140	*24	*0.1
Other ² U990-U999	666	2.0

¹Based on *A Reason for Visit Classification for Ambulatory Care (RVC) (5)*.²Includes problems and complaints not elsewhere classified, entries of "None," blanks, and illegible entries.**Table 7. Number, percent distribution, and cumulative percent of injury-related emergency department visits by the 20 principal reasons for visit most frequently mentioned by patients: United States, 1992**

<i>Principal reason for visit and RVC code¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Cumulative percent</i>
All injury visits.	33,950	100.0	...
Upper extremity lacerations J225	2,321	6.8	6.8
Face lacerations J210	1,483	4.4	11.2
Hand and finger symptoms. S960	1,225	3.6	14.8
Head, neck, and face injury J505	1,065	3.1	18.0
Hand and finger injury. J570	993	2.9	20.9
Neck symptoms S900	933	2.7	23.6
Back symptoms. S905	913	2.7	26.3
Knee symptoms S925	880	2.6	28.9
Ankle symptoms S930	838	2.5	31.4
Foot and toe symptoms. S935	780	2.3	33.7
Head and neck lacerations. J205	728	2.1	35.8
Suture-insertion/removal T555	693	2.0	37.9
Accident NOS. J810	687	2.0	39.9
Shoulder symptoms S940	642	1.9	41.8
Arm symptoms S945	635	1.9	43.6
Pain, specified site not referable S055	621	1.8	45.5
Headache, pain in head S210	621	1.8	47.3
Leg symptoms S920	601	1.8	49.1
Low back symptoms. S910	601	1.8	50.8
Wrist symptoms S955	591	1.7	52.6
All other reasons	15,634	46.0	98.6
Blank	466	1.4	100.0

¹Based on *A Reason for Visit Classification for Ambulatory Care (RVC) (5)*.

Table 8. Number, percent distribution, and cumulative percent of injury-related emergency department visits by the 20 principal diagnoses most frequently rendered by hospital staff: United States, 1992

<i>Principal diagnosis and ICD-9-CM code¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Cumulative percent</i>
All visits	33,950	100.0	...
Open wound of head (other than eye or ear) 873	2,561	7.5	7.5
Contusion of lower limb and other unspecified sites 924	1,755	5.2	12.7
Open wound of finger 883	1,604	4.7	17.4
Sprains and strains of unspecified parts of back 847	1,597	4.7	22.1
Sprains and strains of ankle and foot 845	1,311	3.9	26.0
Open wound of other and unspecified sites, except limbs 879	1,257	3.7	29.7
Contusion of upper limb 923	1,255	3.7	33.4
Contusion of face, scalp, and neck except eyes 920	863	2.5	35.9
Contusion of trunk 922	744	2.2	38.1
Injury, other and unspecified 959	720	2.1	40.3
Open wound of hand, except finger 882	675	2.0	42.2
Intracranial injury of other and unspecified nature 854	564	1.7	43.9
Open wound of knee, leg (except thigh), and ankle 891	548	1.6	45.5
Encounter for other and unspecified procedures and aftercare V58	540	1.6	47.1
Fracture of radius and ulna 813	518	1.5	48.6
Sprains and strains of wrist and hand 842	518	1.5	50.2
Sprains and strains of knee and leg 844	509	1.5	51.7
Fracture of one or more phalanges of hand 816	482	1.4	53.1
Superficial injury of eye and adnexa 918	442	1.3	54.4
Unspecified disorders of the back 724	392	1.2	55.5
All other diagnoses	15,095	44.5	100.0

¹Based on the *International Classification of Diseases*, 9th Revision, Clinical Modification (ICD-9-CM) (3).

Table 9. Number and percent distribution of emergency department visits and percent of total visits that are injury related, by selected diagnostic and/or screening services: United States, 1992

<i>Diagnostic and/or screening service ordered or provided by physician¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent injury related²</i>
All injury-related visits	33,950	100.0	37.8
Blood pressure	25,202	74.2	38.1
Extremity x ray	12,091	35.6	89.3
Other diagnostic imaging	4,147	12.2	44.3
Other blood test	3,397	10.0	13.2
Chest x ray	2,657	7.8	17.6
Mental status exam	2,044	6.0	38.7
Urinalysis	2,063	6.1	15.1
Electrocardiogram (EKG)	1,495	4.4	12.6
CT scan/MRI ³	860	2.5	39.8
HIV serology ⁴	92	0.3	34.2
Other	4,584	13.5	25.9
None	3,819	11.2	35.2

¹Total may exceed total number of visits because more than one service may be reported per visit.

²Percent of all emergency department visits in each category that are injury related.

³CT is computerized tomography. MRI is magnetic resonance imaging.

⁴HIV is human immunodeficiency virus.

occurring at 7.5 percent of all injury visits.

Diagnostic and screening services

Statistics on various diagnostic and screening services ordered or provided by hospital staff during an injury-related ED visit are displayed in table 9.

Approximately 88.8 percent of all injury-related ED visits included one or more diagnostic or screening service. The most frequently mentioned diagnostic service was blood pressure check, recorded at 74.2 percent of visits. Extremity x ray (35.6 percent) was the second most frequent diagnostic procedure. About 9 of every 10 ED visits with extremity x rays were injury

related. Half of all injury-related visits for accidental falls involved an extremity x ray. Visits due to motor vehicle accidents or violence were more likely to have blood tests and urinalysis performed compared to injury visits for other causes.

Readers should note that for items 8, 15, 16, 18, and 19, hospital staff were asked to check all of the applicable

Table 10. Number and percent distribution of injury-related emergency department visits and percent that are injury related, by selected procedures: United States, 1992

<i>Procedure provided by hospital staff¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent injury related²</i>
All visits	33,950	100.0	37.8
Wound care	10,757	31.7	93.1
Orthopedic care	6,706	19.8	94.8
Intravenous fluids	2,075	6.1	16.0
Eye and/or ear, nose, and throat care	1,241	3.7	49.9
Bladder catheter	415	1.2	17.9
Nasogastric tube and/or gastric lavage	372	1.1	42.4
Endotracheal intubation	110	0.3	27.0
CPR ³	63	0.2	21.6
Other	2,470	7.3	36.9
None	13,296	39.2	25.7

¹Total may exceed total number of visits because more than one procedure may be reported per visit.²Percent of all emergency department visits in each category that are injury related.³CPR is cardiopulmonary resuscitation.**Table 11. Number and percent distribution of injury-related emergency department visits and percent that are injury related, by number of medications provided or prescribed: United States, 1992**

<i>Number of medications</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent injury related¹</i>
All injury-related visits	33,950	100.0	37.8
None	12,812	37.7	46.2
One	12,244	36.1	41.8
Two	5,691	16.8	30.2
Three	2,004	5.9	24.8
Four	723	2.1	22.4
Five or more	476	1.4	17.9

¹Percent of all emergency department visits in each category that are injury related.**Table 12. Number, percent distribution, cumulative percent, and therapeutic classification of the 15 drugs most frequently provided or prescribed in injury-related emergency department visits by entry name of drug: United States, 1992**

<i>Entry name of drug¹</i>	<i>Number of mentions in thousands</i>	<i>Percent distribution</i>	<i>Cumulative percent</i>	<i>Therapeutic classification²</i>
All drug mentions	34,910	100.0	...	...
Tetanus-related biologicals	3,311	9.5	9.5	Vaccines and antiserums
Tylenol	2,592	7.4	16.9	General analgesics
Motrin	2,216	6.3	23.3	General analgesics
Tylenol with codeine	1,790	5.1	28.4	General analgesics
Toradol	1,079	3.1	31.5	General analgesics
Demerol	1,017	2.9	34.4	General analgesics
Advil	873	2.5	36.9	General analgesics
Vicodin	794	2.3	39.2	General analgesics
Keflex	701	2.0	41.2	Cephalosporins
Darvocet-N	669	1.9	43.1	General analgesics
Lidocaine	635	1.8	44.9	Local anesthetics
Ibuprofen	627	1.8	46.7	General analgesics
Neosporin	607	1.7	48.4	Antibacterial agents
Flexeril	546	1.6	50.0	Muscle relaxants
Benadryl	507	1.5	51.5	Antihistamines
All other mentions	16,948	48.5	100.0	...

¹The entry made by the hospital staff on the prescription or other medical records. This may be a trade name, generic name, or desired therapeutic effect.²Therapeutic classification is based on the *National Drug Code Directory*, 1985 Edition (6).

Table 13. Number, percent distribution, and cumulative percent of drug mentions for the 15 most frequently used generic substances in injury-related emergency department visits: United States, 1992

<i>Generic substance</i>	<i>Number of mentions in thousands¹</i>	<i>Percent distribution</i>	<i>Cumulative percent</i>
All drug mentions	45,207	100.0	...
Acetaminophen	6,759	15.0	15.0
Ibuprofen	3,869	8.6	23.5
Tetanus toxoid	2,793	6.2	29.7
Codaine	2,008	4.4	34.1
Diphtheria toxoid	1,873	4.1	38.3
Lidocaine	1,230	2.7	41.0
Bacitracin	1,195	2.6	43.6
Meperidine	1,086	2.4	46.0
Ketorolac Tromethamine	1,079	2.4	48.4
Dihydrocodeine	924	2.0	50.5
Polymyxin B	848	1.9	52.3
Cephalexin	792	1.8	54.1
Naproxen	741	1.6	55.7
Neomycin	734	1.6	57.4
Propoxyphene	715	1.6	58.9
All other mentions	18,561	41.1	100.0

¹Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.

Table 14. Number and percent distribution of emergency department visits and percent of total visits that are injury related, by patient's expected source of payment: United States, 1992

<i>Expected source of payment¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent injury related²</i>
All visits	33,950	100.0	37.8
Private and/or commercial	13,869	40.9	42.9
Medicaid	5,072	14.9	24.9
Patient-paid	5,008	14.7	40.4
Medicare	3,129	9.2	23.0
HMO and/or other prepaid	2,701	8.0	41.1
Other government	1,759	5.2	43.6
No charge	213	0.6	27.4
Other	3,677	10.8	60.1
Unknown	484	1.4	32.2

¹Total may exceed total number of visits because more than one pay source may be coded for each visit.

²Percent of all emergency department visits in each category that are injury related.

Table 15. Number and percent distribution of emergency department visits and percent of total visits that are injury related, by type of provider seen: United States, 1992

<i>Type of provider¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent injury related²</i>
All visits	33,950	100.0	37.8
Staff physician	28,466	83.8	38.4
Registered nurse	28,350	83.5	38.0
Other physician	3,799	11.2	36.1
Resident and/or Intern	3,750	11.0	30.5
Nurse's aide	3,210	9.5	37.8
Licensed practical nurse	2,039	6.0	34.9
Physician assistant	864	2.5	49.2
Nurse practitioner	554	1.6	31.7

¹Total may exceed total number of visits because more than one provider may be reported per visit.

²Percent of all emergency department visits in each category that are injury related.

Table 16. Number, percent distribution of injury-related emergency department visits and percent that are injury related, by disposition of visit: United States, 1992

Disposition ¹	Number of visits in thousands	Percent distribution	Percent injury related ²
All visits	33,950	100.0	37.8
Refer to other physician/clinic	13,548	39.9	40.8
Return to emergency department as needed	8,928	26.3	39.8
Return to referring physician	6,957	20.5	36.6
Return to emergency department appointment	2,891	8.5	66.9
No followup planned	2,325	6.8	43.6
Admit to hospital	2,072	6.1	17.1
Transfer to other facility	340	1.0	31.1
Left against medical advice	316	0.9	30.2
Dead on arrival or died in emergency department	*51	*0.2	*18.2
Other	1,650	4.9	36.0

¹Total may exceed total number of visits because more than one disposition may be reported per visit.
²Percent of all emergency department visits in each category that are injury related.

categories for that item, with the result that multiple responses could be coded for each visit.

Procedures

Procedures were performed at 60.8 percent of injury-related ED visits (table 10), which was twice the percent for illness-related visits. The most frequently mentioned procedure was wound care, recorded at 31.7 percent of the visits. Orthopedic care was the procedure with the second highest frequency, occurring at one-fifth of the visits. Roughly 94 percent of all visits with wound care or orthopedic care were identified as related to an injury. Injury visits were less likely to require the use of intravenous fluids compared with illness-related visits (6.1 and 19.5 percent respectively).

Medication therapy

Medication was used at 62.3 percent of the injury-related visits. Hospital staff were instructed to record all new or continued medications ordered or provided at the visit, including prescription and nonprescription preparations, and immunizing and desensitizing agents. As many as five medications or drug mentions could be coded per visit. Visits with one or more drug mentions are termed "drug visits" for this report. Table 11 shows the frequency and percent of numbers of medications administered or prescribed during the visit. There was an average

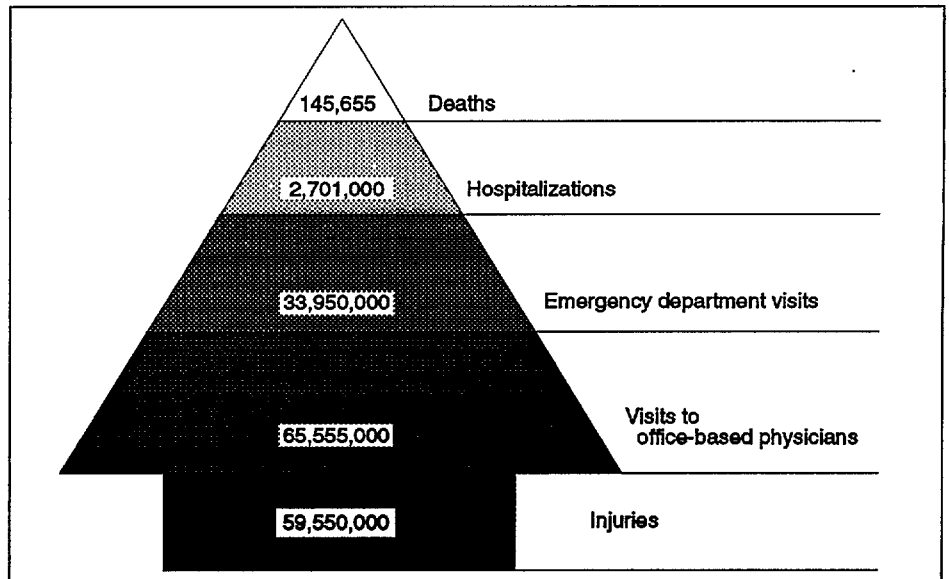


Figure 5. The Injury Pyramid: United States, 1992

of 1.1 drug mentions per injury-related ED visit or 1.8 mentions per injury-related drug visit. Only one drug mention was recorded at 36.1 percent of the injury-related visits. Medications were administered or prescribed less frequently for injury-related visits compared with illness-related visits (62.3 and 73.3 percent respectively).

The 15 most frequently mentioned medications in injury-related ED visits are presented in table 12 according to the name written on the ED Patient Record by the health care provider regardless of whether it is a brand name, generic name, or therapeutic effect. Tetanus-related biologicals, Tylenol, and Motrin were the three drugs or

immunizing agents most frequently provided or prescribed during injury-related ED visits. They accounted for about one-quarter of all drug mentions. Of the top drug names mentioned, most are classified as general analgesics. This is based on the therapeutic categories used in the *National Drug Code Directory*, 1985 edition (NDC) (6).

The 15 most frequently used generic substances for 1992 injury-related ED visits are shown in table 13. Drug products containing more than one ingredient (combination products) are included in the data for each ingredient. For example, acetaminophen with codeine is included in both the count for acetaminophen and the count for

codeine. Acetaminophen was the generic ingredient most frequently used in drugs ordered or provided by hospital staff, occurring in 15 percent of drug mentions. The top 15 generic substances accounted for almost 60 percent of all drug mentions. As expected, the top generic substances in injury-related visits are different from those for illness-related ED visits. Only acetaminophen, ibuprofen, and codeine appear on both lists of top 15 generic substances.

Expected source of payment

Expected source of payment for injury-related visits (table 14) was most often private/commercial insurance (40.9 percent). "Medicaid" and "patient-paid" each accounted for about 15 percent of the injury-related visits. "HMO/other prepaid" and "Medicare" were each mentioned at about 8 percent of injury-related ED visits. The patient-paid category includes the patient's contribution toward "co-payments" and "deductibles." While injuries made up 37.5 percent of the ED workload, they accounted for 60 percent of the visits whose payment source was categorized as "other" on the form. It is possible that visits paid by worker compensation were recorded under "other." A separate category for worker compensation was placed on the 1995-96 Patient Record to provide better information for future analyses. About 40 percent of the "Other Government," "HMO/Other prepaid," "Private commercial," and "Patient-paid" visits are injury related. Only about 24 percent of the Medicare and Medicaid visits are injury related.

Providers seen this visit

A registered nurse or staff physician was seen at 84 percent of injury-related ED visits (table 15). These percents are not significantly different from those corresponding to all ED visits.

Disposition of this visit

The most frequent disposition was to refer the patient to another physician or clinic (39.9 percent). Only 6.1 percent

of injury-related ED visits resulted in hospital admission (table 16). This is lower than the 18 percent of illness-related visits that ended in hospitalization. Roughly one-quarter of the injury-related visits had a disposition of "Return to ED as needed." This means no followup is planned, but if the condition worsens, the patient should return. Patients in injury-related visits were more likely to be scheduled for another ED appointment compared with illness-related visits (8.5 and 2.6 percent, respectively). Visits resulting from accidental falls and motor vehicle accidents were more likely to result in a hospital admission for the patient (9.2 and 11.2 percent respectively) than were injury visits for other causes (5.2 percent).

Impact of data

The NHAMCS data present a better picture of the impact of injuries on health care utilization. Figure 5 presents the injury pyramid indicating the national estimates from which relative rates of various health care events and death may be determined. The following rates are based on 59.6 million reported injuries that were obtained from the 1992 National Health Interview Survey (7). For every 100 injuries requiring medical attention or resulting in the loss of at least one-half day from usual activities, there were 110 physician office visits (8); 57 emergency department visits; 4.5 hospitalizations (9); and 0.24 deaths (10). Another way of comparing the relative impact of injuries is using the number of deaths as the base. For each death in 1992 resulting from an injury, there were 19 hospitalizations, 233 ED visits, and 450 physician office visits.

The impact of injuries comprises a significant portion of health care expenditures in the United States. The average cost of an ED visit in 1987 was \$166 (11). After adjusting for changes in the consumer price index between 1987 and 1992, the cost in 1992 dollars would be \$271. Based on this cost, the annual national cost of visits to ED's alone for injury-related purposes is over 9.2 billion dollars. The 1992 NHAMCS data revealed that the rates of injuries

resulting in ED visits are highest among males 15-24 years of age. Close to two-thirds of all ED visits for this population were for injuries. Continued reliance on injury prevention programs, especially targeted to this population, should help to reduce resources spent in health care, loss of productivity, loss of life, and loss of quality of life as a result of personal injuries. These data support the injury prevention programs that emphasize nonviolent solutions to conflicts, elimination of alcohol and drug abuse, and increased education in home, school, recreational, workplace, and transportation safety procedures and practices. The 1992 NHAMCS data provide the first national data on nonfatal causes of injury resulting in emergency medical care. Analysis of data by E-codes supports the prevention efforts that promote individual practices and behaviors that reduce a person's risk of injury, such as proper storage of firearms in the home, avoiding drinking and driving, using safety restraints while riding in an automobile, and wearing a helmet when riding a bicycle or motorcycle.

Additional reports that utilize the 1992 NHAMCS data will be published. In addition, a computer tape containing both the emergency and outpatient department data is available at a nominal cost from the National Technical Information Service. These data will also be available on CD-ROM and diskettes. Questions regarding this report may be directed to the Ambulatory Care Statistics Branch by calling (301) 436-7132.

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Technical notes

Source of data and sample design

The information presented in this report is based on data collected in the 1992 National Hospital Ambulatory Medical Care Survey (NHAMCS) from December 2, 1991 through December 27, 1992. The data were adjusted to produce annual estimates. The target universe of NHAMCS includes visits made in the United States by patients to emergency departments (ED's) and outpatient departments (OPD's) of non-Federal, short-stay, and general hospitals. Telephone contacts are excluded.

A four-stage probability sample design is used in NHAMCS. It involves samples of primary sampling units (PSU's), hospitals with ED's and/or OPD's within PSU's, ED's within hospitals and/or clinics within OPD's, and patient visits within ED's and/or clinics. For 1992, a sample of 524 non-Federal, short-stay, and general hospitals was selected from the SMG Hospital Market Database. Of this group, 474 hospitals were in scope, or eligible to participate in the survey. The hospital response rate for the NHAMCS during this period was 93 percent. Hospital staff were asked to complete a Patient Record (figure 1) for a systematic random sample of patient visits occurring during a randomly assigned 4-week reporting period. The number of Patient Record forms completed for ED's was 36,271.

Characteristics of the hospital, such as ownership and expected number of ED visits, were obtained from the hospital administrator during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Data processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Surveys Section, Research Triangle Park, North Carolina.

Sampling errors

The standard error is primarily a measure of the sampling variability that

occurs by chance when only a sample, rather than an entire universe, is surveyed. The standard error also reflects part of the measurement error, but does not measure any systematic biases in the data. The chances are 95 out of 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error.

The standard errors that were used in tests of significance for this report were calculated using generalized linear models for predicting the relative standard error for estimates based on the linear relationship between the actual standard error, as approximated using SUDAAN software, and the size of the estimate. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (12). The relative standard error (RSE) of an estimate is obtained by dividing the standard error by the estimate itself. The result is then expressed as a percent of the estimate.

Relative standard errors for emergency department estimates are shown in tables I and II. Standard errors for estimates in percents of visits and drug mentions are shown in tables III and IV. Multiplying the estimate by the RSE will provide an estimate of the standard error for the estimate.

Alternatively, relative standard errors for aggregate estimates may be calculated using the following general formula: where x is the aggregate of interest in thousands, and A and B are the appropriate coefficients from table V.

$$RSE(x) = \sqrt{A + \frac{B}{x}} \times 100$$

Similarly, relative standard errors for an estimate of a percent may be calculated using the following general formula:

$$RSE(x) = \sqrt{\frac{B \times (1-p)}{p \times x}} \times 100$$

where p is the percent of interest, expressed as a proportion, and x is the denominator of the percent in thousands,

Table I. Approximate relative standard errors for estimated numbers of emergency department visits: National Hospital Ambulatory Medical Care Survey, 1992

Estimated number of emergency department visits in thousands	Relative standard error in percent
10	71.1
20	50.4
50	32.0
58	29.7
100	22.8
200	16.4
500	10.8
1,000	8.1
2,000	6.4
5,000	5.1
10,000	4.6
20,000	4.3
50,000	4.1
100,000	4.0

NOTE: The smallest reliable estimate for visits to hospital emergency departments is 58,000. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: An aggregate estimate of 20 million visits has a relative standard error of 4.3 percent or a standard error of 860,000 visits (4.3 percent of 20 million).

Table II. Approximate relative standard errors for estimated numbers of drug mentions at emergency department visits: National Hospital Ambulatory Medical Care Survey, 1992

Estimated number of drug mentions in thousands	Relative standard error in percent
10	71.9
20	50.9
50	32.4
59	29.9
100	23.1
200	16.6
500	11.1
1,000	8.5
2,000	6.8
5,000	5.5
10,000	5.0
20,000	4.8
50,000	4.6
100,000	4.5
200,000	4.5

NOTE: The smallest reliable estimate of drug mentions at visits to hospital emergency departments is 59 million. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: An aggregate estimate of 10 million drug mentions has a relative standard error of 5.5 percent or a standard error of 550,000 drug mentions (5.5 percent of 10 million).

using the appropriate coefficients from table V.

Adjustments for hospital nonresponse

Estimates from NHAMCS data were adjusted to account for sample

Table III. Approximate standard errors of percents of estimated numbers of emergency department visits: National Hospital Ambulatory Medical Care Survey, 1992

Base of percent (visits in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
Standard error in percentage points							
10	7.1	15.5	21.3	28.4	32.5	34.8	35.5
20	5.0	10.9	15.1	20.1	23.0	24.6	25.1
50	3.2	6.9	9.5	12.7	14.6	15.6	15.9
100	2.2	4.9	6.7	9.0	10.3	11.0	11.2
200	1.6	3.5	4.8	6.4	7.3	7.8	7.9
500	1.0	2.2	3.0	4.0	4.6	5.0	5.0
1,000	0.7	1.5	2.1	2.8	3.3	3.5	3.6
2,000	0.5	1.1	1.5	2.0	2.3	2.5	2.5
5,000	0.3	0.7	1.0	1.3	1.5	1.6	1.6
10,000	0.2	0.5	0.7	0.9	1.0	1.1	1.1
20,000	0.2	0.3	0.5	0.6	0.7	0.8	0.8
50,000	0.1	0.2	0.3	0.4	0.5	0.5	0.5
100,000	0.1	0.2	0.2	0.3	0.3	0.3	0.4

Example of use of table: An estimate of 40 percent based on an aggregate estimate of 10 million visits has a standard error of 1.1 percent or a relative standard error of 2.8 percent (1.1 percent divided by 40 percent).

Table IV. Approximate standard errors of percents of estimated numbers of drug mentions at emergency department visits: National Hospital Ambulatory Medical Care Survey, 1992

Base of percent (drug mentions in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
Standard error in percentage points							
10	7.1	15.6	21.5	28.7	32.9	35.1	35.9
20	5.0	11.1	15.2	20.3	23.2	24.8	25.4
50	3.2	7.0	9.6	12.8	14.7	15.7	16.0
100	2.3	4.9	6.8	9.1	10.4	11.1	11.3
200	1.6	3.5	4.8	6.4	7.4	7.9	8.0
500	1.0	2.2	3.0	4.1	4.6	5.0	5.1
1,000	0.7	1.6	2.2	2.9	3.3	3.5	3.6
2,000	0.5	1.1	1.5	2.0	2.3	2.5	2.5
5,000	0.3	0.7	1.0	1.3	1.5	1.6	1.6
10,000	0.2	0.5	0.7	0.9	1.0	1.1	1.1
20,000	0.2	0.3	0.5	0.6	0.7	0.8	0.8
50,000	0.1	0.2	0.3	0.4	0.5	0.5	0.5
100,000	0.1	0.2	0.2	0.3	0.3	0.3	0.4
200,000	0.1	0.1	0.2	0.2	0.2	0.2	0.3

Example of use of table: An estimate of 50 percent based on an aggregate estimate of 10 million visits has a standard error of 1.1 percent or a relative standard error of 2.2 percent (1.1 percent divided by 50 percent).

hospitals that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding hospitals data from visits to similar hospitals. For this purpose, hospitals were judged similar if they were in the same region, ownership control group, and metropolitan statistical area control group.

Adjustments for ED and/or clinic nonresponse

Estimates from NHAMCS data were adjusted to account for ED's and

sample clinics that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding ED's or clinics' data from visits to similar ED's or clinics. For this purpose, ED's or clinics were judged similar if they were in the same ED or clinic group.

Test of significance and rounding

The determination of statistical inference is based on the *t*-test. The Bonferroni inequality was used to establish the critical value for

statistically significant differences (0.05 level of significance over all analyses performed on estimates in a table). Terms relating to differences such as "higher than" indicate that the difference is statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of ED visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not

necessarily agree with percents calculated from rounded data.

Definition of terms

Patient—An individual seeking personal health services who is not currently admitted to any health care institution on the premises.

Hospital—All hospitals with an average length of stay for all patients of less than 30 days (short-stay) or hospital whose specialty is general (medical or surgical) or children's general. Federal hospitals, hospital units of institutions, and hospitals with fewer than six beds staffed for patient use are excluded.

Emergency department—Hospital facility for the provision of unscheduled outpatient services to patients whose conditions require immediate care and which is staffed 24 hours a day. If an ED provided emergency services in different areas of the hospital, then all these areas were selected with certainty into the sample. Off-site emergency

Table V. Coefficients appropriate for determining relative standard error by type of estimate for hospital emergency departments: National Hospital Ambulatory Medical Care Survey, 1992

Type of estimate	Coefficient with use for estimates in thousands	
	A	B
Visits	0.00158	5.04053
Drug mentions	0.00235	5.14293

departments open less than 24 hours are included if staffed by the hospital's emergency department.

Visit—A direct personal exchange between a patient and a physician or other health care provider working under the physician's supervision, for the purpose of seeking care and receiving personal health services.

Urgent/emergent—A visit wherein the patient requires immediate attention for an acute illness or injury that threatens life or function and where delay would be harmful to the patient.

Non-urgent—A visit wherein the patient does not require attention immediately or within a few hours.

Injury-related visit—A visit during which hospital staff indicated that the visit was a result of any kind of accident or injury including but not limited to falls; lacerations; burns; intentional injuries; unintentional poisonings by drugs, medicinal substances, biologicals, gases, or vapors; adverse reaction to drugs; complications of surgical and medical procedures; and insect and animal bites.

Symbols

- Data not available
 - ... Category not applicable
 - Quantity zero
 - 0.0 Quantity more than zero but less than 0.05
 - Z Quantity more than zero but less than 500 where numbers are rounded to thousands
 - * Figure does not meet standard of reliability or precision
-

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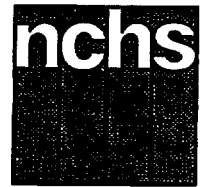
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Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Office Visits for Glaucoma: United States, 1991–92

by Susan M. Schappert, M.A., Division of Health Care Statistics

Introduction

During the 2-year period 1991–92, there were an estimated 17.5 million visits made to nonfederally employed, office-based physicians in the United States at which the principal, or first-listed, diagnosis was glaucoma—an average of 8.7 million visits per year. An additional 3.2 million visits over this same period included glaucoma as the second- or third-listed diagnosis.

This report presents national estimates pertaining to glaucoma-related office visits. These estimates are based upon data collected in the National Ambulatory Medical Care Survey (NAMCS), a national probability sample survey conducted by the Division of Health Care Statistics of the National Center for Health Statistics, Centers for Disease Control and Prevention. Statistics are presented on patient characteristics, physician practice characteristics, and visit characteristics for visits with a diagnosis of glaucoma.

The 1991 and 1992 National Ambulatory Medical Care Surveys shared identical survey instruments, definitions, and procedures. The resulting 2 years of data have been combined to provide more reliable estimates. In most cases, the estimates, percent distributions, and rates presented in this report reflect average annual estimates based on the combined 1991

and 1992 data. Figures representing 2-year totals rather than averages are noted as such in the text.

A copy of the Patient Record form, the survey instrument used by participating physicians to record information about their patients' office visits, is shown in figure 1. In item 11 of the form, physicians are requested to record a principal diagnosis (the diagnosis most closely associated with the patient's most important reason for visit) as well as any other current diagnoses. Up to three diagnoses are coded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (1) for each visit. This report focuses primarily on office visits at which the patient's principal diagnosis was recorded as glaucoma (ICD–9–CM codes 365.0–365.9). Such visits are termed "glaucoma visits" throughout this report.

It is necessary to keep in mind that the estimates presented in this report are based on a sample, rather than on the entire universe of office visits, and, as such, they are subject to sampling variability. The technical notes at the end of this report include a brief discussion of the sample design, sampling errors, and guidelines for use in evaluating the precision of NAMCS estimates. Additional reports

summarizing general findings from the 1991 and 1992 NAMCS have been published (2–4).

Patient characteristics

Visits with a principal diagnosis of glaucoma are described in terms of the patient's age, sex, and race, and geographic region of the visit in table 1. The overwhelming majority of glaucoma visits were made by persons 45 years of age and over (92.8 percent), and more than half (61.3 percent) were made by females. About nine-tenths (88.3 percent) of the visits were made by white persons.

The overall rate of office visits with a principal diagnosis of glaucoma was 3.5 visits per 100 persons per year. Visit rates rose with age, and significant increases were noted in each age group after the age of 44, that is, among persons 45–54 years, 55–64 years, 65–74 years, and 75 years and over. (Visit estimates for persons under the age of 25 years were not statistically reliable and have been omitted from the age analysis.) The visit rate was highest for persons 75 years of age and over—an average of 26.8 visits per 100 persons per year (figure 2).

The glaucoma visit rate was higher for females than for males overall, with



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Table 1. Number, percent distribution, and annual rate of office visits with a principal diagnosis of glaucoma by patient's age, sex, race, and geographic region of the visit, averaged over a 2-year period: United States, 1991–92

Selected patient and visit characteristics	Number of visits in thousands	Percent distribution	Visit rate per 100 persons ¹
All visits	8,742	100.0	3.5
Age			
Under 25 years	*58	*0.7	*0.1
25–44 years	564	6.5	0.7
45–54 years	720	8.2	2.7
55–64 years	1,315	15.0	6.2
65–74 years	2,831	32.4	15.4
75 years and over	3,254	37.2	26.8
Sex			
Female	5,359	61.3	4.2
Under 25 years	*45	*0.5	*0.1
25–44 years	*265	*3.0	*0.6
45–54 years	414	4.7	3.0
55–64 years	697	8.0	6.3
65–74 years	1,809	20.7	17.8
75 years and over	2,128	24.3	27.9
Male	3,382	38.7	2.8
Under 25 years	*12	*0.1	*0.0
25–44 years	*299	*3.4	*0.7
45–54 years	*306	*3.5	*1.6
55–64 years	618	7.1	6.2
65–74 years	1,021	11.7	12.4
75 years and over	1,126	12.9	24.8
Race			
White	7,721	88.3	3.7
Black	934	10.7	3.0
Other	*87	*1.0	*0.9
Geographic region			
Northeast	1,662	19.0	3.3
Midwest	1,724	19.7	2.8
South	3,644	41.7	4.3
West	1,711	19.6	2.1

¹Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population for July 1, 1991, and July 1, 1992, averaged over the 2-year period.

Comparative data from the National Hospital Ambulatory Medical Care Survey show that black persons accounted for about one-third (36.6 percent) of the glaucoma visits made to hospital outpatient departments (OPD's) in 1992 compared with white persons (61.3 percent). However, the estimated number of OPD visits with this principal diagnosis was only 278,000 overall, resulting in estimates that were too low to permit meaningful analysis by race and age.

Office visit rates did not differ statistically by geographic region of the country, except that the rate was higher in the South (4.3 visits per 100 persons) than in the West (2.1 visits per 100 persons).

Physician practice characteristics

About three-quarters (76.8 percent) of all glaucoma visits during 1991–92 were made to ophthalmologists. The remainder (23.2 percent) were made to other specialists, including physicians who described themselves as glaucoma specialists. (Because the American Medical Association's (AMA) master file, upon which the determination of physician specialty for NAMCS purposes is based, did not have a separate specialty code for physicians reporting themselves to the AMA as glaucoma specialists, such physicians were classified as "other" specialists

both in the AMA masterfile and in the NAMCS.)

Glaucoma was the second most frequently reported principal diagnosis at office visits to ophthalmologists after cataract, accounting for 15.3 percent of the visits to this specialty (table 2). It should be noted that the ranked order presented in this and other tables in this report may not always be reliable because some estimates may not be statistically different from other near estimates due to sampling variability.

Visit characteristics

Referral status and prior-visit status

Data pertaining to patient's referral status and prior-visit status are shown in table 3. Only 6.8 percent of all glaucoma visits during 1991–92 were the result of a referral by another physician. However, of all visits made by new patients (that is, patients who had not seen the physician previously), about two-thirds (68.1 percent) were recorded as referrals from another physician. In contrast, about one-third (31.6 percent) of all nonglaucoma visits made by new patients (that is, visits with a principal diagnosis other than glaucoma) were the result of referrals from other physicians.

The majority (89.1 percent) of glaucoma visits were made by patients who were making return visits to the physician for care of their condition. Ten percent of the visits were made by new patients. However, by age group, 17.3 percent of the visits by persons 45–64 years were made for new problems, compared with 9.0 percent of those 65 years of age and over. "New problem" visits include those made as a new patient or as a continuing patient.

The chronic nature of glaucoma is highlighted by the fact that among all return visits for the care of previously treated problems, glaucoma was the fifth most frequently recorded principal diagnosis related to illness or injury. Among visits with this principal diagnosis, there were 4.1 return visits recorded during the 2-year period for

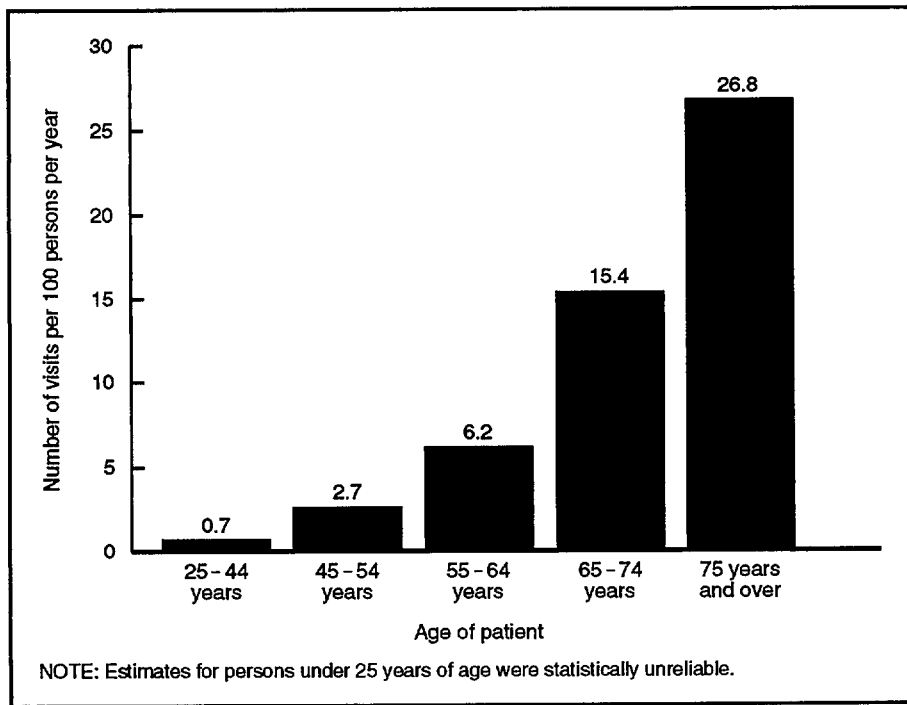


Figure 2. Annual rate of office visits with a principal diagnosis of glaucoma by age of patient, averaged over a 2-year period: United States, 1991-92

Table 2. Annual number and percent distribution of office visits to office-based ophthalmologists by the 10 most frequently mentioned principal diagnoses, averaged over a 2-year period: United States, 1991-92

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Percent distribution	Cumulative percent
All visits	43,884	100.0	...
Cataract366	7,196	16.4	16.4
Glaucoma365	6,715	15.3	31.7
Disorders of refraction and accommodation . .367	5,871	13.4	45.1
Organ or tissue replaced by other means . .V43	2,731	6.2	51.3
Other retinal disorders362	2,214	5.0	56.3
Other disorders of eye379	1,961	4.5	60.8
Special Investigations and examinations . . .V72	1,838	4.2	65.0
Disorders of conjunctiva372	1,605	3.7	68.7
Diabetes mellitus250	1,335	3.0	71.7
Inflammation of eyelids373	1,296	3.0	74.7
All other diagnoses	11,121	25.3	100.0

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (1)*.

every visit that was recorded as a new problem encounter (table 4).

Expected source of payment

In item 6 of the Patient Record form the physician is asked to list the expected source of payment for the visit; more than one source may be listed by the physician for each visit. Medicare was the expected source of payment at 61.9 percent of visits with a principal diagnosis of glaucoma, followed by private insurance

(36.6 percent), payment made by the patient (18.8 percent), Medicaid (8.0 percent), and HMO/prepaid plan (7.1 percent) (table 5).

Reason for visit

In item 10a of the Patient Record form, the physician is asked to record the patient's most important complaint, symptom, or other reason for the visit using the patient's (or patient surrogate's) own words. These responses have been classified and coded using the

Reason for Visit Classification for Ambulatory Care (RVC) (9). This classification is divided into eight modules, or groups of reasons. These are shown in table 6. The disease module accounted for the highest percent of visits with a first-listed diagnosis of glaucoma (46.9 percent), indicating that the majority of visits were made by persons whose condition had been diagnosed previously and was known to them. This finding corresponds with the high return visit ratio found among glaucoma visits that was discussed earlier. The disease module was followed by the diagnostic, screening, and preventive module (27.2 percent), the treatment module (9.7 percent), and the symptom module (9.4 percent).

Diagnostic and screening services

The majority (82.3 percent) of glaucoma visits included a visual acuity examination ordered or provided by the physician, compared with 4.8 percent of all other office visits (that is, visits that did not list glaucoma as a principal diagnosis). Overall, 82.5 million office visits included a visual acuity exam during 1991-92, and glaucoma was the most frequently recorded principal diagnosis at these visits, accounting for 17.4 percent of the total.

About one-third (32.7 percent) of glaucoma visits included one diagnostic service ordered or provided by the physician; about half (52.4 percent) included two diagnostic services. With the exception of visual acuity, none of the specified categories was reported at frequencies high enough to yield reliable estimates, and 54.2 percent of the visits reported "other" diagnostic services that were unspecified as to type. Data on diagnostic services are shown in table 7.

Principal diagnosis

Glaucoma is classified into more specific diagnoses according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (1)*. Of the total number of glaucoma visits made during 1991-92, the majority (63.2 percent) were coded as unspecified glaucoma (ICD-9-CM code 365.9); 20.7 percent were open-angle glaucoma (ICD-9-CM code 365.1); and 14.0 percent were coded as

Table 3. Number and percent distribution of office visits with a principal diagnosis of glaucoma by referral status and prior-visit status, averaged over a 2-year period: United States, 1991-92

Visit characteristic	Number of visits in thousands	Percent distribution
All visits	8,742	100.0
Referral status		
Patient was referred by another physician	597	6.8
Patient was not referred by another physician	8,144	93.2
Prior-visit status		
New patient	877	10.0
Old patient	7,864	90.0
New problem	*74	*0.9
Old problem	7,790	89.1

Table 4. Number and percent of office visits and return visit ratio for the 10 most frequent principal diagnoses among return visits for the care of previously treated problems, averaged over a 2-year period: United States, 1991-92

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Percent	Return visit ratio ²
All return visits	443,996	100.0	...
Essential hypertension 401	23,552	5.3	4.0
Normal pregnancy V22	20,655	4.7	2.4
Health supervision of infant or child. V20	12,643	2.8	2.1
Suppurative and unspecified otitis media. 382	12,067	2.7	0.9
Diabetes mellitus 250	11,810	2.7	3.4
General medical examination. V70	9,346	2.1	0.5
Acute upper respiratory infections 465	8,774	2.0	0.4
Glaucoma. 365	7,790	1.8	4.1
Asthma 493	7,678	1.7	2.4
Allergic rhinitis 477	6,737	1.5	1.9

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (1)*.
²Return visit ratio is the ratio of visits made by previously seen patients for the care of previously treated problems to visits made for the treatment of new problems. "New problem" visits may be made by either new or old patients.

Table 5. Number and percent distribution of office visits with a principal diagnosis of glaucoma by expected source(s) of payment, averaged over a 2-year period: United States, 1991-92

Expected source(s) of payment ¹	Number of visits in thousands	Percent distribution
All visits	8,742	100.0
Medicare	5,409	61.9
Private/commercial insurance	3,196	36.6
Patient-paid	1,641	18.8
Medicaid	700	8.0
HMO/other prepaid plan ²	624	7.1
Other government	412	4.7
Other	*249	*2.9
No charge	*105	*1.2
Unknown	*66	*0.8

¹Numbers may not add to totals because more than one expected source of payment may be reported per visit.
²HMO is health maintenance organization.

those 65-74 years and 4.4 percent of the diagnoses among those 75 years and over. For visits by all age groups, glaucoma was the 10th most frequently reported morbidity-related principal diagnosis and the 13th most frequent principal diagnosis during 1991-92. (Morbidity-related diagnoses are defined here as those classifiable to disease or injury, in contrast to nonillness- or noninjury-related visits. Examples of visits with diagnoses that are not morbidity related would include visits for routine pregnancy examination or general medical examination.)

Concomitant diagnoses

About one-quarter (26.4 percent) of glaucoma visits had a second diagnosis listed on the Patient Record form, and 9.1 percent included a third diagnosis. Cataract was the most frequently reported second- or third-listed diagnosis, showing up at about 12.5 percent of all visits with a principal diagnosis of glaucoma.

Physician's checklist of selected conditions

In item 13, which was added to the Patient Record form for 1991, physicians were requested to report if the patient had any of four medical conditions—hypertension, hypercholesterolemia, obesity, and depression—regardless of what was coded as the first, second, or third diagnosis in item 11 of the Patient Record form. At 11.2 percent of glaucoma visits, physicians checked hypertension as an accompanying condition. However, virtually none of the glaucoma visits during 1991-92 included a second or third diagnosis of hypertension in item 11 of the Patient Record form. This suggests that physicians tend to underreport existing chronic conditions as a diagnosis in item 11.

Therapeutic services

Therapeutic services ordered or provided at glaucoma visits are shown in tables 9-11. Medication therapy was the most frequently mentioned therapeutic service at glaucoma visits,

borderline glaucoma (ICD-9-CM code 365.0). Visits for glaucoma are described by specific diagnosis in table 8.

The prominence of glaucoma as a principal diagnosis among office visits

by older adults is underscored by the finding that for persons in the age groups 65-74 and 75 years and over, it was the third most frequently reported principal diagnosis, accounting for 3.2 percent of the diagnoses among

Table 6. Number and percent distribution of office visits with a principal diagnosis of glaucoma by patient's principal reason for visit, averaged over a 2-year period: United States, 1991-92

Principal reason for visit and RVC code ¹	Number of visits in thousands	Percent distribution
All visits	8,742	100.0
Symptom moduleS001-S999	825	9.4
Vision dysfunctionsS305	536	6.1
All other	*289	*3.3
Disease moduleD001-D999	4,096	46.9
GlaucomaD415	4,041	46.2
All other	*55	*0.7
Diagnostic, screening, and preventive moduleX100-X599	2,380	27.2
Other and unspecified diagnostic testsX370	1,972	22.6
Eye examinationX230	*315	*3.6
All other	*93	*1.0
Treatment moduleT100-T899	846	9.7
Progress visit, not otherwise specified.T800	542	6.2
All other	*304	*3.5
Test results moduleR100-R700	*84	*1.0
Other ²U990-U999	511	5.8

¹Based on "A Reason for Visit Classification for Ambulatory Care" (RVC) (9).

²Includes problems and complaints not elsewhere classified, entries of "none," blanks, and illegible entries. None of the visits had reasons coded in the injuries and adverse effects module (J001-J999) or the administrative module (A100-A140).

Table 7. Number and percent distribution of office visits with a principal diagnosis of glaucoma by diagnostic and screening services, averaged over a 2-year period: United States, 1991-92

Diagnostic and screening services ordered or performed at the visit ¹	Number of visits in thousands	Percent distribution
All visits	8,742	100.0
None	1,208	13.8
Visual acuity	7,196	82.3
Other ²	5,110	58.5
Number of diagnostic and screening services ordered or performed at the visit		
None	1,208	13.8
One	2,862	32.7
Two	4,579	52.4
Three or more	*93	*1.1

¹Numbers may not add to totals because more than one category may be reported per visit.

²54.2 percent of glaucoma visits included unspecified diagnostic services; none of the specific diagnostic services listed on the Patient Record form (with the exception of the visual acuity examination) were recorded at frequencies large enough to provide estimates that were statistically reliable.

Table 8. Number and percent distribution of office visits with a principal diagnosis of glaucoma by detailed diagnosis, averaged over a 2-year period: United States, 1991-92

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Percent distribution
All visits	8,742	100.0
Borderline glaucoma365.0	1,222	14.0
Preglaucoma, unspecified365.00	792	9.1
Other borderline glaucoma365.01,365.02	*39	*0.5
Ocular hypertension365.04	391	4.5
Open-angle glaucoma365.1	1,809	20.7
Open-angle glaucoma, unspecified365.10	808	9.2
Primary open-angle glaucoma365.11	932	10.7
Other open-angle glaucoma365.12,365.13	*69	*0.8
Primary angle-closure glaucoma365.2	*186	*2.1
Unspecified glaucoma365.9	5,525	63.2

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) (1).

recorded at 79.6 percent of visits (table 9). This is significantly higher than the 63.3 percent of all other visits at which medication therapy was mentioned. Nonmedication therapy was mentioned at 12.4 percent of glaucoma visits, with counseling (4.9 percent), corrective lenses (4.4 percent), and other therapy (5.4 percent) recorded by the physician as either ordered or provided at the visit.

As used in the NAMCS, the term "drug" is interchangeable with the term "medication" and includes all new or continued medications ordered or provided at the visit, including both prescription and nonprescription preparations, immunizing agents, and desensitizing agents. The term "drug mention" refers to each mention of medication on the Patient Record form. Because doctors can record more than one drug per visit, the total number of drug mentions will generally be higher than the number of visits. The term "drug visit" refers to any visit in which at least one drug is ordered or provided by the physician. An earlier report is available that describes the method and instruments used in collecting and processing NAMCS drug data (10).

There were about 27.7 million drug mentions at glaucoma visits during 1991-92, an average of 13.8 million mentions per year. This yields an average of 2.0 drug mentions per drug visit or 1.6 drugs ordered or provided per visit overall.

About one-third of glaucoma visits included a single medication (33.6 percent), while approximately one-fifth (21.6 percent) listed two medications and one-quarter (24.4 percent) listed three or more medications.

As expected, most of the drugs prescribed were classified as ophthalmic drugs, specifically agents used to treat glaucoma (59.6 percent) and ocular anti-infective and anti-inflammatory agents (9.6 percent). Drug mentions at glaucoma visits are listed in table 10 by therapeutic classification, based on the *National Drug Code Directory, 1985 edition* (11).

The majority of drugs mentioned at glaucoma visits were single-ingredient preparations (91.3 percent), were prescribed as trade names rather than generics (71.4 percent), and were

Table 9. Number and percent distribution of office visits with a principal diagnosis of glaucoma by therapeutic services, averaged over a 2-year period: United States, 1991-92

Therapeutic services ordered or provided at the visit ¹	Number of visits in thousands	Percent distribution
All visits	8,742	100.0
Medication therapy		
New or continuing medication	6,962	79.6
Visits without mention of medication	1,779	20.4
Number of new or continued medications		
None	1,779	20.4
One	2,938	33.6
Two	1,889	21.6
Three	1,589	18.2
Four or more	545	6.2
Nonmedication therapy		
None	7,659	87.6
Other counseling ²	425	4.9
Corrective lenses	386	4.4
Other therapy	470	5.4
Ambulatory surgery		
None	8,125	92.9
One or more procedures	616	7.1

¹Numbers may not add to totals because more than one category may be reported per visit.

²Counseling other than the specified categories of diet, exercise, weight reduction, alcohol abuse, smoking cessation, and family/social.

Table 10. Number and percent distribution of drug mentions by therapeutic classification for office visits with a principal diagnosis of glaucoma, averaged over a 2-year period: United States, 1991-92

Therapeutic classification ¹	Number of drug mentions in thousands	Percent distribution
All drug mentions	13,835	100.0
Ophthalmic drugs	10,930	79.0
Agents used to treat glaucoma	8,241	59.6
Ocular anti-infective and anti-inflammatory agents	1,330	9.6
Miscellaneous ophthalmic preparations	1,199	8.7
Mydriatics and cycloplegics	*160	*1.2
Cardiovascular-renal drugs	1,138	8.2
Diuretics	807	5.8
Other	*330	*2.4
Other ²	1,767	12.8
Unclassified/miscellaneous	*511	*3.7

¹Therapeutic class is based on the standard drug classification used in the *National Drug Code Directory, 1985 Edition* (11).

²Includes the following classifications: anesthetic drugs, antimicrobial agents, psychopharmacologic drugs, gastrointestinal agents, metabolic and nutrient agents, hormones and agents affecting hormonal mechanisms, immunologic agents, skin/mucous membrane, oncology, drugs used for pain relief, and respiratory tract drugs.

the current visit. Physicians were asked to record up to two ambulatory surgical procedures per visit. These were coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification, Volume 3 (ICD-9-CM) (1)*.

Ambulatory surgery was recorded at an estimated 1.2 million glaucoma visits over the 2-year period (an average of 616,000 visits per year), and a total of 1.3 million procedures were scheduled or performed. The proportion of glaucoma visits with mention of ambulatory surgery (7.1 percent) is not significantly different than the 6.0 percent of visits with principal diagnoses other than glaucoma that included ambulatory surgery in 1991-92.

While no specific ambulatory procedures were recorded at frequencies large enough to obtain reliable estimates, all of the surgical procedures mentioned were related to the eye and included operations on the iris, ciliary body, sclera, and anterior chamber; iridotomy and simple iridectomy; operations on the lens; operations on the retina, choroid, vitreous, and posterior chamber; and operations on the orbit and eyeball (ICD-9-CM, Volume 3, codes 12-14, 16).

Disposition of visit

Nine of ten glaucoma visits (93.3 percent) resulted in a scheduled return visit. In contrast, 62.0 percent of all other visits included a scheduled return visit. The predominance of this type of disposition among glaucoma visits is mirrored in the correspondingly high return visit ratio that was discussed previously. Data on disposition of visit are shown in table 12.

Duration of visit

The mean duration of physician-patient contact for glaucoma visits was 21.7 minutes, compared with 17.3 minutes for office visits in general. Mean duration does not include visits in which no face-to-face contact with the physician occurred. Physician-patient contact only includes the time spent in actual face-to-face contact between physician and patient. Data on duration

available only by prescription (92.8 percent).

Drug mentions at glaucoma visits are displayed in table 11 according to their most frequently occurring generic ingredients. Timolol was the generic ingredient that appeared most frequently, showing up in 21.4 percent of all glaucoma drug mentions. Pilocarpine

was also prominent, occurring in 16.6 percent of drug mentions at glaucoma visits.

Ambulatory surgical procedures

The 1991 NAMCS added a new item pertaining to whether ambulatory surgery was scheduled or performed at

Table 11. Number, percent distribution, and therapeutic classification for the five most frequently occurring generic ingredients in drug mentions at office visits with a principal diagnosis of glaucoma, averaged over a 2-year period: United States, 1991–92

Generic Ingredient ¹	Number of drug mentions in thousands	Percent distribution	Therapeutic classification ²
All mentions	13,835	100.0	...
Timolol	2,957	21.4	Agents used to treat glaucoma
Pilocarpine	2,295	16.6	Agents used to treat glaucoma
Betaxolol hydrochloride	1,284	9.3	Agents used to treat glaucoma
Dipivefrin	1,055	7.6	Agents used to treat glaucoma
Levobunolol hydrochloride	911	6.6	Miscellaneous ophthalmic preparations

¹Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.
²Therapeutic classification is based on the *National Drug Code Directory, 1985 Edition* (11). In cases where a generic ingredient had more than one therapeutic classification, it was listed in the category which occurred with the greatest frequency.

Table 12. Number and percent distribution of office visits with a principal diagnosis of glaucoma by disposition and duration of visit, averaged over a 2-year period: United States, 1991–92

Visit characteristic	Number of visits in thousands	Percent distribution
All visits	8,742	100.0
Disposition of visit ¹		
Return at specified time	8,154	93.3
Other ²	814	9.3
Duration of visit		
0 minutes ³	*39	*0.4
1–5 minutes	754	8.6
6–10 minutes	1,657	19.0
11–15 minutes	1,936	22.1
16–30 minutes	1,809	20.7
More than 30 minutes	2,547	29.1

¹Numbers may not add to totals because more than one disposition may be reported per visit.
²None of the other specific disposition categories had frequencies large enough to provide estimates that were statistically reliable.
³Visits at which there was no face-to-face contact between the physician and the patient.

of glaucoma visits are shown in table 12.

Visits with a second or third diagnosis of glaucoma

In addition to the estimated total of 17.5 million office visits with a first-listed diagnosis of glaucoma during 1991–92, there were 3.2 million office visits at which a second or third diagnosis was listed as glaucoma. Visits in which the second or third diagnosis was glaucoma were not found to differ significantly from visits in which the principal diagnosis was glaucoma in terms of the age, sex, or race of patients.

At office visits in which glaucoma was the second- or third-listed diagnosis, the principal diagnosis was listed within the major ICD–9–CM coding class of disorders of the eye and adnexa (ICD–9–CM codes 360–379) 62.9 percent of the time. No specific diagnosis was recorded at frequencies high enough to provide reliable estimates, although the frequency of visits with a principal diagnosis of cataract approached statistical reliability.

Glaucoma visits between 1975 and 1992

In 1975, glaucoma was the ninth most frequently mentioned morbidity-related principal diagnosis among persons 65 years of age and older; by 1992, it was the fifth. Overall, glaucoma visits were estimated at 4.5 million during 1975–76, an average of 2.3 million per year. However, the average for 1991 and 1992 was 8.7 million—an increase of 284.6 percent (figure 3). Visits for glaucoma by age and sex of patients between 1975 and 1992 are shown in table 13. Race data have been omitted from the table because glaucoma visit estimates for the black population prior to 1989 were statistically unreliable when using NAMCS data.

Annual rates of glaucoma visits between 1975 and 1992 for the U.S. population in general are shown in figure 4, using both crude and age-adjusted rates. Both the crude and the age-adjusted rates for 1991–92 were

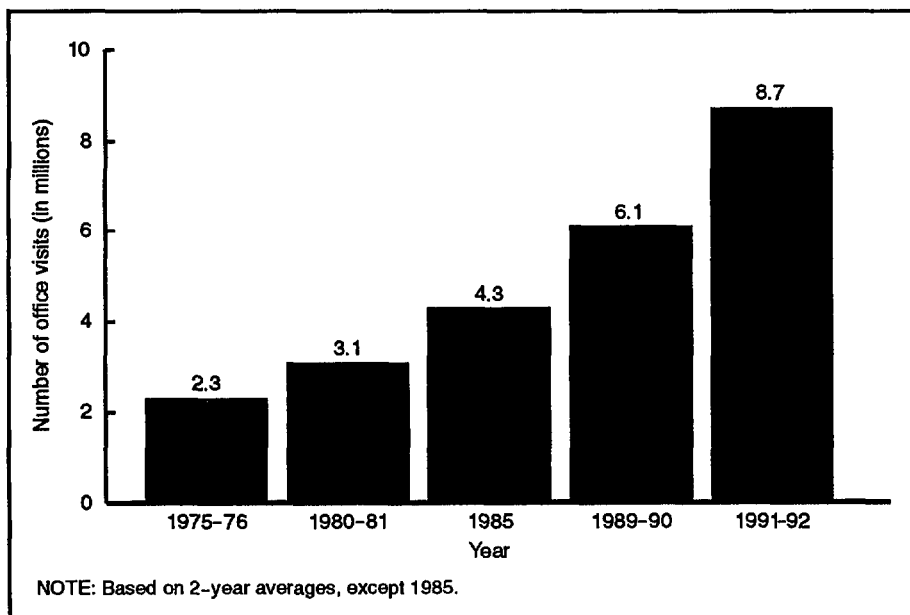


Figure 3. Office visits with a principal diagnosis of glaucoma: United States, 1975–92

Table 13. Number, percent distribution, and annual rate of office visits with a principal diagnosis of glaucoma by patient's age and sex: United States, 1975-92

Patient characteristic	Year				
	1975-76	1980-81	1985	1989-90	1991-92
	Number of visits in thousands ¹				
All visits	2,273	3,080	4,304	6,093	8,742
Age					
Under 25 years	*75	*45	*62	*27	*58
25-44 years	*138	233	*214	*234	564
45-64 years	827	994	1,218	1,537	2,035
65-74 years	706	897	1,356	1,891	2,831
75 years and over	527	910	1,454	2,405	3,254
Sex					
Female	1,398	1,864	2,610	3,847	5,359
Male	875	1,215	1,695	2,246	3,382
	Percent distribution				
All visits	100.0	100.0	100.0	100.0	100.0
Age					
Under 25 years	*3.3	*1.5	*1.4	*0.4	*0.7
25-44 years	*6.1	7.6	*5.0	*3.8	6.5
45-64 years	36.4	32.3	28.3	25.2	23.3
65-74 years	31.0	29.1	31.5	31.0	32.4
75 years and over	23.2	29.6	33.8	39.5	37.2
Sex					
Female	61.5	60.5	60.6	63.1	61.3
Male	38.5	39.5	39.4	36.9	38.7
	Visit rate per 100 persons ²				
All visits	1.1	1.4	1.8	2.5	3.5
Age					
Under 25 years	*0.1	*0.0	*0.1	*0.0	*0.1
25-44 years	*0.3	0.4	*0.3	*0.3	0.7
45-64 years	1.9	2.3	2.7	3.3	4.3
65-74 years	5.2	5.8	8.2	10.5	15.4
75 years and over	6.7	10.2	14.1	20.8	26.8
Sex					
Female	1.3	1.6	2.2	3.1	4.2
Male	0.9	1.1	1.5	1.9	2.8

¹Figures are shown as 2-year averages, except for 1985.

²Based on Bureau of the Census estimates of the civilian noninstitutionalized population for July 1 of each survey year. Rates for combined years are based on an average of the population estimates for July 1 of each year of the 2-year period. Survey years from 1975-85 did not include Alaska or Hawaii.

significantly higher than those reported in 1975-76.

Visit rates increased for the age groups 45-64 years, 65-74 years, and 75 years and over between 1975 and 1992 (figure 5). Among persons 65 years of age and over, the rate of glaucoma visits went from 5.7 visits per 100 persons in 1975 to 19.9 visits per 100 persons in 1992. Visit rates increased for both sexes between 1975 and 1992. Significant differences were noted in the overall glaucoma visit rates for males

compared with females in each of the years analyzed, except for 1975-76.

About one-quarter (23.2 percent) of glaucoma visits were made by persons 75 years of age and over in 1975-76, but 37.2 percent of the total were made by this age group in 1991-92. There was a corresponding decrease in the percent of visits made by persons 45-64 years, from 36.4 percent of visits in 1975-76, to 23.3 percent in 1991-92. The percent of visits made by persons

65-74 was not found to differ significantly between 1975 and 1992.

Reasons for the substantial increase in rates of glaucoma-related office visits during 1975-92 are unclear. Data from the National Health Interview Survey (NHIS) show an increase in the overall rate of persons reporting a glaucomatous condition, from 5.7 conditions per 1,000 persons in 1977 to 10.4 conditions per 1,000 persons in 1991 (12,13). Age-specific rates for glaucoma were not available from the NHIS during the 1970's, but an increase in glaucomatous conditions was noted among persons 65 years of age and over between 1982 and 1991, from 41.8 conditions per 1,000 persons to 57.0 conditions per 1,000 persons (14).

In 1991, the National Eye Institute of the National Institutes of Health issued new government guidelines for glaucoma testing that advise all Americans ages 60 and older and black Americans ages 40-59 to receive glaucoma screening tests at least once every 2 years. This heightened awareness of the need for early detection of glaucoma, in combination with new diagnostic procedures such as laser tomographic scanners and Fourier ellipsometry that yield more precise measurements than are possible with photography and ophthalmoscopes (15), may result in even higher visit rates for glaucoma than are seen in the 1991-92 NAMCS survey data.

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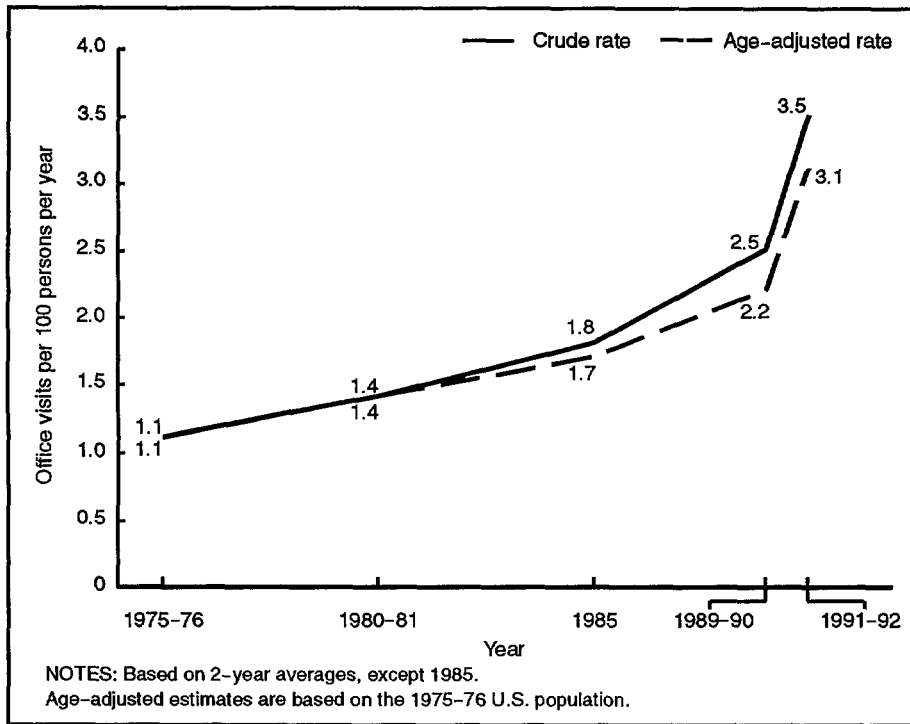


Figure 4. Annual rate of office visits with a principal diagnosis of glaucoma: United States, 1975-92

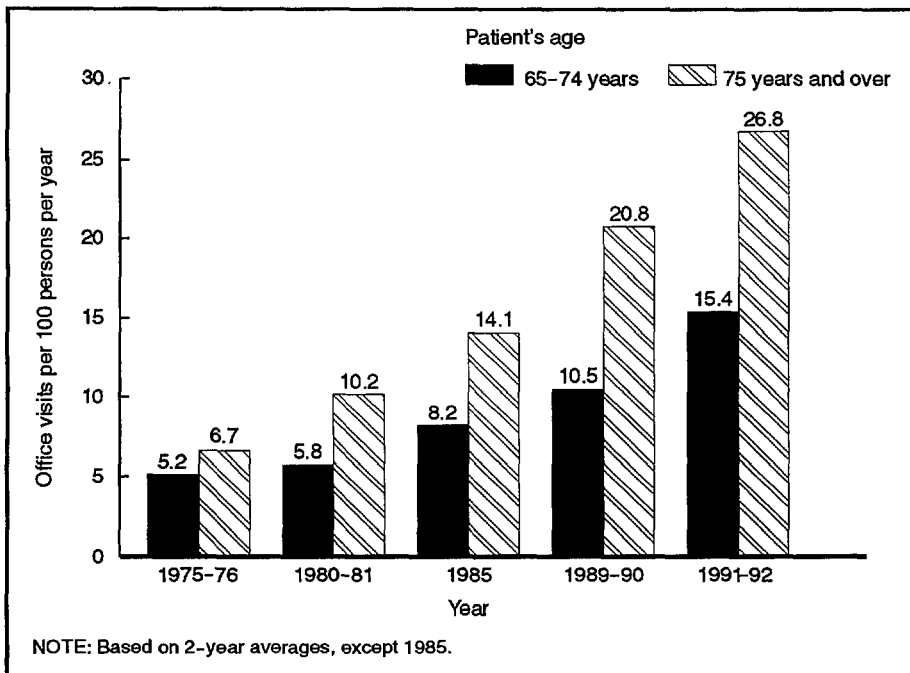


Figure 5. Annual rate of office visits with a principal diagnosis of glaucoma by patients 65-74 years and 75 years and over: United States, 1975-92

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Technical notes

Source of data and sample design

The information presented in this report is based on data collected in the National Ambulatory Medical Care Survey (NAMCS) over the 2-year period from January 1991 through December 1992. The target universe of NAMCS includes office visits made in the United States by ambulatory patients to nonfederally employed physicians who are principally engaged in office practice, but not in the specialties of anesthesiology, pathology, or radiology. Telephone contacts and nonoffice visits are excluded.

A multistage probability sample design is used in NAMCS, involving samples of primary sampling units (PSU's), physician practices within PSU's, and patient visits within physician practices. The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU's in New England). For 1991, a sample of 2,540 nonfederal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Physicians were screened at the time of the survey to ensure that they were eligible for survey participation. Of those screened, 1,887 physicians were eligible (in-scope) to participate in the survey. The remaining 653 physicians were ineligible (out-of-scope) due to reasons of being retired, employed primarily in teaching, research, or administration, or other reasons. The physician response rate for the 1991 NAMCS was 72 percent.

For 1992, a sample of 3,000 nonfederal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Of those screened, 858 physicians were ruled ineligible (out-of-scope); 2,142 were in-scope for the survey. The physician response rate for the 1992 NAMCS was 71 percent.

Sample physicians were asked to complete Patient Record forms (figure 1)

for a systematic random sample of office visits occurring during a randomly assigned 1-week reporting period. Responding physicians completed 33,795 Patient Record forms in 1991 and 34,606 Patient Record forms in 1992.

Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained from the physicians during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Survey Section, Research Triangle Park, North Carolina.

For 1992, several changes were made in the sample design of the NAMCS that should be considered in the interpretation of the survey results. In an effort to even the precision of estimates across each of the physician specialty strata in the sample design, the decision was made to increase the proportion in the sample of specialists in general surgery, psychiatry, otolaryngology, and neurology. Although this would result in a corresponding decrease in the sample of the larger physician specialties, most notably general and family practice, internal medicine, and pediatrics, the precision of these estimates tended to be much higher relative to the smaller specialties, and it was expected that the end result would be an acceptable balance of precision levels across all strata.

However, the reduced number of general practitioners, internists, and pediatricians sampled in 1992, coupled with the high percents of sampled physicians in these specialties who were determined to be ineligible (out-of-scope) for survey participation, resulted in low numbers of survey respondents in these categories and a lowering of the precision of these estimates relative to other survey years, especially when disaggregated by other variables such as race. Because visits made by black patients were often found to be clustered among the sampled physicians and were more likely to be made to general and family practitioners, which were undersampled in 1992, it is

recommended that caution be exercised when interpreting differences in race data and individual physician specialties.

Despite the difference in sample sizes, the 1991 and 1992 surveys were identical in terms of survey instruments, definitions, and procedures. The resulting 2 years of data have been combined to provide more reliable estimates. All estimates, percent distributions, and rates presented here, unless otherwise noted, reflect 1991 and 1992 data that were averaged over the 2-year period.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing the standard error by the estimate itself; the result is then expressed as a percent of the estimate.

Relative standard errors (RSE's) for estimated numbers of office visits, expressed as 2-year averages for the period 1991-92, are shown in table I. Relative standard errors for estimated numbers of drug mentions, also expressed as 2-year averages, are

Table I. Approximate relative standard errors for estimated numbers of office visits: National Ambulatory Medical Care Survey, 1991-92

<i>Estimated number of office visits (expressed as annual averages) in thousands</i>	<i>Relative standard error in percent</i>
50	78.4
100	55.5
250	35.2
346	30.0
500	25.0
1,000	17.8
2,500	11.6
5,000	8.5
10,000	6.5
25,000	4.9
50,000	4.2
100,000	3.8
250,000	3.6
500,000	3.5

NOTE: The smallest reliable estimate for visits to aggregated specialties is 346,000 visits per year (or a 2-year total of 691,000 visits). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: An aggregate estimate of 10 million visits per year has a relative standard error of 6.5 percent or a standard error of 650,000 visits (6.5 percent of 10 million).

Table II. Approximate relative standard errors for estimated numbers of drug mentions: National Ambulatory Medical Care Survey, 1991-92

Estimated number of drug mentions (expressed as annual averages) in thousands	Relative standard error in percent
50	109.0
100	77.2
250	48.9
500	34.7
674	30.0
1,000	24.7
2,500	16.0
5,000	11.7
10,000	8.8
25,000	6.5
50,000	5.5
100,000	4.9
250,000	4.6
500,000	4.4

NOTE: The smallest reliable estimate of drug mentions to aggregated specialties is 674,000 drug mentions per year (or a 2-year total of 1,347,000 mentions). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: An aggregate estimate of 25 million drug mentions per year has a relative standard error of 6.5 percent or a standard error of 1,625,000 drug mentions (6.5 percent of 25 million).

presented in table II. Standard errors for estimated percents of visits and drug mentions are displayed in tables III and IV.

Alternatively, relative standard errors for 2-year averages may be calculated using the following general formula, where x is the average of interest in thousands multiplied by 2 to obtain the 2-year total, and A and B are

Table IV. Approximate standard errors of percents for estimated numbers of drug mentions: National Ambulatory Medical Care Survey, 1991-92

Base of percent (visits, expressed as annual averages, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
Standard error in percentage points							
50	10.8	23.7	32.7	43.6	49.9	53.4	54.5
100	7.7	16.8	23.1	30.8	35.3	37.7	38.5
250	4.9	10.6	14.6	19.5	22.3	23.9	24.4
500	3.4	7.5	10.3	13.8	15.8	16.9	17.2
1,000	2.4	5.3	7.3	9.7	11.2	11.9	12.2
2,500	1.5	3.4	4.6	6.2	7.1	7.6	7.7
5,000	1.1	2.4	3.3	4.4	5.0	5.3	5.5
10,000	0.8	1.7	2.3	3.1	3.5	3.8	3.9
25,000	0.5	1.1	1.5	2.0	2.2	2.4	2.4
50,000	0.3	0.8	1.0	1.4	1.6	1.7	1.7
100,000	0.2	0.5	0.7	1.0	1.0	1.2	1.2
250,000	0.2	0.3	0.5	0.6	0.7	0.8	0.8
500,000	0.1	0.2	0.3	0.4	0.5	0.5	0.6

Example of use of table: An estimate of 20 percent based on an estimate of 10 million drug mentions per year has a standard error of 3.1 percent or a relative standard error of 15.5 percent (3.1 percent divided by 20 percent).

the appropriate coefficients from table V. The relative standard error obtained in this way applies to both the 2-year total and the 2-year average.

$$RSE(x) = \sqrt{A + \frac{B}{x}} \cdot 100$$

Similarly, relative standard errors for percents may be calculated using the following general formula, where p is the percent of interest and x is the denominator of the percent in thousands (and the denominator is the 2-year aggregate estimate rather than the average), using the appropriate

coefficient from table V. (The 2-year aggregate is obtained by multiplying the average estimate by 2.)

$$RSE(p) = \sqrt{\frac{B \cdot (1-p)}{p \cdot x}} \cdot 100$$

Adjustments for nonresponse

Estimates from NAMCS data were adjusted to account for sample physicians who were in-scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding physicians data from visits to similar physicians. For this purpose, physicians were judged similar if they had the same specialty designation and practiced in the same PSU.

Test of significance and rounding

In this report, the determination of statistical inference is based on the two-tailed t -test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of significance) based on the number of possible comparisons within a particular variable or (combination of variables) of interest. Terms relating to differences such as "greater than" or "less than" indicate that the difference is statistically

Table III. Approximate standard errors of percents of estimated numbers of office visits: National Ambulatory Medical Care Survey, 1991-92

Base of percent (visits, expressed as annual averages, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
Standard error in percentage points							
50	7.8	17.1	23.5	31.3	35.9	38.4	39.2
100	5.5	12.1	16.6	22.2	25.4	27.1	27.7
250	3.5	7.6	10.5	14.0	16.1	17.2	17.5
500	2.5	5.4	7.4	9.9	11.4	12.1	12.4
1,000	1.7	3.8	5.3	7.0	8.0	8.6	8.8
2,500	1.1	2.4	3.3	4.4	5.1	5.4	5.5
5,000	0.8	1.7	2.4	3.1	3.6	3.8	3.9
10,000	0.6	1.2	1.7	2.2	2.5	2.7	2.8
25,000	0.4	0.8	1.1	1.4	1.6	1.7	1.8
50,000	0.3	0.5	0.7	1.0	1.1	1.2	1.2
100,000	0.2	0.4	0.5	0.7	0.8	0.9	0.9
250,000	0.1	0.2	0.3	0.4	0.5	0.6	0.6
500,000	0.1	0.2	0.2	0.3	0.4	0.4	0.4

Example of use of table: An estimate of 20 percent based on an estimate of 25 million visits per year has a standard error of 1.4 percent or a relative standard error of 7.0 percent (1.4 percent divided by 20 percent).

Table V. Coefficients appropriate for determining relative standard errors by type of estimate and physician groups: National Ambulatory Medical Care Survey, 1991-92

Type of estimate and physician specialty	Coefficient for use with estimates in thousands	
	A	B
Visits		
Overall totals	0.001157131	61.31199989
General and family practice	0.007330504	54.54704362
Osteopathy	0.01402452	18.13642054
Internal medicine	0.008718567	55.2168744
Pediatrics	0.007994386	35.33091768
General surgery	0.006685247	10.65103125
Obstetrics and gynecology	0.00919584	25.59962011
Orthopedic surgery	0.005641337	24.20372144
Cardiovascular diseases	0.01383253	12.58489271
Dermatology	0.01275351	10.28901849
Urological surgery	0.008000282	11.92853664
Psychiatry	0.009414736	12.88530675
Neurology	0.01314774	5.36720816
Ophthalmology	0.007938148	23.84517495
Otolaryngology	0.007549396	8.0936265
All other specialties	0.01537018	35.00317779
Drug mentions		
Overall totals	0.001853163	118.69462
General and family practice	0.009085669	100.96778
Osteopathy	0.01658477	23.4739982
Internal medicine	0.01148498	103.21387
Pediatrics	0.01245118	26.73517786
General surgery	0.03935224	8.06806796
Obstetrics and gynecology	0.01454044	31.24058408
Orthopedic surgery	0.01568053	23.3833057
Cardiovascular diseases	0.01575914	24.23751806
Dermatology	0.01299377	15.94507357
Urological surgery	0.01867719	10.6886669
Psychiatry	0.01430555	15.99374434
Neurology	0.01593433	6.67244993
Ophthalmology	0.0251486	25.1381195
Otolaryngology	0.008374063	12.25916054
All other specialties	0.0226229	57.79950436

significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of office visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not necessarily agree with percents calculated from rounded data.

Definition of terms

Ambulatory patient—An ambulatory patient is an individual seeking personal health services who is not currently admitted to any health care institution on the premises.

Drug mention—A drug mention is the physician's entry on the Patient Record form of a pharmaceutical agent—by any route of administration—for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included, as are nonprescription and prescription drugs. Along with all new drugs, the physician also records continued medications if the patient was specifically instructed during the visit to continue the medication. Physicians may report up to five medications per visit.

Drug visit—A drug visit is a visit at which medication was prescribed or provided by the physician.

Office—An office is the space identified by a physician as a location for his or her ambulatory practice. Offices customarily include consultation, examination, or treatment spaces that

patients associate with the particular physician.

Physician—A physician is a duly licensed doctor of medicine (M.D.) or doctor of osteopathy (D.O.) who is currently in office-based practice and who spends some time caring for ambulatory patients. Excluded from the NAMCS are physicians who are hospital based; who specialize in anesthesiology, pathology, or radiology; who are federally employed; who treat only institutionalized patients; or who are employed full time by an institution and spend no time seeing ambulatory patients.

Visit—A visit is a direct personal exchange between an ambulatory patient and a physician or a staff member working under the physician's supervision, for the purpose of seeking care and rendering personal health services. Excluded from the NAMCS are visits where medical care was not provided, such as visits made to drop off specimens, pay bills, make appointments, and walk-outs.

Symbols

- - - Data not available
 - . . . Category not applicable
 - Quantity zero
 - 0.0 Quantity more than zero but less than 0.05
 - Z Quantity more than zero but less than 500 where numbers are rounded to thousands
 - * Figure does not meet standard of reliability or precision
-

Advance Data

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Relationship Between Cigarette Smoking and Other Unhealthy Behaviors Among our Nation's Youth: United States, 1992

by Jean C. Willard and Charlotte A. Schoenborn, M.P.H., Division of Health Interview Statistics

Introduction

The transitional period between childhood and adulthood is a time in which youth experience many physical changes, as well as a developing sense of self and increasing emotional independence (1). During this time, adolescents often develop behaviors that extend into adulthood (2). Young people may experiment with risky health behaviors, some of which have long term health consequences (3). Some adolescents use these behaviors to bond with peers, improve their social image, and appear independent and mature (1). Recently, health risk behaviors of adolescents have been the focus of considerable study (4-13).

Cigarette smoking almost always begins in the adolescent years (5,14) and smoking at early ages increases the risk of becoming ill or dying from causes attributable to smoking (1). Reduction in smoking prevalence among adolescents is one of the objectives established in the National Health Objectives for the Year 2000 (2). These objectives encompass 22 priority areas, including tobacco, alcohol and other drugs, physical activity and fitness, nutrition, violent and abusive behavior, and family planning. Each priority area contains

numerous specific, measurable health objectives. Many of the objectives specifically target health-threatening behaviors among adolescents and young adults.

Progress toward achieving the National Health Objectives for the Year 2000 is monitored closely at the Federal level. Much research was devoted to establishing baseline prevalence estimates of high risk behaviors and developing objectives based on both the baseline estimates and a realistic appraisal of what can be accomplished by the end of the decade. While the objectives set targets for individual behaviors, a large body of research suggests that many high risk behaviors are interrelated. The recent Surgeon General's Report, *Preventing Tobacco Use Among Young People* (1), summarized studies that have shown relationships between smoking and other health-threatening behaviors such as drinking alcohol, using illicit drugs, using smokeless tobacco products, carrying weapons, engaging in physical fights, ever having had sexual intercourse, and failure to wear seat belts. Research has also shown that adolescents who participated in interscholastic sports were less likely

than youth who did not participate to be regular or heavy smokers (6). Much of this earlier research was based on samples of youth who were in school, with data collected in a classroom setting. This report expands upon earlier research by delineating the relationship between cigarette smoking and other high risk behaviors among adolescents in the general household population of the United States, including youth who have left school either prematurely or by graduating. Examining the relationships between smoking and other high risk behaviors may provide clues on how to reduce smoking and other unhealthy behaviors among adolescents, thereby furthering progress toward achieving the National Health Objectives for the Year 2000.

This report uses data from the 1992 National Health Interview Survey of Youth Risk Behavior (NHIS-YRBS) and presents prevalence estimates for selected unhealthy behaviors among adolescents in the United States according to smoking status. These unhealthy behaviors, consistent with earlier studies, include drinking alcohol; consuming more than five alcoholic beverages in a row; using marijuana, cocaine, and smokeless tobacco;



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carrying weapons; physical fighting; sexual intercourse; failure to use a seat belt; lack of exercise; and consumption of fewer than five servings of fruits and vegetables daily. These behaviors are of significant public health concern as evidenced by their inclusion in the National Health Objectives for the Year 2000.

The data presented in this report provide an overview of unhealthy behaviors that are recognized as important for the current future health of our Nation's youth. However, these data do not provide specific tracking information for the objectives because of the age specificity of most objectives.

Data and methods

The NHIS-YRBS was developed to provide estimates of health risk behaviors for the noninstitutionalized, household population of youth aged 12–21 years. The NHIS is a continuous, nationwide, household interview survey of the civilian noninstitutionalized population of the United States, conducted by the National Center for Health Statistics (NCHS)(15). Interviews are conducted for NCHS by the interviewing staff of the U.S. Bureau of the Census. Information is obtained about the health and sociodemographic characteristics of each member of the household. Each year, special topic surveys are included in conjunction with the basic NHIS. These topics change annually. In 1992, the NHIS-YRBS was one of the special topics.

Within each NHIS sample family, one youth who was attending school and up to two youth who were not in school or whose in-school status was unknown were selected for the NHIS-YRBS interview. Youth in all NHIS sample families, including emancipated youth (married youth and/or those not living with a parent or guardian), were eligible for selection. The youth were followed back approximately two months after the initial household interview. NHIS-YRBS interviews were conducted in person from April 1992 through March 1993. NHIS-YRBS interviews were completed for 10,645 youth,

representing an overall response rate of 73.9 percent.

Rather than using the traditional face-to-face interview or self-administered questionnaires, the NHIS-YRBS used a unique audiocassette technology, developed in collaboration with researchers at University of Michigan's Survey Research Center. This technology allowed the youth to listen to the questions, using a personal headset and to record answers on an answer sheet that contained only answer categories. The answer sheet did not contain any information that would allow parents or others in the household to know what questions the youth was answering. The voice on the interview tape matched the sex of the respondent; males heard a male voice and females heard a female voice. This data collection method ensured greater privacy and increased data quality for youth with poor reading skills.

Using data from the 1992 NHIS-YRBS, this report presents prevalence estimates for selected unhealthy behaviors among male and female adolescents 12–21 years old and examines the relationship between cigarette smoking and each of the other behaviors, using age-adjusted statistics. Table 1 contains percents and standard errors for each of the selected unhealthy behaviors by smoking status. These unadjusted statistics (table 1) are used for discussions of overall prevalence. Table 2 contains percents, age-adjusted to the full NHIS-YRBS sample, and the associated standard errors. For data on sexual intercourse, age adjustment was limited to the NHIS-YRBS sample aged 14–21 years because only youth 14 years and older were asked the questions related to sexual experiences. Age-adjusted statistics are used in all discussions of findings concerning relationships between smoking and other unhealthy behaviors. Age-adjusted statistics control for variations in the age distributions of the various smoking status groups. Statistics for all youth ages 12–21 years are shown in order to provide an overall view of the

relationships between smoking and a variety of other behaviors during the adolescent and young adult years. Age-specific analyses (not shown) revealed that the relationships between smoking and other unhealthy behaviors were stronger at the younger ages, but remained consistent, if somewhat attenuated, among youth 18–21 years of age.

Definition of smoking terms

Definitions for smoking status in the national health objectives are aimed at adults. For adults, current smoker is a person who has ever smoked 100 cigarettes in his or her lifetime and smokes "now"— "now" being defined by the respondent. Recent measures of smoking status assess regularity of smoking in adults by distinguishing between "everyday" and "some day" smokers. These definitions may not be appropriate for adolescents.

Consistent with other studies of adolescents, current smokers are defined as youth who have smoked at least one cigarette in the past 30 days. Former smokers are youth who had smoked at least one cigarette every day for 30 days at some time in their lives, but had not smoked cigarettes in the past month. Experimenters are youth who had smoked at least one or two puffs of a cigarette, but had never smoked cigarettes every day for 30 days and had not used cigarettes in the past 30 days. "Never smokers" are youth who had never had even one or two puffs of a cigarette. Definitions for other terms used in this report are in the technical notes.

Findings

Figure 1 shows prevalence of smoking among youth aged 12–21 years. About 29 percent of male youth and 26 percent of female youth were current smokers in 1992 and about 3 percent of both sexes were former smokers. About 28 percent of male youth and about 30 percent of female youth had experimented with cigarettes, but had never smoked regularly. About 40 percent of youth had never taken a puff of a cigarette.

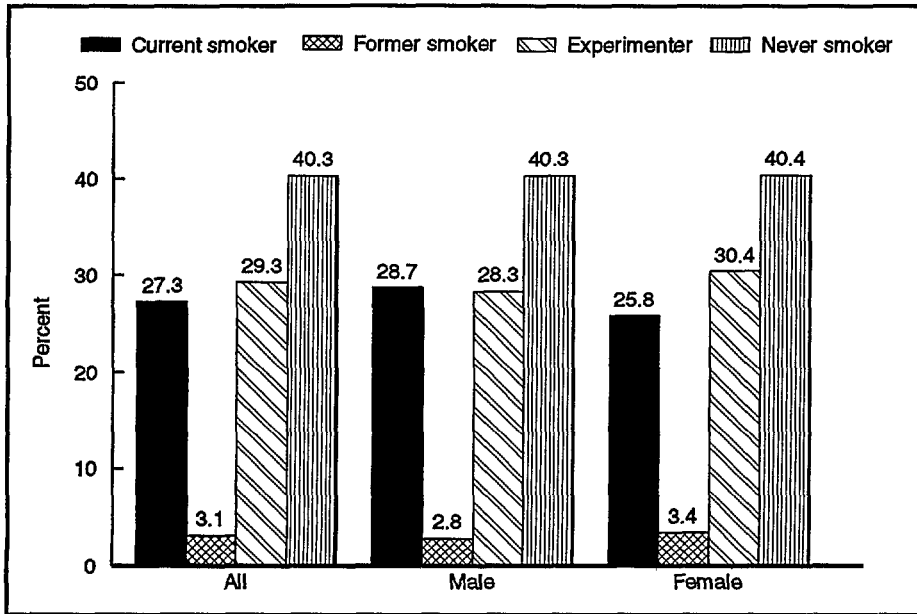


Figure 1. Percent of youth 12-21 years of age by smoking status and sex: United States, 1992

Table 1 shows the prevalence of selected unhealthy behaviors among male and female adolescents by smoking status. Figures 2 and 3 display overall prevalence of these behaviors for males and females, respectively. The data in figures 2 and 3 correspond to column 1 of table 1. Together these data show the overall pattern of unhealthy behaviors among U.S. adolescents. In

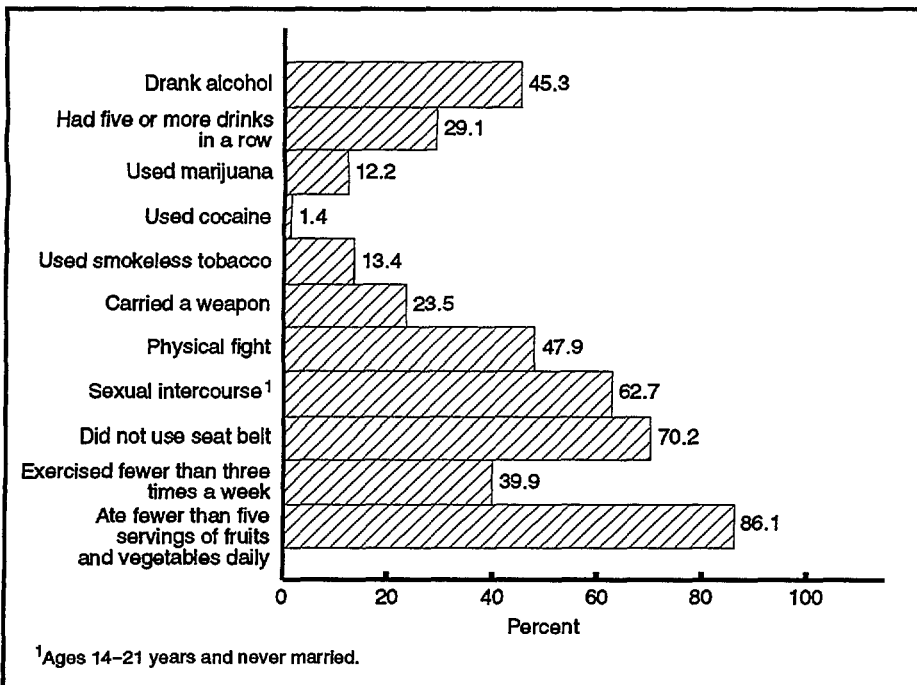
general, the patterns appear similar for adolescent males and females. For example, among both male and female youth, failure to eat at least five servings of fruits and vegetables daily had the highest prevalence of the unhealthy behaviors examined (86.1 percent and 87.9 percent, respectively), followed by failure to always use seat belts (70.2 percent and 61.4 percent of males

and females, respectively), and engaging in sexual intercourse (62.7 percent and 58.7 percent of males and females, respectively). Prevalence of cocaine use was only about 1 percent for both groups.

Although the patterns among the behaviors appear similar for males and females, prevalence estimates for some behaviors differed markedly between the sexes. Among the more noteworthy differences are: male youth were more likely than female youth to have engaged in a physical fight in the past year (47.9 percent versus 29.2 percent); to have carried a weapon in the past month (23.5 percent versus 5.6 percent); to have used smokeless tobacco (13.4 percent versus 1.5 percent); and to have used marijuana (12.2 percent versus 9.2 percent). Female youth (52.7 percent) were more likely than male youth (39.9 percent) to get inadequate exercise (defined as exercising less than three times per week). Prevalence of consumption of any alcohol was about the same for male (45.3 percent) and female youth (44.0 percent), although males (29.1 percent) were somewhat more likely than females (22.0 percent) to have had five or more drinks in a row.

Figures 1-3 and table 1 show prevalence estimates of unhealthy behaviors among U.S. adolescents. Using these estimates and the population table in the technical notes of this report, the reader can estimate the numbers of youth who are both smoking and engaging in other high risk behaviors. Analysis of interrelationships between smoking and other unhealthy behaviors should be restricted to the data in table 2.

Table 2 presents data on the relationship between smoking and selected other unhealthy behaviors among adolescents, adjusted for differences in the age composition of the various smoking status groups. Generally, youth who had never smoked were significantly less likely to have engaged in each unhealthy behavior studied than were current smokers. With a few exceptions, "never smokers" were also less likely than former smokers or experimenters to participate in unhealthy behaviors.



¹Ages 14-21 years and never married.

Figure 2. Prevalence of selected unhealthy behaviors among adolescent males: United States, 1992

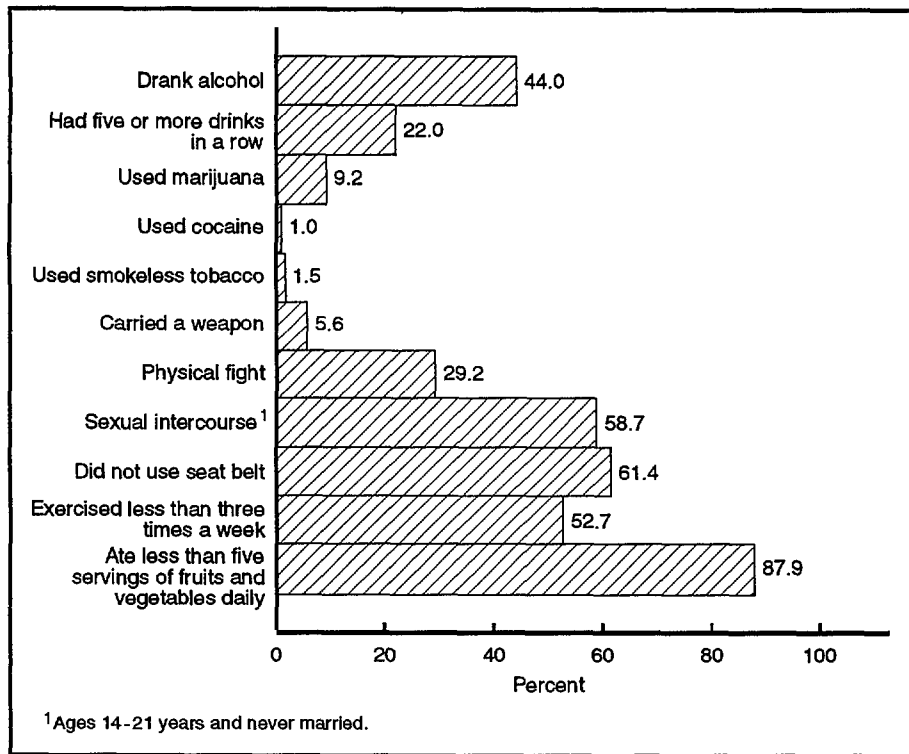


Figure 3. Prevalence of selected unhealthy behaviors among adolescent females: United States, 1992

Drinking

Alcohol consumption among youth has serious short term and long term health consequences. Prevention efforts are directed at encouraging young people to abstain from alcohol and to

avoid episodic heavy drinking (sometimes called binge drinking) if they do drink. Table 2 shows that after controlling for differences in age composition, about three-quarters (74.4 percent) of current smokers aged 12-21 years old had consumed alcohol

in the past 30 days, compared with 23.0 percent of "never smokers." Figure 4 shows the percent of youth who drank alcohol in the past month by smoking status and sex. Among current smokers, prevalence of alcohol consumption in the past month was about the same for males and females. Among those who have never smoked, males were slightly more likely than females to have consumed alcohol in the past month. Table 2 also shows that current smokers (50.3 percent) were considerably more likely than former smokers (25.5 percent), experimenters (21.3 percent), and "never smokers" (9.5 percent) to have had five or more drinks in a row in the past month. Rates of episodic heavy drinking were somewhat lower for females than for males across all categories of smoking status, but the pattern remained the same.

Marijuana and cocaine use

As with alcohol, drug use among our Nation's young people is a major problem and the focus of extensive prevention efforts. Table 2 shows past month use of each of two drugs—marijuana and cocaine—by smoking status. Among youth 12-21 years of age, controlling for differences in age composition, 26.5 percent of adolescent current smokers reported marijuana use in the previous 30 days compared with 10.3 percent of former smokers, 6.2 percent of experimenters, and only 1.5 percent of youth who had never smoked. Among both males and females, current marijuana use was considerably more prevalent among current smokers than among youth who were not currently smoking. Table 2 also shows that 3.5 percent of current smokers 12-21 years old had used cocaine in the previous month. Although data for former smokers, experimenters, and "never smokers" do not meet reliability standards, patterns indicate that prevalence may be lower in these groups.

Smokeless tobacco

Smokeless tobacco use among our Nation's youth is a serious public health concern. Like so many other behaviors, use of smokeless tobacco (chewing

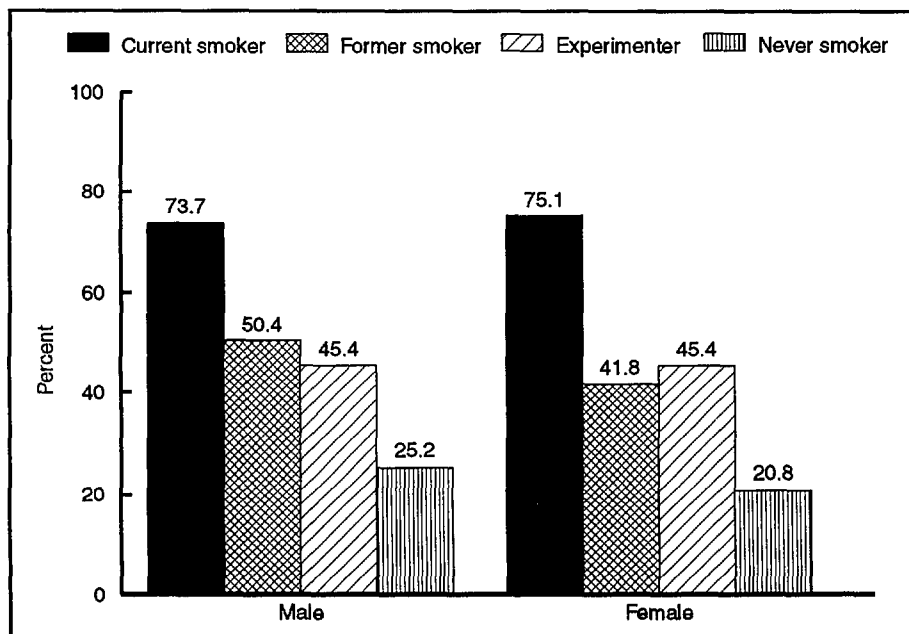


Figure 4. Percent of youth who drank alcohol in the past month, by smoking status and sex: United States, 1992

tobacco and snuff) is frequently taken up during the adolescent years. Table 2 shows that after controlling for differences in age composition, male adolescents who were current smokers (28.1 percent) and former smokers (27.5 percent) were almost seven times more likely to have used smokeless tobacco in the past month than were male youth who had never smoked (4.1 percent). Although the small number of female adolescents reporting use of smokeless tobacco makes estimates of this behavior unreliable for most subgroups, the data suggest that currently smoking females may be more likely to be users of smokeless tobacco than other adolescent females.

Carrying weapons and physical fights

Table 2 also provides important insights into the extent to which youth engage in two types of violent behavior—carrying weapons and engaging in physical fights—according to smoking status. After controlling for differences in age composition, about one-quarter of youth who were current smokers reported carrying a weapon such as a gun, knife, or club during the

previous 30 days, compared with about one-tenth of youth who had never smoked. Figure 5 shows that adolescent male smokers were more than twice as likely (39.4 percent) as males who had never smoked (16.5 percent) to have carried a weapon. Rates of carrying weapons among male former smokers (30.8 percent) and experimenters (22.1 percent) ranked between the other two groups. Adolescent female current smokers were more than four times as likely (11.0 percent) as female youth who had never smoked (2.6 percent) to have carried a weapon during the previous month. As with males, female experimenters (5.8 percent) ranked between those of current and “never smokers” on the rate of those who carried weapons. Due to the small number of female former smokers who carried weapons, data for this group were unreliable.

Table 2 shows that male current smokers (64.1 percent) were more likely than males who had experimented with cigarettes (47.1 percent) and those who had never smoked (38.4 percent) to have been involved in a physical fight in the past year. Among female adolescents, current smokers (44.3 percent) were

more than twice as likely as “never smokers” (19.8 percent) to have engaged in physical fighting in the past year.

Sexual intercourse

The NHIS-YRBS includes data on sexual intercourse for adolescents 14–21 years of age. For this report, analysis was restricted to youth who had never been married.

Prevalence of sexual intercourse among never married adolescents was high across all smoking status groups. Table 1 indicates that 6 of 10 never married adolescents 14 years old and older (60.8 percent) had engaged in sexual intercourse at some time in their lives. There appears to be a relationship between cigarette smoking and sexual intercourse. Current smokers (80.0 percent) and former smokers (80.4 percent) were most likely to have engaged in sexual intercourse compared with 60.6 percent of youth who had only experimented with cigarettes and 41.4 percent of youth who had never smoked at all (table 2).

Seat belts

Injuries are one of the leading causes of death among adolescents and young adults. Injury deaths among those 15–24 years of age are largely attributable to motor vehicle accidents (2). Overall, 65.8 percent of adolescents did not always use seat belts when they rode in a car (table 1). Table 2 shows that over three-quarters (76.6 percent) of current smokers did not always wear a seat belt compared with about one-half (55.7 percent) of adolescents who had never smoked, with the other two groups falling in between.

Vigorous exercise

Regular participation in vigorous exercise is recognized as having important health benefits for people of all ages, including youth. In the NHIS-YRBS, youth were asked how often in the past week they engaged in any activities that made them sweat or breathe hard. The percent of youth who reported participating in such vigorous activities 3 or more days in the week preceding the interview is shown in table 2, according to smoking status.

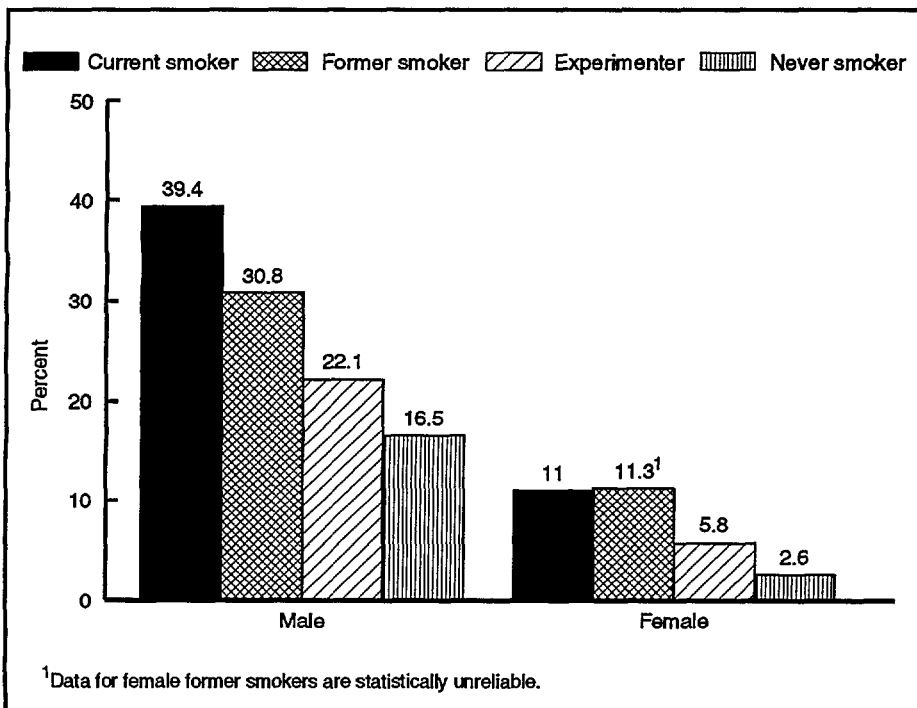


Figure 5. Percent of youth who carried weapons in the past month, by smoking status and sex: United States, 1992

Overall, prevalence of regular, vigorous exercise among adolescents was low (46.2 percent), regardless of smoking status (table 1). Table 2 shows that 49.6 percent of adolescent current smokers exercised less than 3 times during the week preceding the survey; 44.8 percent of "never smokers" exercised this infrequently.

Eating habits

Guidelines for healthy eating generally recommend eating five or more servings of fruits and vegetables daily. The National Health Objectives for the Year 2000 address this issue for adults, but not for children or youth. Nevertheless, the NHIS-YRBS asked youth about fruit and vegetable consumption during the day preceding the interview. Overall, 87.0 percent of all adolescents consumed less than five servings of fruits and vegetables (table 1). Table 2 shows that consumption of fewer than the recommended minimum quantities of fruits and vegetables was somewhat more common among adolescents who currently smoked (89.6 percent) than among those who had never smoked (83.6 percent).

Discussion and conclusions

This report provides a broad overview of the links between smoking and other high risk behaviors. Although it does not establish causal links, it does show a consistent association between smoking and other unhealthy behaviors among adolescents, further strengthening the evidence that unhealthy behaviors among adolescents are interrelated. In almost all cases, current smokers had the highest and "never smokers" the lowest rates of other risk behaviors. The differences were particularly striking for use of other addictive substances such as alcohol, marijuana, and smokeless tobacco: current smokers were 3–17 times more likely than adolescents who had never smoked to have used these other substances in the past 30 days. (Data for cocaine were suggestive of a similar relationship, but were not statistically reliable due to small numbers of youth reporting cocaine use.) Although not quite as dramatic,

differences between smoking and nonsmoking teenagers were also noteworthy for carrying weapons, physical fighting, sexual intercourse, and failure to use seat belts. For two risk behaviors—exercising less than three times per week and eating fewer than five servings of fruits and vegetables—smokers similarly had higher prevalence rates than those who had never smoked, but the differences were less striking.

The interrelationships between smoking and other unhealthy behaviors are undoubtedly complex. Multivariate analyses are needed to delineate the nature of these interrelationships. The data presented here suggest that high risk behaviors may cluster. That is, youth who engage in some high risk behaviors are likely to be engaging in others. Interventions that target multiple high risk behaviors may be more effective in getting youth to adopt healthy behaviors than programs that target a single behavior.

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Table 1. Percent of youth ages 12–21 years who engaged in selected unhealthy behaviors by type of behavior, sex, and smoking status: United States, 1992

Unhealthy behavior ¹ and sex	All smoking statuses		Current smoker		Former smoker		Experimenter		Never smoker	
	Percent	Standard error	Percent	Standard error	Percent	Standard error	Percent	Standard error	Percent	Standard error
Drank alcohol										
Both sexes.	44.6	0.69	77.9	0.93	55.5	3.40	48.7	1.12	17.6	0.79
Male	45.3	0.86	78.2	1.31	56.4	5.69	48.0	1.64	18.8	1.00
Female	44.0	0.94	77.7	1.29	54.9	4.01	49.4	1.57	16.5	1.07
Had five or more drinks in a row										
Both sexes.	25.6	0.58	54.5	1.07	28.8	2.80	23.4	1.00	6.8	0.51
Male	29.1	0.78	59.5	1.42	34.6	4.92	26.7	1.49	8.2	0.76
Female	22.0	0.75	48.9	1.57	24.0	3.10	20.2	1.23	5.4	0.61
Used marijuana										
Both sexes.	10.7	0.39	29.1	1.04	11.7	2.13	6.8	0.56	1.1	0.18
Male	12.2	0.59	31.1	1.49	16.4	3.97	7.8	0.84	1.6	0.30
Female	9.2	0.46	26.8	1.35	7.8	1.99	5.8	0.70	0.6	0.18
Used cocaine										
Both sexes.	1.2	0.11	3.9	0.37	*1.5	0.75	*0.3	0.09	*0.1	0.06
Male	1.4	0.18	4.2	0.57	*1.6	1.15	*0.4	0.15	*0.2	0.08
Female	1.0	0.15	3.5	0.55	*1.5	1.00	*0.2	0.11	*0.1	0.07
Used smokeless tobacco										
Both sexes.	7.5	0.37	16.1	0.90	14.2	3.07	6.2	0.51	2.1	0.25
Male	13.4	0.65	27.9	1.53	29.4	5.72	11.2	0.95	3.6	0.44
Female	1.5	0.20	2.9	0.52	*1.4	0.84	1.4	0.36	*0.6	0.19
Carried a weapon										
Both sexes.	14.5	0.42	23.2	0.91	18.9	3.13	13.3	0.76	9.2	0.54
Male	23.5	0.72	35.0	1.43	29.9	5.88	21.5	1.35	16.2	0.92
Female	5.6	0.39	10.1	0.93	9.9	2.79	5.7	0.66	2.4	0.39
Engaged in physical fight in past year										
Both sexes.	38.6	0.62	48.7	1.09	42.3	2.99	36.2	1.06	33.2	0.89
Male	47.9	0.86	57.7	1.52	49.5	5.21	44.9	1.51	42.9	1.23
Female	29.2	0.78	38.7	1.54	36.4	3.98	28.1	1.37	23.4	1.11
Ever had sexual intercourse²										
Both sexes.	60.8	0.77	81.7	0.98	82.4	2.70	61.8	1.28	37.9	1.29
Male	62.7	1.02	81.8	1.34	*80.8	4.12	61.8	1.86	42.5	1.65
Female	58.7	1.07	81.6	1.41	*84.1	3.20	61.9	1.76	33.2	1.77
Did not always use seat belt										
Both sexes.	65.8	0.69	75.5	1.05	67.2	3.13	66.9	1.13	58.4	1.00
Male	70.2	0.88	79.7	1.27	77.7	4.21	70.4	1.47	62.9	1.33
Female	61.4	0.94	70.8	1.63	58.4	4.13	63.7	1.60	53.8	1.36
Exercised vigorously fewer than 3 times in past week³										
Both sexes.	46.2	0.59	54.4	1.06	55.3	3.17	46.1	1.03	40.1	0.94
Male	39.9	0.80	50.2	1.49	55.0	5.17	37.2	1.46	33.3	1.19
Female	52.7	0.85	59.2	1.49	55.5	4.01	54.4	1.40	46.9	1.39
Ate fewer than five servings of fruits and vegetables yesterday										
Both sexes.	87.0	0.42	89.8	0.71	91.3	1.66	89.2	0.64	83.1	0.73
Male	86.1	0.58	89.4	0.95	93.3	2.42	87.6	1.03	82.2	1.01
Female	87.9	0.57	90.3	0.93	89.7	2.25	90.8	0.77	84.0	0.95

¹Reference period is past 30 days unless otherwise specified.²Ages 14–21 years and never married.³Vigorous is defined as exercise that made the youth sweat and breathe hard.

Table 2. Age-adjusted percent of youth ages 12–21 years who engaged in selected unhealthy behaviors by type of behavior, sex, and smoking status: United States, 1992

Unhealthy behavior ¹ and sex	All smoking statuses		Current smoker		Former smoker		Experimenter		Never smoker	
	Percent	Standard error	Percent	Standard error	Percent	Standard error	Percent	Standard error	Percent	Standard error
Drank alcohol										
Both sexes.	44.3	0.61	74.4	1.11	47.0	3.92	45.4	1.01	23.0	1.02
Male	45.3	0.80	73.7	1.60	50.4	6.23	45.4	1.49	25.2	1.34
Female	43.4	0.85	75.1	1.56	41.8	3.25	45.4	1.42	20.8	1.29
Had five or more drinks in a row										
Both sexes.	25.4	0.53	50.3	1.22	25.5	2.93	21.3	0.88	9.5	0.69
Male	29.2	0.72	53.7	1.61	31.5	4.57	24.7	1.27	12.0	1.07
Female	21.7	0.71	46.4	1.80	18.8	2.69	18.2	1.11	7.2	0.81
Used marijuana										
Both sexes.	10.7	0.38	26.5	1.02	10.3	2.19	6.2	0.52	1.5	0.25
Male	12.3	0.58	28.0	1.48	15.2	3.98	7.4	0.79	2.3	0.43
Female	9.1	0.45	24.7	1.34	5.4	1.30	5.2	0.62	*0.8	0.25
Used cocaine										
Both sexes.	1.2	0.11	3.5	0.46	*1.1	0.55	*0.3	0.09	*0.2	0.10
Male	1.5	0.18	3.5	0.47	*1.4	0.99	*0.4	0.14	*0.3	0.13
Female	1.0	0.15	3.6	0.79	*1.0	0.62	*0.2	0.10	*0.2	0.12
Used smokeless tobacco										
Both sexes.	7.5	0.37	16.1	1.02	13.7	3.50	6.1	0.49	2.4	0.28
Male	13.5	0.65	28.1	1.76	27.5	6.48	11.1	0.92	4.1	0.52
Female	1.5	0.21	3.0	0.60	*1.5	0.92	1.5	0.36	*0.6	0.20
Carried a weapon										
Both sexes.	14.5	0.41	25.6	1.12	20.2	3.42	13.8	0.78	9.5	0.59
Male	23.4	0.71	39.4	1.74	30.8	6.40	22.1	1.37	16.5	1.02
Female	5.6	0.38	11.0	1.10	*11.3	4.29	5.8	0.70	2.6	0.43
Engaged in physical fight in past year										
Both sexes.	38.6	0.59	54.7	1.09	48.6	3.50	38.3	1.05	29.0	0.86
Male	47.7	0.81	64.1	1.40	53.9	5.42	47.1	1.39	38.4	1.32
Female	29.3	0.77	44.3	1.70	41.8	5.20	29.6	1.45	19.8	0.95
Ever had sexual intercourse²										
Both sexes.	60.8	0.72	80.0	0.99	80.4	3.27	60.6	1.13	41.4	1.40
Male	62.4	0.96	79.9	1.38	77.7	5.58	60.0	1.61	45.9	1.85
Female	59.1	1.05	80.0	1.42	82.9	3.43	61.0	1.64	36.6	1.89
Did not always use seat belt										
Both sexes.	65.8	0.68	76.6	1.03	71.6	3.05	67.7	1.11	55.7	1.11
Male	70.2	0.87	80.6	1.38	79.0	4.34	70.9	1.44	60.3	1.56
Female	61.4	0.93	72.2	1.61	66.3	3.61	64.9	1.56	51.2	1.47
Exercised vigorously fewer than 3 times in past week³										
Both sexes.	46.2	0.58	49.6	1.17	48.9	3.78	44.1	1.00	44.8	1.00
Male	40.1	0.79	45.6	1.62	51.5	6.27	36.1	1.42	37.7	1.39
Female	52.4	0.83	54.0	1.64	45.6	4.44	51.6	1.40	51.7	1.43
Ate fewer than five servings of fruits and vegetables yesterday										
Both sexes.	87.0	0.42	89.6	0.80	91.2	1.94	89.0	0.65	83.6	0.74
Male	86.1	0.58	88.4	1.18	92.8	2.61	87.5	1.04	82.7	1.05
Female	87.9	0.57	90.7	1.00	90.1	2.91	90.5	0.82	84.5	1.01

¹Reference period is past 30 days unless otherwise specified.

²Ages 14–21 years and never married.

³Vigorous is defined as exercise that made the youth sweat and breathe hard.

NOTE: Total age-adjusted percents may differ slightly from total percents shown in table 1 due to minor variations in item nonresponse among youth in the various smoking status groups.

Technical notes

Target population

The estimates presented in this report are based on data from the 1992 National Health Interview Survey of Youth Risk Behavior (NHIS-YRBS). The National Health Interview Survey (NHIS) is a continuous, nationwide, household interview survey of the civilian noninstitutionalized population of the United States, conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC).

The NHIS-YRBS was a followback survey of a subsample of youth ages 12–21 years who were identified at the time of the 1992 NHIS household interviews. Within each NHIS sample family, one youth attending school and up to two youth not in school or whose in-school status was unknown were randomly selected for the NHIS-YRBS interview. Youth in all NHIS sample families, including emancipated youth (married youth and/or those not living with a parent or guardian), were eligible for selection. The youth were interviewed approximately 2 months after the initial NHIS interview. NHIS-YRBS interviews were conducted in person from April 1992 through March 1993. The ages shown in this report represent the youths' ages at the time of the initial NHIS interview, which may not be the same as their ages at the time of the NHIS-YRBS interview because of the 2-month lag between the two data collection points. The questions on sexual intercourse were asked of all youth who were 14 years old or older by the time of the NHIS-YRBS interview. However, for consistency with other data presented in this report, the data on sexual intercourse shown in tables 1 and 2 are limited to youth who were 14 years old at the time of the initial NHIS household interview.

Description of the survey

The NHIS-YRBS provides estimates of health risk behaviors for the noninstitutionalized household population of youth ages 12–21 years. Topics covered in the YRBS include:

tobacco use including cigarettes, chewing tobacco, and snuff; alcohol consumption; illegal drug use and perceptions of risks associated with their use; nutrition, including weight control; physical activity; injury control, including helmet use when riding bicycles and motorcycles; violence, including frequency of physical fighting and carrying weapons; overnight stays away from home and without permission; sexual history and practices; and AIDS education at home and in school. This survey is part of the Youth Risk Behavior Surveillance System (YRBSS). The YRBSS was developed by the Division of Adolescent and School Health of the National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC), to monitor the major health risk behaviors of American youth. The surveillance system is described elsewhere (16). The majority of the YRBSS is school-based and has been tracking behaviors of in-school youth since 1990. The 1992 NHIS-YRBS added a new dimension to the study of health risk behaviors among American youth by providing estimates of risk behaviors for out-of-school youth (17). Out-of-school youth were oversampled in the NHIS-YRBS to achieve reliable estimates for this hard-to-reach group; a special question was added to the basic NHIS questionnaire in 1992 to determine school status for the YRBS sample.

Data collection methods

Interviews are conducted for NCHS by staff of the U.S. Bureau of the Census. The basic health and demographic questionnaire of the NHIS is administered in a personal interview, with telephone follow-up permitted for hard-to-reach people. Basic health information is collected for every member of the family residing in the household. Based on the roster of family members listed at the time of interview, a subsample of youth was selected for the NHIS-YRBS.

Because the sampling frame was the 1992 NHIS and three-quarters of the data were collected in 1992, for ease of reading, findings from the NHIS-YRBS

are referred to as 1992 results although the data were collected from April 1992 through March 1993.

In collaboration with researchers at University of Michigan's Survey Research Center, extensive methodological testing was conducted during the development of the NHIS-YRBS to determine the optimal mode of data collection from adolescents. Results indicated that, due to the sensitive nature of the questions on the NHIS-YRBS, privacy and confidentiality would be of paramount concern to teens during the interview. Youth indicated that they would be more likely to answer questions honestly if the questions could not be heard by others in the household. Further, younger teens and those with less developed reading skills found a written questionnaire to be difficult to complete. For these reasons, questions were asked of teens using a portable audio headset. They recorded their answers on an answer sheet that included only answer categories, not questions. In addition to providing privacy and being easier for less advanced readers, this mode of data collection had the added benefit of providing standardization in asking questions that eliminated the normal variations that occur when an interviewer asks the questions.

Response rates

Of the 13,789 persons 12–21 years of age identified as eligible in the basic NHIS interview, NHIS-YRBS interviews were completed for 10,645 youths, representing a response rate of 77.2 percent of eligible respondents and an overall response rate of 73.9 percent (the product of the YRBS response rate (77.2 percent) and the response rate for the basic NHIS household interview (95.7 percent)).

School status was ascertained in two ways. At the time of the initial NHIS questionnaire, 8,062 youth were currently in school or on vacation from school, 1,886 youth were not in school, and the school status of the remaining 697 adolescents was unknown. At the time of the NHIS-YRBS interview, 8,203 were currently in school or on vacation from school, 2,384 were not in

school, and the school status of the remaining 58 youth was not ascertained. Due to some field difficulties in rostering eligible youth, the number of teenagers selected for the NHIS-YRBS was somewhat smaller than the number of youth ultimately identified as having been eligible for interview. Hence, the response rate for the NHIS-YRBS was somewhat lower than it might have been had all eligible youth been given the opportunity to respond. Another factor that may have contributed to the YRBS nonresponse rate was the requirement that interviews be done in person. Because of the portable audio headset method of data collection, telephone follow-up was not permitted for the NHIS-YRBS. Comparison of respondents and nonrespondents indicated that the two groups were not substantially different in terms of their sociodemographic profiles. Item nonresponse ranged from 0.15 to 7.86 percent for the questions discussed in this report.

Sample design and statistical testing

The NHIS sample is selected so that a national probability sample of households is interviewed each week throughout the year. A detailed discussion of the sample design is available in *Current Estimates from the National Health Interview Survey, 1992* (15). Because the estimates shown in this report are based on a sample, they are subject to sampling error. The standard error is a measure of sampling error. The standard errors shown in tables 1 and 2 of this report were calculated using SUDAAN (SURvey DATA ANalysis), developed by the Research Triangle Institute for analysis

of complex sample surveys. The unadjusted percents were calculated using PROC CROSSTABS. The age-adjusted percents were calculated using PROC DESCRIPT. The entire NHIS-YRBS sample (age groups: 12–13 years, 14–17 years, and 18–21 years) was used as the standard population. For the data on sexual intercourse, age adjustment was limited to the two older groups because the question was asked only of youth 14 years and older. Data for tables 1 and 2 were tabulated using WOR (without replacement) design. All estimates in this report are based on data that have been weighted to represent the U.S. population of youth 12–21 years old. Table I shows the numbers of youth in the total U.S. population and in each of the four smoking status subgroups. This table can be used to estimate numbers of youth engaging in combinations of smoking and other health risk behaviors. Population estimates derived by using table I may be slightly different from those that would be obtained had the exact denominators for each individual variable been provided. However, the differences will be small and of no statistical consequence.

All differences cited in this report are statistically significant at the .05 level. The *t*-test, with a critical value of 1.96, was used to test all comparisons that are discussed. Lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found not to be statistically significant.

Definition of terms

Current smokers—Youth who had smoked at least one cigarette in the past 30 days.

Former smokers—Youth who had at one time smoked at least one cigarette per day for 30 days, but had not smoked cigarettes in the past month.

Experimenters—Youth who had smoked at least one or two puffs of a cigarette, but had never smoked cigarettes every day for 30 days and had not used cigarettes in the last 30 days.

Never smokers—Youth who had never had even one or two puffs of a cigarette.

Drank alcohol—Consumed at least one alcoholic drink, including beer, wine, wine coolers, and liquor on at least one of the past 30 days.

Episodic heavy drinking—Consumed at least 5 drinks within a couple of hours in the past month.

Smokeless tobacco—Snuff such as Skoal, Skoal Bandits, or Copenhagen, or chewing tobacco such as Redman, Levi Garrett, or Beechnut.

Marijuana—Marijuana, grass, or pot.

Cocaine—Any form of cocaine, including powder, crack, or freebase.

Carried a weapon—Gun, knife, or club, carried at least once in the past 30 days.

Physical fight—Had been involved in at least one physical fight in the past year.

Vigorous exercise—Exercise that caused sweating and heavy breathing.

Fewer than five servings of fruits and vegetables—Adolescents were asked about their consumption of selected foods the day before the interview and could respond that they had consumed the food once, twice or more, or not at all. The foods were fruit juice, fruit, green salad, and cooked vegetables. The sum of the youth's fruit and vegetable intake was obtained by

Table I. Number of youth by cigarette smoking status and age, United States, 1992

Smoking status	Ages 12–21 years			Ages 14–21 years ¹		
	Total	Males	Females	Total	Males	Females
	Number in thousands					
All youth ²	33,518	16,816	16,702	23,412	12,152	11,260
Current smokers	9,132	4,818	4,314	7,336	4,042	3,295
Former smokers	1,033	468	565	739	372	367
Experimenters	9,835	4,759	5,076	7,478	3,734	3,744
Never smokers	13,518	6,771	6,747	7,859	4,005	3,854

¹Never married and 14–21 years of age at time of NHIS initial household interview.

²Excludes youth for whom smoking status is unknown.

adding 1 for each time the youth said "once" and 2 for each time the youth said "2 or more." Thus, the prevalence of fruit and vegetable intake is a conservative estimate because youth who had more than 2 servings of a food were counted as having had only 2 servings.

Availability of data and related data sources

The NHIS-YRBS is available on data tape from the Division of Health Interview Statistics. The NHIS-YRBS public use data tape includes data for all questions included in the youth risk behavior questionnaire as well as all other health and demographic information gathered during the initial household interview. For some youth ages 18–21 years, data from the NHIS-YRBS can be linked to other special topics that were part of the 1992 NHIS, including AIDS Knowledge and Attitudes, Cancer Control, Cancer Epidemiology, and Family Resources. The NHIS-YRBS is also available on CD-ROM from the U.S. Government Printing Office and from the National Technical Information Service. Contact the National Center for Health Statistics' Data Dissemination Branch for ordering information.

Symbols

- - - Data not available
 - . . . Category not applicable
 - Quantity zero
 - * Figure does not meet standard of reliability or precision (more than 30-percent relative standard error in numerator of percent or rate)
 - *- Figure does not meet standard of reliability and quantity zero
-

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Advance Data

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

1993 Summary: National Hospital Discharge Survey

by Edmund J. Graves, Division of Health Care Statistics

Introduction

During 1993, there were an estimated 30.8 million discharges of inpatients, excluding newborn infants, from short-stay non-Federal hospitals in the United States. These discharges accounted for 184.6 million days of inpatient hospital care. The discharge rate was 120.2 per 1,000 population and the average length of stay was 6.0 days.

These and other statistics presented in this report are based on data collected by means of the National Hospital Discharge Survey (NHDS), a continuous survey that has been conducted by the National Center for Health Statistics (NCHS) since 1965. In 1993, data were abstracted from the medical records of approximately 235,000 discharges from 466 short-stay non-Federal hospitals. Beginning in 1988, a new three-stage stratified sample design was put in operation. A brief description of the new design, data collection procedures, estimation process, and definitions of terms used in this report are in the

section entitled "Technical notes." A description of the development and design of the original NHDS, which was in operation from 1965–1987, has been published (1). Differences may exist between data for 1988–93 and earlier years because of the redesign of the survey.

Medical data were coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* (2). Up to seven diagnoses and four procedures were coded for each discharge. Although diagnoses included in the ICD-9-CM section entitled "Supplementary classification of external causes of injury and poisoning" (codes E800–E999) were used in the NHDS, these diagnoses are excluded from this report.

Beginning in 1991, all ICD-9-CM procedure codes were used in the NHDS. In previous years, selected codes were excluded. These were primarily codes for certain miscellaneous diagnostic and therapeutic procedures.

Starting in 1985, some hospitals participating in the NHDS have been

submitting machine-readable data tapes. In 1993, approximately 32 percent of the hospitals used this method to submit data. More detailed analyses of NHDS data are published in Series 13 of the *NCHS Vital and Health Statistics* reports.

Data highlights

Utilization by patient and hospital characteristics

The number, rate, and average length of stay of discharges from short-stay non-Federal hospitals are shown by age, geographic region, and sex in tables 1–3. Of the 30.8 million discharges from short-stay hospitals during 1993, an estimated 12.3 million were for males and 18.6 million were for females. The discharge rate per 1,000 population for females was 141, which was 44 percent higher than the rate of 98 for males. The number and rate of discharges were higher for females than for males largely because women 15–44 years of age were

Acknowledgments

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Centers for Disease Control and Prevention

National Center for Health Statistics



Table 1. Number of discharges from short-stay hospitals by selected characteristics: United States, 1993

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants]

Selected characteristic	Both sexes	Male	Female
Total	30,825	12,262	18,563
Age			
Under 15 years	2,141	1,193	948
15-44 years	11,200	3,179	8,021
45-64 years	6,283	3,143	3,141
65 years and over	11,201	4,748	6,453
Region			
Northeast	6,965	2,931	4,033
Midwest	7,097	2,900	4,197
South	11,580	4,448	7,132
West	5,183	1,983	3,200

Table 2. Rate of discharges from short-stay hospitals by selected characteristics: United States, 1993

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants]

Selected characteristic	Both sexes	Male	Female
Total	120.2	98.4	140.8
Age			
Under 15 years	97.7	41.1	34.2
15-44 years	95.4	54.5	136.0
45-64 years	126.8	131.5	122.5
65 years and over	341.6	357.2	330.9
Region			
Northeast	135.8	118.8	151.6
Midwest	116.4	97.9	133.9
South	130.6	104.0	155.5
West	93.3	72.0	114.2

Table 3. Average length of stay for discharges from short-stay hospitals by selected characteristics: United States, 1993

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants]

Selected characteristic	Both sexes	Male	Female
Total	6.0	6.5	5.6
Age			
Under 15 years	5.2	5.0	5.4
15-44 years	4.2	5.8	3.5
45-64 years	6.2	6.3	6.1
65 years and over	7.8	7.5	8.1
Region			
Northeast	7.0	7.4	6.7
Midwest	6.1	6.5	5.8
South	5.7	6.3	5.4
West	5.1	5.8	4.6

frequently hospitalized for deliveries and pregnancy-related conditions.

The average length of stay was 6.5 days for males and 5.6 days for females during 1993. The average length of stay of the 4.0 million women who were hospitalized for deliveries was 2.4 days. The average length of stay was 5.2 days for children under 15 years of age, 4.2 days for the 15-44 years age group, 6.2 days for those 45-64 years of age, and 7.8 days for the group 65 years of age and over.

The number of discharges from short-stay hospitals by geographic region during 1993 ranged from 11.6 million in the South to 5.2 million in the West. Regional differences in the number of discharges were accounted for in part by variations in the population sizes. The discharge rates per 1,000 population ranged from 136 in the Northeast region to 93 in the West. Average lengths of stay by geographic region were 5.1 days in the West, 5.7 days in the South, 6.1 days in the Midwest, and 7.0 days in the Northeast.

Utilization by diagnosis

The number and rates of discharges and average length of stay for each ICD-9-CM diagnostic chapter and selected categories within chapters are shown by sex and age in tables 4-6. In 1993, 5.6 million discharges had a principal or first-listed diagnosis in the ICD-9-CM diagnostic chapter of diseases of the circulatory system. Other leading ICD-9-CM diagnostic chapters were supplementary classifications (including females with deliveries) (4.4 million discharges), diseases of the respiratory system (3.1 million discharges), and diseases of the digestive system (3.1 million discharges). Approximately 53 percent of the discharges from non-Federal short-stay hospitals were included in these four ICD-9-CM diagnostic chapters.

Within the chapters, the common diagnostic categories were deliveries, heart disease, malignant neoplasms, pneumonia, psychoses, and fractures. Excluding deliveries, these last five diagnostic categories were leading

first-listed diagnoses for both males and females.

Common diagnoses for children under 15 years of age were acute respiratory infections, pneumonia, and asthma. For the age group 15–44 years of age, frequent diagnoses were deliveries, psychoses, and fractures. For those 45–64 years of age and 65 years of age and over, heart disease and malignant neoplasms were major causes of hospitalization. Average lengths of stay ranged from 1.3 days for chronic disease of tonsils and adenoids to 12.0 for psychosis.

Utilization by procedure

One or more surgical or nonsurgical procedures were performed during an estimated 20.0 million of the 30.8 million hospitalizations in 1993. A total of 41.6 million procedures, or an average of 2.1 per discharge where at least one procedure was performed, were recorded in 1993.

The number and rate of all-listed procedures in 1993 for each ICD–9–CM procedure chapter and selected categories are shown by sex and age in tables 7 and 8. More than three-fourths of all the surgical and nonsurgical procedures performed during 1993 were in 5 of the 16 ICD–9–CM procedure chapters. These chapters were miscellaneous diagnostic and therapeutic procedures (13.6 million), obstetrical procedures (6.8 million), operations on the digestive system (5.1 million), operations on the cardiovascular system (4.4 million), and operations on the musculoskeletal system (3.2 million).

Within the chapters, frequent procedures for males were arteriography and angiocardiology, cardiac catheterization, diagnostic ultrasound, and computerized axial tomography. Procedures commonly performed on females were episiotomy, fetal EKG and fetal monitoring, cesarean section, and repair of obstetric laceration.

Commonly performed procedures for children under 15 years of age were respiratory therapy and spinal tap; for the age group 15–44 years, episiotomy, fetal EKG and fetal monitoring, and cesarean section; for those 45–64 years of age, arteriography and angiocardiology, cardiac

catheterization, and diagnostic ultrasound; and for the group 65 years of age and over, arteriography and angiocardiology, diagnostic ultrasound, and computerized axial tomography.

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Table 4. Number of discharges from short-stay hospitals, by first-listed diagnosis, sex, and age: United States, 1993[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM)*]

Category of first-listed diagnosis and ICD-9-CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
Number in thousands							
All conditions	30,825	12,262	18,563	2,141	11,200	6,283	11,201
Infectious and parasitic diseases.001-139	797	390	407	168	231	120	278
Septicemia038	270	118	152	18	28	44	180
Neoplasms140-239	1,855	759	1,096	39	346	584	885
Malignant neoplasms140-208,230-234	1,482	690	792	31	180	459	811
Malignant neoplasm of large intestine and rectum153-154,197.5	157	73	84	*	*7	46	103
Malignant neoplasm of trachea, bronchus, and lung162,197.0,197.3	194	114	80	*	*7	75	111
Malignant neoplasm of breast174-175,198.81	168	*	167	*	36	62	71
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature210-229,235-239	373	69	304	*8	166	125	74
Endocrine, nutritional and metabolic diseases, and immunity disorders.240-279	1,210	480	730	90	256	300	564
Diabetes mellitus250	464	212	252	15	120	147	182
Volume depletion276.5	347	129	218	57	50	50	189
Diseases of the blood and blood-forming organs280-289	327	149	178	50	100	63	113
Mental disorders.290-319	1,827	959	868	75	1,089	375	288
Psychoses290-299	1,054	500	554	30	564	237	222
Alcohol dependence syndrome303	252	193	59	*	175	62	13
Diseases of the nervous system and sense organs320-389	681	312	369	95	179	154	252
Diseases of the central nervous system320-336,340-349	278	119	159	29	98	61	90
Diseases of the ear and mastoid process380-389	118	59	59	52	17	20	29
Diseases of the circulatory system.390-459	5,633	2,885	2,747	25	421	1,599	3,587
Heart disease391-392.0,393-398,402,404,410-416,420-429	3,951	2,078	1,873	13	242	1,167	2,529
Acute myocardial infarction410	745	435	310	*	47	250	446
Coronary atherosclerosis.414.0	492	322	170	*	25	208	258
Other ischemic heart disease411-413,414.1-414.9	842	447	395	*	45	299	499
Cardiac dysrhythmias427	549	267	282	*	42	123	380
Congestive heart failure428.0	875	394	481	*	21	169	681
Cerebrovascular disease430-438	841	385	456	*	38	172	629
Diseases of the respiratory system460-519	3,142	1,528	1,614	667	468	576	1,430
Acute respiratory infections.460-466	400	204	196	222	62	41	75
Chronic disease of tonsils and adenoids.474	37	17	20	26	9	*	-
Pneumonia.480-486	1,184	598	586	209	142	191	642
Asthma493	468	191	278	159	128	94	87
Diseases of the digestive system520-579	3,079	1,358	1,721	206	878	810	1,185
Ulcers of the stomach and small intestine.531-534	216	114	102	*	34	61	120
Appendicitis540-543	223	131	92	47	131	29	16
Inguinal hernia.550	83	76	*8	*8	17	19	40
Noninfectious enteritis and colitis555-558	350	139	211	87	107	61	95
Cholelithiasis.574	476	134	342	*	168	146	161
Diseases of the genitourinary system580-629	1,915	663	1,252	62	746	446	662
Calculus of kidney and ureter592	225	143	82	*	104	84	36
Hyperplasia of prostate600	185	185	...	*	*	44	140
Complications of pregnancy, childbirth, and the puerperium ¹630-676	594	...	594	*	592	*	...
Abortions and ectopic and molar pregnancies630-639	133	...	133	*	132	*	...
Diseases of the skin and subcutaneous tissue680-709	451	214	237	37	129	105	180
Mellulitis and abscess681-682	304	148	155	23	94	76	111
Diseases of the musculoskeletal system and connective tissue710-739	1,561	687	874	37	481	433	611
Arthropathies and related disorders.710-719	541	215	325	11	111	114	305
Intervertebral disc disorders722	391	219	172	*	206	131	55
Congenital anomalies.740-759	150	82	69	105	28	10	*8
Certain conditions originating in the perinatal period.760-779	139	81	58	134	*	*	*
Symptoms, signs, and ill-defined conditions780-799	327	153	174	53	134	87	53
Injury and poisoning800-999	2,718	1,395	1,323	238	1,007	515	959
Fractures, all sites800-829	1,017	440	577	77	303	144	494
Fracture of neck of femur820	307	72	235	*	*8	20	276
Intracranial injuries (excluding those with skull fracture)850-854	160	102	58	30	72	23	35
Lacerations and open wounds870-904	171	129	42	20	107	25	20
Supplementary classifications.V01-V82	4,419	168	4,251	57	4,110	105	147
Females with deliveriesV27	4,015	...	4,015	11	4,001	*	...

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

Table 5. Rate of discharges from short-stay hospitals, by first-listed diagnosis, sex, and age: United States, 1993[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM)*]

Category of first-listed diagnosis and ICD-9-CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
		Number per 10,000 population					
All conditions	1,202.1	984.2	1,407.9	377.3	945.5	1,268.1	3,415.7
Infectious and parasitic diseases.001-139	31.1	31.3	30.9	29.6	19.7	24.3	84.7
Septicemia038	10.5	9.5	11.5	3.2	2.4	8.9	54.9
Neoplasms140-239	72.3	60.9	83.2	7.0	29.5	117.8	270.0
Malignant neoplasms140-208,230-234	57.8	55.3	60.1	5.5	15.4	92.6	247.4
Malignant neoplasm of large intestine and rectum153-154,197.5	6.1	5.9	6.4	*	*0.6	9.3	31.5
Malignant neoplasm of trachea, bronchus, and lung162,197.0,197.3	7.6	9.2	6.1	*	*0.6	15.1	33.9
Malignant neoplasm of breast174-175,198.81	6.6	*	12.7	*	3.0	12.4	21.5
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature210-229,235-239	14.5	5.5	23.1	*1.4	14.2	25.2	22.7
Endocrine, nutritional and metabolic diseases, and immunity disorders.240-279	47.2	38.5	55.4	15.9	21.8	60.6	171.9
Diabetes mellitus250	18.1	17.0	19.1	2.6	10.2	29.8	55.4
Vitamin depletion276.5	13.5	10.4	16.5	10.0	4.3	10.1	57.7
Diseases of the blood and blood-forming organs280-289	12.7	11.9	13.5	8.9	8.5	12.8	34.4
Mental disorders.290-319	71.3	77.0	65.9	13.2	92.8	75.8	87.7
Psychoses290-299	41.1	40.1	42.0	5.3	48.1	47.9	67.8
Alcohol dependence syndrome303	9.8	15.5	4.5	*	14.9	12.5	4.1
Diseases of the nervous system and sense organs320-389	26.5	25.0	28.0	16.8	15.3	31.1	76.9
Diseases of the central nervous system320-336,340-349	10.8	9.6	12.1	5.2	8.3	12.3	27.6
Diseases of the ear and mastoid process380-389	4.6	4.7	4.5	9.1	1.5	4.0	9.0
Diseases of the circulatory system.390-459	219.6	231.6	208.4	4.4	35.9	322.7	1,093.9
Heart disease391-392.0,393-398,402,404,410-416,420-429	154.1	166.8	142.1	2.4	20.6	235.4	771.3
Acute myocardial infarction410	29.0	34.9	23.5	*	4.0	50.5	136.0
Coronary atherosclerosis.414.0	19.2	25.9	12.9	*	2.2	42.1	78.7
Other ischemic heart disease411-413,414.1-414.9	32.8	35.9	29.9	*	3.8	60.3	152.0
Cardiac dysrhythmias427	21.4	21.5	21.4	*	3.5	24.9	115.8
Congestive heart failure428.0	34.1	31.6	36.5	*	1.8	34.1	207.6
Cerebrovascular disease430-438	32.8	30.9	34.6	*	3.2	34.7	192.0
Diseases of the respiratory system460-519	122.5	122.6	122.4	117.6	39.9	116.3	436.2
Acute respiratory infections.460-466	15.6	16.4	14.9	39.2	5.3	8.2	22.7
Chronic disease of tonsils and adenoids.474	1.4	1.3	1.5	4.5	0.8	*	-
Pneumonia.480-486	46.2	48.0	44.5	36.9	12.1	38.5	195.9
Asthma493	18.3	15.3	21.1	28.0	10.9	19.0	26.6
Diseases of the digestive system520-579	120.1	109.0	130.5	36.3	74.9	163.6	361.2
Ulcers of the stomach and small intestine.531-534	8.4	9.1	7.7	*	2.9	12.4	36.6
Appendicitis540-543	8.7	10.5	7.0	8.3	11.2	5.8	4.8
Inguinal hernia.550	3.3	6.1	*0.6	*1.4	1.4	3.8	12.2
Noninfectious enteritis and colitis555-558	13.7	11.1	16.0	15.3	9.1	12.3	29.0
Cholelithiasis.574	18.6	10.8	25.9	*	14.3	29.5	49.0
Diseases of the genitourinary system580-629	74.7	53.2	95.0	10.9	63.6	89.9	201.8
Calculus of kidney and ureter592	8.8	11.5	6.2	*	8.8	16.9	11.1
Hyperplasia of prostate600	7.2	14.8	...	*	*	8.9	42.7
Complications of pregnancy, childbirth, and the puerperium ¹630-676	23.2	...	45.1	*	50.4	*	...
Abortions and ectopic and molar pregnancies630-639	5.2	...	10.1	*	11.3	*	...
Diseases of the skin and subcutaneous tissue680-709	17.6	17.2	18.0	6.5	11.0	21.3	54.8
Cellulitis and abscess681-682	11.8	11.9	11.8	4.1	8.0	15.3	33.7
Diseases of the musculoskeletal system and connective tissue710-739	60.9	55.1	66.3	6.5	41.0	87.4	186.3
Arthropathies and related disorders.710-719	21.1	17.3	24.7	1.9	9.5	22.9	93.0
Intervertebral disc disorders722	15.3	17.6	13.0	*	17.5	26.3	16.7
Congenital anomalies.740-759	5.9	6.5	5.2	18.5	2.3	2.0	*2.4
Certain conditions originating in the perinatal period.760-779	5.4	6.5	4.4	23.6	*	*	*
Symptoms, signs, and ill-defined conditions780-799	12.7	12.3	13.2	9.3	11.4	17.5	16.3
Injury and poisoning800-999	106.0	112.0	100.4	41.9	85.8	103.9	292.3
Fractures, all sites800-829	39.7	35.3	43.8	13.5	25.8	29.1	150.7
Fracture of neck of femur820	12.0	5.8	17.8	*	*0.7	4.1	84.1
Intracranial injuries (excluding those with skull fracture)850-854	6.2	8.2	4.4	5.3	6.1	4.6	10.7
Lacerations and open wounds.870-904	6.7	10.4	3.2	3.5	9.1	5.1	5.9
Supplementary classifications.V01-V82	172.3	13.5	322.4	10.1	350.3	21.1	44.8
Females with deliveriesV27	156.6	...	304.5	2.0	341.0	*	...

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

Table 6. Average length of stay for discharges from short-stay hospitals, by first-listed diagnosis, sex, and age: United States, 1993[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM)*]

Category of first-listed diagnosis and ICD-9-CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
				Number of days			
All conditions	6.0	6.5	5.6	5.2	4.2	6.2	7.8
Infectious and parasitic diseases	7.9	8.4	7.5	4.4	7.7	9.5	9.6
Septicemia	10.6	10.9	10.3	7.7	11.7	12.1	10.3
Neoplasms	7.4	8.3	6.7	7.2	4.8	7.3	8.4
Malignant neoplasms	8.1	8.5	7.7	7.0	6.1	8.0	8.6
Malignant neoplasm of large intestine and rectum	11.0	10.5	11.4	*	*9.3	9.8	11.7
Malignant neoplasm of trachea, bronchus, and lung	8.7	8.4	9.0	*	*6.5	8.6	8.9
Malignant neoplasm of breast	3.7	*	3.7	*	3.2	3.9	3.8
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature	4.5	5.9	4.1	*8.0	3.5	4.5	6.1
Endocrine, nutritional and metabolic diseases, and immunity disorders	6.6	6.4	6.7	4.1	5.2	6.1	7.8
Diabetes mellitus	7.5	7.2	7.7	4.5	5.0	7.3	9.6
Volume depletion	5.9	5.5	6.2	2.7	6.2	5.2	7.0
Diseases of the blood and blood-forming organs	5.8	5.7	5.9	4.5	5.3	5.8	6.8
Mental disorders	10.3	9.8	10.8	14.5	9.3	10.5	12.5
Psychoses	12.0	11.6	12.3	16.1	10.9	12.4	13.7
Alcohol dependence syndrome	8.5	8.2	9.3	*	8.4	8.5	9.2
Diseases of the nervous system and sense organs	5.4	5.7	5.3	4.2	5.1	5.2	6.3
Diseases of the central nervous system	8.5	9.1	8.1	6.2	6.7	8.1	11.5
Diseases of the ear and mastoid process	3.1	2.5	3.7	3.4	2.0	2.9	3.5
Diseases of the circulatory system	6.7	6.3	7.0	5.2	5.3	5.9	7.2
Heart disease	6.3	6.0	6.6	5.6	4.7	5.5	6.8
Acute myocardial infarction	7.4	7.0	7.8	*	5.5	6.6	8.0
Coronary atherosclerosis	6.0	5.6	6.7	*	4.1	5.2	6.9
Other ischemic heart disease	4.5	4.5	4.6	*	3.2	4.1	4.9
Cardiac dysrhythmias	4.8	5.0	4.7	*	2.7	4.4	5.2
Congestive heart failure	7.5	7.0	7.9	*	6.2	6.5	7.8
Cerebrovascular disease	8.4	8.1	8.7	*	9.0	8.3	8.4
Diseases of the respiratory system	6.7	6.5	7.0	3.8	4.9	6.9	8.6
Acute respiratory infections	4.0	3.6	4.4	3.2	3.6	4.4	6.4
Chronic disease of tonsils and adenoids	1.3	1.2	1.3	1.3	1.2	*	-
neumonia	7.8	7.6	8.0	4.8	6.6	7.4	9.2
Asthma	4.4	3.8	4.9	3.4	3.5	5.4	6.7
Diseases of the digestive system	5.7	5.6	5.7	4.0	4.4	5.4	7.1
Ulcers of the stomach and small intestine	6.7	6.5	6.8	*	4.9	6.1	7.5
Appendicitis	4.5	4.6	4.3	5.0	3.6	5.1	8.7
Anginal hernia	2.7	2.6	*4.6	*2.5	1.6	1.9	3.7
Noninfectious enteritis and colitis	4.8	4.6	5.0	2.5	4.0	5.5	7.6
Cholelithiasis	4.2	4.6	4.1	*	3.3	3.2	6.1
Diseases of the genitourinary system	4.5	4.7	4.4	4.1	3.4	4.0	6.1
Calculus of kidney and ureter	2.9	2.8	3.2	*	2.8	2.6	4.0
Hyperplasia of prostate	3.8	3.8	...	*	*	3.3	3.9
Complications of pregnancy, childbirth, and the puerperium ¹	2.6	...	2.6	*	2.6	*	...
Abortions and ectopic and molar pregnancies	2.0	...	2.0	*	2.0	*	...
Diseases of the skin and subcutaneous tissue	7.6	7.9	7.3	3.9	6.5	7.5	9.2
Cellulitis and abscess	6.6	6.7	6.4	3.8	5.8	6.8	7.7
Diseases of the musculoskeletal system and connective tissue	5.8	5.1	6.4	4.7	3.7	4.8	8.2
Arthropathies and related disorders	6.8	6.0	7.4	4.2	3.3	6.1	8.5
Intervertebral disc disorders	4.0	3.6	4.5	*	3.5	3.9	5.9
Congenital anomalies	6.7	6.1	7.3	7.2	4.8	4.8	*8.0
Certain conditions originating in the perinatal period	11.3	11.3	11.3	11.5	*	*	*
Symptoms, signs, and ill-defined conditions	2.8	2.7	2.8	3.1	2.4	2.3	4.1
Injury and poisoning	6.4	5.8	6.9	4.6	4.8	6.3	8.5
Fractures, all sites	7.5	6.7	8.0	4.3	5.6	6.4	9.4
Fracture of neck of femur	10.3	10.5	10.2	*	*10.1	10.4	10.3
Intracranial injuries (excluding those with skull fracture)	7.3	7.1	7.5	2.9	7.5	7.5	10.5
Lacerations and open wounds	3.7	3.5	4.2	3.3	3.0	4.5	6.3
Supplementary classifications	2.9	8.3	2.7	6.1	2.5	6.0	11.9
Females with deliveries	2.4	...	2.4	2.6	2.4	*	...

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

Table 7. Number of all-listed procedures for discharges from short-stay hospitals, by procedure category, sex, and age: United States, 1993

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Procedure groupings and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM)*]

Procedure category and ICD-9-CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
Number in thousands							
All procedures	41,608	16,142	25,466	1,863	16,021	9,178	14,546
Operations on the nervous system01-05	909	449	460	188	327	183	211
Spinal tap03.31	334	168	166	140	88	47	58
Operations on the endocrine system06-07	90	25	64	*	30	35	22
Operations on the eye08-16	391	188	203	19	83	81	208
Operations on the ear18-20	83	48	35	40	22	13	*8
Operations on the nose, mouth, and pharynx21-29	390	213	177	77	163	84	66
Tonsillectomy with or without adenoidectomy28.2-28.3	50	24	26	31	16	*	*
Operations on the respiratory system30-34	986	554	432	46	187	277	475
Bronchoscopy with or without biopsy33.21-33.24,33.27	301	173	128	13	58	88	142
Operations on the cardiovascular system35-39	4,410	2,619	1,791	131	486	1,560	2,234
Removal of coronary artery obstructon36.0	398	268	130	*	30	185	183
Coronary artery bypass graft 1/.36.1	485	353	133	-	21	205	260
Cardiac catheterization37.21-37.23	1,010	613	397	14	90	420	485
Insertion, replacement, removal, and revision of pacemaker leads or device37.7-37.8	281	141	141	*	*	42	232
Shunt or vascular bypass39.0-39.2	173	99	74	*	19	58	94
Hemodialysis39.95	328	168	161	*	73	117	137
Operations on the hemic and lymphatic system40-41	377	197	181	22	63	117	176
Operations on the digestive system42-54	5,096	2,106	2,990	169	1,376	1,342	2,210
Endoscopy of small intestine with or without biopsy45.11-45.14,45.16	832	367	465	11	143	207	471
Endoscopy of large intestine with or without biopsy45.21-45.25	517	211	306	*	74	133	307
Partial excision of large intestine45.7	207	93	113	*	24	60	120
Appendectomy, excluding incidental47.0	250	135	115	49	148	35	17
Cholecystectomy51.2	502	148	354	*	182	150	168
Repair of inguinal hernia53.0-53.1	109	96	13	10	19	27	54
Lysis of peritoneal adhesions54.5	347	58	289	*	171	84	90
Operations on the urinary system55-59	1,263	653	610	35	317	341	570
Cystoscopy with or without biopsy57.31-57.33	329	211	118	*	60	83	181
Operations on the male genital organs60-64	468	468	...	30	30	96	312
Prostatectomy60.2-60.6	317	317	...	...	*	66	250
Operations on the female genital organs65-71	2,197	...	2,197	*6	1,454	492	245
Oophorectomy and salpingo-oophorectomy65.3-65.6	443	...	443	*	225	164	52
Bilateral destruction or occlusion of fallopian tubes66.2-66.3	384	...	384	*	383	*	...
Hysterectomy68.3-68.7,68.9	562	...	562	*	326	172	63
Dilation and curettage of uterus69.0	127	...	127	*	99	19	*9
Repair of cystocele and rectocele70.5	159	...	159	-	41	60	58
Obstetrical procedures72-75	6,763	...	6,763	19	6,740	*	...
Episiotomy with or without forceps or vacuum extraction72.1,72.21,72.31,72.71,73.6	1,562	...	1,562	*	1,555	*	...
Artificial rupture of membranes73.0	744	...	744	*	742	*	...
Cesarean section74.0-74.2,74.4,74.99	917	...	917	*	915	*	...
Fetal EKG (scalp) and fetal monitoring, not otherwise specified75.32,75.34	1,142	...	1,142	*	1,139	*	...
Repair of current obstetric laceration75.5-75.6	860	...	860	*	857	*	...
Operations on the musculoskeletal system76-84	3,223	1,600	1,623	151	1,231	798	1,043
Partial excision of bone76.2-76.3,77.6-77.8	227	123	104	*	96	76	50
Open reduction of fracture with internal fixation79.3	423	175	247	13	142	79	189
Excision or destruction of intervertebral disc80.5	333	183	150	*	175	115	44
Total hip replacement81.51	125	51	74	*	9	31	83
Total knee replacement81.54	179	62	117	*	*	42	131
Operations on the integumentary system85-86	1,364	565	799	74	475	364	450
Mastectomy85.4	124	*	123	*	24	43	57
Debridement of wound, infection, or burn86.22,86.28	334	184	150	20	108	88	118
Skin graft86.6-86.7	120	69	51	11	46	28	34
Miscellaneous diagnostic and therapeutic procedures87-99	13,599	6,455	7,143	854	3,038	3,391	6,315
Computerized axial tomography87.03,87.41,87.71,88.01,88.38	1,158	565	594	59	272	251	576
Pyelogram87.73-87.75	197	108	89	*	73	59	61
Arteriography and angiocardiology using contrast material88.4-88.5	1,731	1,024	706	19	183	699	830
Diagnostic ultrasound88.7	1,420	572	848	60	354	318	688
Circulatory monitoring89.6	505	239	266	23	89	122	271
Radionuclide scan92.0-92.1	412	173	239	12	69	109	222
Respiratory therapy93.9	876	427	449	185	117	165	409

*The number of discharges with a coronary artery bypass graft was 309,000.

Table 8. Rate of all-listed procedures for discharges from short-stay hospitals, by procedure category, sex, and age: United States, 1993[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Procedure groupings and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM)*]

Procedure category and ICD-9-CM code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
				Number per 100,000 population			
All procedures	16,225.6	12,955.9	19,315.6	3,283.4	13,653.6	18,521.8	44,360.0
Operations on the nervous system01-05	354.5	360.7	348.6	330.9	278.5	369.4	644.6
Spinal tap03.31	130.1	134.6	125.8	247.0	75.3	93.8	178.4
Operations on the endocrine system06-07	35.0	20.2	48.9	*	25.2	70.9	65.8
Operations on the eye08-16	152.4	151.1	153.7	34.1	70.4	163.2	634.5
Operations on the ear18-20	32.5	38.4	26.8	69.9	19.1	25.9	*25.8
Operations on the nose, mouth, and pharynx21-29	152.2	171.3	134.1	135.7	138.7	170.3	201.6
Tonsillectomy with or without adenoidectomy28.2-28.3	19.6	19.1	20.0	54.3	13.6	*	*
Operations on the respiratory system30-34	384.4	444.7	327.4	80.7	159.7	559.3	1,449.9
Bronchoscopy with or without biopsy33.21-33.24,33.27	117.3	138.6	97.2	23.7	49.5	176.8	432.2
Operations on the cardiovascular system35-39	1,719.8	2,102.0	1,358.7	230.0	414.2	3,148.5	6,811.7
Removal of coronary artery obstruction36.0	155.3	215.2	98.7	*	25.6	372.9	558.4
Coronary artery bypass graft 1/36.1	189.3	283.2	100.5	-	17.9	413.2	791.8
Cardiac catheterization37.21-37.23	393.8	491.6	301.3	24.9	76.7	848.2	1,479.8
Insertion, replacement, removal, and revision of pacemaker leads or device37.7-37.8	109.6	112.8	106.6	*	*	85.0	708.2
Shunt or vascular bypass39.0-39.2	67.5	79.4	56.2	*	16.4	118.0	285.5
Hemodialysis39.95	128.1	134.5	122.1	*	62.3	235.9	419.1
Operations on the hemic and lymphatic system40-41	147.1	157.7	137.0	38.4	53.5	235.6	536.2
Operations on the digestive system42-54	1,987.4	1,690.7	2,267.7	298.6	1,172.3	2,707.5	6,738.7
Endoscopy of small intestine with or without biopsy45.11-45.14,45.16	324.5	294.3	353.0	18.9	121.8	418.1	1,437.1
Endoscopy of large intestine with or without biopsy45.21-45.25	201.7	169.6	232.0	*	62.7	268.0	936.0
Partial excision of large intestine45.7	80.6	74.8	86.0	*	20.8	120.6	367.3
Appendectomy, excluding incidental47.0	97.5	108.5	87.1	87.2	126.4	71.2	52.0
Cholecystectomy51.2	195.6	118.6	268.4	*	155.4	302.2	512.8
Repair of inguinal hernia53.0-53.1	42.6	77.3	9.9	18.0	16.0	53.7	163.7
Lysis of peritoneal adhesions54.5	135.5	46.7	219.3	*	145.3	169.7	273.6
Operations on the urinary system55-59	492.4	524.0	462.5	61.1	270.4	688.1	1,737.3
Cystoscopy with or without biopsy57.31-57.33	128.2	169.2	89.4	*	51.3	166.8	552.8
Operations on the male genital organs60-64	182.6	375.8	...	53.3	25.4	193.4	952.2
Prostatectomy60.2-60.6	123.7	254.6	...	...	*	133.5	761.3
Operations on the female genital organs65-71	856.6	...	1,666.0	*10.0	1,238.9	993.0	747.6
Oophorectomy and salpingo-oophorectomy65.3-65.6	172.6	...	335.6	*	191.7	331.3	159.7
Bilateral destruction or occlusion of fallopian tubes66.2-66.3	149.6	...	291.0	*	326.4	*	...
Hysterectomy68.3-68.7,68.9	219.0	...	426.0	*	278.2	347.1	191.5
Dilation and curettage of uterus69.0	49.6	...	96.4	*	84.6	38.7	*26.1
Repair of cystocele and rectocele70.5	62.1	...	120.8	-	35.1	121.5	176.5
Obstetrical procedures72-75	2,637.3	...	5,129.6	33.9	5,743.7	*	...
Episiotomy with or without forceps or vacuum extraction72.1,72.21,72.31,72.71,73.6	608.9	...	1,184.4	*	1,325.6	*	...
Artificial rupture of membranes73.0	290.3	...	564.6	*	631.9	*	...
Cesarean section74.0-74.2,74.4,74.99	357.7	...	695.8	*	780.0	*	...
Fetal EKG (scalp) and fetal monitoring, not otherwise specified75.32,75.34	445.5	...	866.4	*	970.4	*	...
Repair of current obstetric laceration75.5-75.6	335.3	...	652.2	*	730.0	*	...
Operations on the musculoskeletal system76-84	1,256.9	1,284.5	1,230.9	265.6	1,049.2	1,610.2	3,182.2
Partial excision of bone76.2-76.3,77.6-77.8	88.6	98.8	78.9	*	82.1	152.8	153.1
Open reduction of fracture with internal fixation79.3	164.8	140.8	187.4	23.0	120.8	159.7	575.0
Excision or destruction of intervertebral disc80.5	130.0	147.2	113.7	*	148.8	231.5	193.7
Total hip replacement81.51	48.8	41.1	56.1	*	7.8	63.4	252.5
Total knee replacement81.54	69.7	49.8	88.5	*	*	85.5	400.0
Operations on the integumentary system85-86	531.7	453.5	605.7	129.8	405.2	735.2	1,372.7
Mastectomy85.4	48.3	*	93.1	*	20.2	86.8	173.1
Debridement of wound, infection, or burn86.22,86.28	130.2	147.9	113.5	35.1	91.9	176.8	361.3
Skin graft86.6-86.7	46.7	55.4	38.4	18.9	39.6	57.2	104.0
Miscellaneous diagnostic and therapeutic procedures87-99	5,302.9	5,181.3	5,417.9	1,505.4	2,589.2	6,843.1	19,259.2
Computerized axial tomography87.03,87.41,87.71,88.01,88.38	451.8	453.3	450.3	104.4	231.9	505.9	1,757.9
Pyelogram87.73-87.75	76.8	86.4	67.8	*	62.1	118.4	187.2
Arteriography and angiocardiology using contrast material88.4-88.5	674.9	822.2	535.7	33.2	156.0	1,410.4	2,531.1
Diagnostic ultrasound88.7	553.9	459.3	643.2	105.9	302.0	641.7	2,097.6
Circulatory monitoring89.6	196.9	192.0	201.5	40.3	75.6	246.7	826.7
Radiolotope scan92.0-92.1	160.6	139.1	181.0	21.3	59.0	219.8	676.1
Respiratory therapy93.9	341.7	342.6	340.8	326.2	99.4	333.1	1,248.2

*The rate per 100,000 population of discharges with a coronary artery bypass graft was 120.6.

Technical notes

Survey methodology

Source of data

The National Hospital Discharge Survey covers discharges from noninstitutional hospitals, exclusive of Federal, military, and Department of Veterans Affairs hospitals, located in the 50 States and the District of Columbia. Only short-stay hospitals (hospitals with an average length of stay for all patients of fewer than 30 days) or those whose specialty is general (medical or surgical) or children's general are included in the survey. These hospitals must also have six beds or more staffed for patient use.

From 1988 through 1990, the NHDS sampling frame consisted of hospitals that were listed in the April 1987 SMG Hospital Market Database (3), met the above criteria, and began accepting patients by August 1987. In 1991 the sampling frame was updated to include hospitals from the 1991 SMG Hospital Database (4). For 1993, the sample consisted of 528 hospitals. Of the 528 hospitals, 15 were found to be out of scope (ineligible) because they went out of business or otherwise failed to meet the criteria for the NHDS universe. Of the 513 in-scope (eligible) hospitals, 466 responded to the survey.

Sample design and data collection

The NCHS has conducted the NHDS continuously since 1965. The original sample was selected in 1964 from a frame of short-stay hospitals listed in the National Master Facility Inventory. That sample was updated periodically with samples of newly opened hospitals. Sample hospitals were selected with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals. Within each sample hospital, a systematic random sample of discharges was selected. A report on the design and development of the original NHDS has been published (1).

Beginning in 1988, the NHDS sample includes with certainty all hospitals with 1,000 beds or more or 40,000 discharges or more annually. The remaining sample of hospitals is based

on a stratified three-stage design. The first stage consists of a selection of 112 primary sampling units (PSU's) that comprise a probability subsample of PSU's to be used in the 1985-94 National Health Interview Survey. The second stage consists of a selection of noncertainty hospitals from the sample PSU's. At the third stage, a sample of discharges was selected by a systematic random sampling technique.

Two data collection procedures were used for the survey. The first was a manual system of sample selection and data abstraction. The second was an automated method, used for approximately 32 percent of the respondent hospitals in 1993, that involved the purchase of data tapes from abstracting service organizations, State data systems, or hospitals.

In the manual system, the sample selection and the transcription of information from the hospital records to abstract forms were performed at the hospitals. The completed forms, along with sample selection control sheets, were forwarded to NCHS for coding, editing, and weighting. Of the hospitals using the manual system in 1993, about 55 percent had the work performed by their own medical records staff. In the remaining hospitals using the manual system, personnel of the U.S. Bureau of the Census did the work on behalf of NCHS.

For the automated system, NCHS purchased tapes containing machine-readable medical record data that were systematically sampled by NCHS.

The medical abstract form and the automated data tapes contain items relating to the personal characteristics of the patient, including birth date, sex, race, and marital status, but not name and address; administrative information, including admission and discharge dates, discharge status, and medical record number; and medical information, including diagnoses and surgical and nonsurgical operations or procedures. Since 1977, patient ZIP Code, expected source of payment, and dates of surgery have also been collected. (The medical record number and patient ZIP Code are

confidential information and are not available to the public.)

Presentation of estimates

The relative standard error of the estimate and the number of sample records on which the estimate is based (referred to as the sample size) are used to identify estimates with relatively low reliability.

Because of the complex sample design of the NHDS, estimates of less than 5,000 are not presented; only an asterisk (*) appears in the tables. These estimates generally have a relative standard error of more than 30 percent or are based on a sample of fewer than 30 cases. Estimates of 5,000 to 9,000 are preceded by an asterisk (*) to indicate that they should not be assumed to be reliable. These estimates are generally based on fewer than 60 cases.

Sampling errors and rounding of numbers

The standard error is primarily a measure of sampling variability that occurs by chance because only a sample rather than the entire universe is surveyed. The relative standard error of the estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. The resulting value is multiplied by 100, so the relative standard error is expressed as a percent of the estimate.

Estimates of sampling variability were calculated with SESUDAAN software, which computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (5).

The constants for relative standard error curves for the 1993 National Hospital Discharge Survey are presented in table I. The relative standard error $RSE(X)$ of an estimate X may be estimated from the formula:

$$RSE(X) = 100 \sqrt{a + b/X}$$

where X , a , and b are as defined in table I.

Table I. Estimated parameters for relative standard error equations for National Hospital Discharge Survey statistics by selected characteristics: United States, 1993

Characteristic	Number of discharges or first-listed diagnoses		Number of procedures	
	a	b	a	b
Total	0.00129	1,082.615	0.00178	463.926
Sex				
Male	0.00425	332.843	0.00681	273.720
Female	0.00304	417.946	0.00386	636.779
Age				
Under 15 years	0.06552	110.056	0.03770	110.109
15-44 years	0.00618	245.201	0.00863	304.399
45-64 years	0.00826	182.876	0.00509	127.555
65 years and over	0.00410	314.867	0.00176	551.656
Region				
Northeast	0.00282	307.085	0.00561	321.543
Midwest	0.00686	660.696	0.00848	212.188
South	0.00289	543.012	0.00373	418.823
West	-0.00193	1,689.447	0.00858	1,057.077

Estimates have been rounded to the nearest thousandth. For this reason, figures within tables do not always add to the totals. Rates and average lengths of stay were calculated from original, unrounded figures and will not necessarily agree precisely with rates or average lengths of stay calculated from rounded data.

Tests of significance

In this report, statistical inference is based on the two-tailed t-test with a critical value of 1.96 (0.05 level of significance). Terms such as "higher" and "less" indicate that differences are statistically significant. Terms such as "similar" or "no difference" mean that no statistically significant difference exists between the estimates being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found not to be significant.

Terms relating to hospitalization

Hospitals—All hospitals with an average length of stay for all patients of fewer than 30 days or hospitals whose specialty is general (medical or surgical) or children's general are eligible for inclusion in the National Hospital Discharge Survey, except Federal

hospitals, hospital units of institutions, and hospitals with fewer than six beds staffed for patients' use.

Patient—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. The terms "patient" and "inpatient" are used synonymously.

Newborn infant—A patient admitted by birth to a hospital.

Discharge—The formal release of a patient by a hospital; that is, the termination of a period of hospitalization by death or by disposition to place of residence, nursing home, or another hospital. The terms "discharges" and "patients discharged" are used synonymously.

Discharge rate—The ratio of the number of hospital discharges during a year to the number of persons in the civilian population on July 1 of that year.

Days of care—The number of patient days accumulated by a patient at time of discharge. A stay of less than 1 day (patient admission and discharge on the same day) is counted as 1 day in the summation of total days of care. For patients admitted and discharged on different days, the number of days of care is computed by counting all days from (and including) the date of

admission to (but not including) the date of discharge.

Average length of stay—The number of days of care accumulated by patients discharged during the year divided by the number of these patients.

Terms relating to diagnoses

Diagnosis—A disease or injury (or factor that influences health status and contact with health services that is not itself a current illness or injury) on the medical record of a patient.

Principal diagnosis—The condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care.

First-listed diagnosis—The coded diagnosis identified as the principal diagnosis or listed first on the face sheet or discharge summary of the medical record if the principal diagnosis cannot be identified. The number of first-listed diagnoses is equivalent to the number of discharges.

Terms relating to procedures

Procedure—A surgical or nonsurgical operation, diagnostic procedure, or special treatment reported on the medical record of a patient. Beginning with the 1991 data, all ICD-9-CM procedure codes are used in the NHDS. Previously selected codes, primarily codes for miscellaneous diagnostic and therapeutic procedures, were not used.

All-listed procedures—The number of procedures on the face sheet of the medical record. In the NHDS a maximum of four procedures are coded.

Rate of procedures—The ratio of the number of procedures during a year to the number of persons in the civilian population on July 1 of that year determines the rate of procedures.

Demographic terms

Population—The U.S. resident population excluding members of the Armed Forces.

Age—Patient's age at birthday prior to admission to the hospital.

Geographic region—Hospitals are classified by location in one of the four geographic regions of the United States that correspond to those used by the U.S. Bureau of the Census.

<i>Region</i>	<i>States included</i>
Northeast	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania
Midwest	Michigan, Ohio, Illinois, Indiana, 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, Hawaii, and Alaska

Symbols

- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision (more than 30-percent relative standard error in numerator of percent or rate)
#	Figure suppressed to comply with confidentiality requirements

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Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Underreporting of Race in the National Hospital Discharge Survey

by Lola Jean Kozak, Ph.D., Division of Health Care Statistics

Introduction

Race data from the National Hospital Discharge Survey (NHDS) has become increasingly incomplete in recent years. This report examines factors related to the underreporting of race and explores the effects of the underreporting on NHDS estimates of hospital use by race. A major concern is whether discharges for each racial group are equally likely to be underestimated. If underreporting of race is a general phenomenon, then the NHDS estimates of hospital use for each racial group are too low. However, if discharges for some racial groups are more likely to be underestimated than others in the NHDS, using the data to make comparisons across racial groups could be misleading.

The NHDS has been conducted continuously by the National Center for Health Statistics (NCHS) since 1965. The data for the survey come from a sample of inpatient records that are obtained from a national sample of

non-Federal general and short-stay specialty hospitals located in the United States. In 1990, data were abstracted from medical records of 266,000 discharges from 474 hospitals. In 1991, 484 hospitals provided data from 274,000 medical records, and 494 hospitals provided data from 274,000 medical records in 1992.

Beginning in 1988, a 3-stage stratified sample design was put into operation for the NHDS. For the first stage, primary sampling units (PSU's) were sampled; in the second, hospitals were sampled from the PSU's, and the third stage consisted of sampling discharges within the selected hospitals. In addition, hospitals with 1,000 beds or more or 40,000 discharges or more per year were selected with certainty.

Since 1985, two data collection procedures have been used for the NHDS. One is a manual system in which data are abstracted from the face sheet or discharge summary of the medical record for each sampled

discharge at the hospital, either by hospital staff or personnel of the U.S. Bureau of the Census, on behalf of NCHS. The other, an automated method, involves the purchase of data tapes from abstracting service organizations, State data systems, or hospitals.

Further information about the survey design, data collection procedures, sampling errors, and definition of terms used in this report can be found in the section entitled "Technical notes."

Data from the NHDS have been used to examine racial differences in patterns of hospital use that may reflect differences in access to care or in the distribution of health problems. Recent studies that have used race data from the NHDS have investigated a variety of topics, including hysterectomy (1), HIV (2), stroke (3), children's asthma (4), preeclampsia and eclampsia (5), appendicitis and appendectomy (6), coronary arteriography and coronary bypass surgery (7), hip fractures (8), and idiopathic cardiomyopathy (9).

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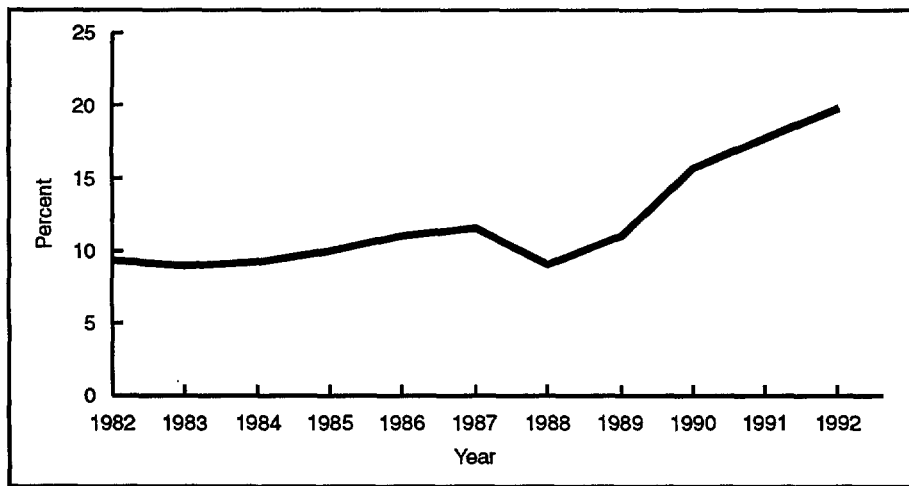


Figure 1. Percent of discharges with race not stated: United States, 1982–92

The NHDS race data have never been 100 percent complete. From 1982 through 1989, discharges with race not stated ranged from 8.9 to 11.5 percent of total discharges. Then, in 1990, the proportion of discharges with race not stated increased to 15.7 percent. In 1991, 17.8 percent of discharges were not identified by race, and in 1992, 19.8 percent of discharges were in the race-not-stated category (figure 1).

Two main factors were found to be related to the increasing underreporting of race in the NHDS. First, a growing number of the hospitals that participated in the NHDS in 1990–92 did not report race for any of their patients. In 1989, 17 hospitals did not report race, but in 1992 the number had increased to 63. Nonreporting hospitals made up only 12.8 percent of the hospitals participating in the survey in 1992, but accounted for 70.7 percent of the discharges with race not stated. Second, race was not reported for the majority of patients that were identified as Hispanic. In 1992, 16.0 percent of the discharges with race not stated were identified as Hispanic.

These two main problems will be discussed further in the following sections of this report. Approaches to estimating the racial distribution of patients not reported by race will also be examined. To further evaluate the effects of the underreporting of race, the NHDS race data will be compared with data from other sources, including hospital use data from National Health Interview Survey, Medicare data from

the Health Care Financing Administration, and natality data from the Division of Vital Statistics. Finally, adjustment of NHDS race data for underreporting will be discussed.

Highlights

- The number of hospitals in the NHDS that reported race for less than 3 percent of discharges increased from 17 in 1989 to 63 in 1992.
- Most of the hospitals that did not report race in the 1990–92 period used the automated data collection method.
- Based on data from previous years and county populations, hospitals that did not report race in 1990–92 were likely to have a higher proportion of white discharges than hospitals that reported race.
- A specific race was reported for only 25–35 percent of Hispanic patients in the 1990–92 period; most Hispanic patients were probably white.
- In comparison with the number of discharges estimated from the 1990–92 National Health Interview Survey, NHDS estimates of discharges were significantly lower for white patients, but not significantly different for black patients.
- Proportional adjustment of NHDS race data may produce more accurate estimates of white discharges, but it does not improve comparisons between racial groups.

Hospital reporting patterns

The majority of hospitals that participate in the National Hospital Discharge Survey (NHDS) report race for all or almost all discharges. In 1992, for example, 296 hospitals (59.9 percent) reported race on 97–100 percent of their sample records (table 1). The discharges not identified by race come primarily from a small group of hospitals that do not report race for any or almost any of their discharges. In 1992, 63 hospitals (12.8 percent) reported race on less than 3 percent of sampled records. These 63 hospitals accounted for 83.4 percent of the sampled records with race not stated in the 1992 NHDS, and 70.7 percent of the estimated number of discharges with race not stated.

Nonreporting hospitals, which are defined in this report as those providing race data for less than 3 percent of discharges, have increased in number in recent years (figure 2). In 1989 there were only 17 nonreporting hospitals, but the number jumped to 45 in 1990, increased to 50 in 1991, and to 63 in 1992. Nonreporting hospitals accounted for 50 percent of the sampled records with race not stated in 1989, but for 81–84 percent in 1990–92.

Most of the hospitals that did not report race in the 1990–92 period used the automated data collection method. As described earlier, the automated method refers to the purchase of medical record data in electronic form from abstracting service organizations, State data systems, or hospitals. In contrast, data collected via the manual method were transcribed from the medical record to abstract forms specifically for the NHDS.

As shown in figure 2, only 5 hospitals that did not report race used the automated data collection method in 1989, but in 1990, 31 nonreporting hospitals used the automated method. In 1991, 35 nonreporting hospitals used the automated data collection method, as did 48 nonreporting hospitals in 1992. The number of nonreporting hospitals using the manual method only increased from 12 in 1989 to 15 in 1992.

A concerted effort was made to improve the NHDS response rate in the 1990's, which resulted in a substantial

Table 1. Number and percent distribution of hospitals by proportion of sample records with race reported: United States, 1992

[Short-stay non-Federal hospitals that participated in the National Hospital Discharge Survey. Excludes newborn infants]

Proportion of records with race reported	Hospitals	
	Number	Percent
All records	494	100.0
0.0–2.9 percent	63	12.8
3.0–49.9 percent	15	3.0
50.0–74.9 percent	21	4.3
75.0–89.9 percent	41	8.3
90.0–96.9 percent	58	11.7
97.0–100.0 percent	296	59.9

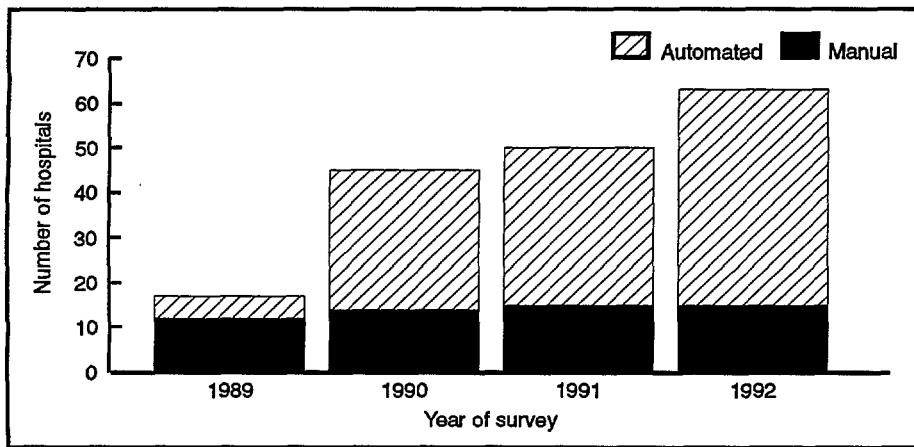


Figure 2. Number of hospitals not reporting race that used the automated and manual methods of data collection: 1989–92

Table 2. Percent distribution of discharges by race, for 26 nonreporting hospitals based on previous data and for reporting hospitals: United States, 1992

[Discharges of inpatients from non-Federal short-stay hospitals. Excludes newborn infants]

Race	26 non-reporting hospitals ¹	Reporting hospitals ²
	Percent distribution	
All races	100.0	100.0
White	87.3	75.2
Black	8.3	13.9
All other races	2.1	4.2
Race not stated	2.3	6.7

¹Nonreporting hospitals reported race for less than 3 percent of discharges. Racial distribution was based on the most recent data reported by each hospital.

²Hospitals that reported race for 3–100 percent of discharges.

Race for nonreporting hospitals

An important question to investigate is whether nonreporting hospitals have the same racial distribution of discharges as reporting hospitals. Two approaches were taken to answer this question. First, data from previous years were reviewed. The NHDS was redesigned in 1988, and with some exceptions (some hospitals went out of business, a few new hospitals were added to the sample in 1991), the same hospitals were in the sample from 1988 through 1992. Among the 63 hospitals that did not report race in 1992 were 26 that had reported race in at least 1 year from 1988–91. For each of these 26 hospitals, the percent distribution of the weighted number of discharges by race was obtained for the most recent year in which race was reported. This percent distribution was multiplied by the weighted number of discharges from the hospital in 1992.

The resulting distribution of discharges by race for the 26 hospitals combined is shown in table 2. The estimated proportion of patients who were white was significantly larger in the 26 nonreporting hospitals (87.3 percent) than in hospitals that reported race in 1992 (75.2 percent). The reporting hospitals had higher proportions of patients who were black, all other races, and race not stated.

Because the 26 hospitals that previously reported race may or may not be representative of all the hospitals that did not report race, a second approach to estimate the racial distribution of discharges from nonreporting hospitals was used. This involved an examination of the populations they served. The 1990 Census provided data on the racial distributions of counties (10) that can be used to approximate service areas of hospitals despite the fact that some hospitals may serve only part of a county or multiple counties.

A preliminary test was conducted to investigate whether it would be reasonable to use county population distributions by race as proxy measures for the distribution of discharges by race. A 20-percent stratified random sample was taken of the hospitals that

increase in the number of hospitals participating in the survey, from 408 in 1989 to 474 in 1990, 484 in 1991, and 494 in 1992. Many hospitals that had not participated in previous years agreed to participate in the NHDS through the automated systems. Much of the data obtained using the automated method were from State data systems or other

systems that used the National Uniform Bill, or UB-82 (and its successor, UB-92) for data collection. The National Uniform Bill was established for processing hospital bills and does not include race as a required item. Thus, the race of discharges was often not included in the data from such systems purchased for the NHDS.

reported race for 97–100 percent of their discharges in 1992. The county in which each sampled hospital was located was identified and the percent distribution of the population of the county by race was obtained. This percent distribution was multiplied by the weighted number of discharges from the hospital in the county.

The resulting distribution of discharges by race for the sample hospitals was 76.8 percent white patients, 17.5 percent black patients, and 5.6 percent patients of other races. In comparison, the distribution reported for these sample hospitals was 80.0 percent white discharges, 15.2 percent black discharges, and 4.1 percent discharges of other races.

Although not exact, the population distribution of a county appeared useful as a general indicator of the racial distribution of discharges from a hospital in the county. Therefore, the procedure used in the test was applied to the nonreporting hospitals. The county in which each nonreporting hospital was located was identified and the percent distribution of the population of the county by race was obtained. This percent distribution was multiplied by the weighted number of discharges from the nonreporting hospital in the county.

The resulting distributions of discharges by race for nonreporting hospitals are shown in table 3. For each year 1990 through 1992, the proportion of discharges that were white calculated for nonreporting hospitals was significantly higher than the proportion in reporting hospitals. Conversely, the proportions of discharges that were

black calculated for nonreporting hospitals were significantly lower than the proportions in reporting hospitals. The “all other races” category accounted for larger proportions of discharges for the nonreporting than for the reporting hospitals, but these proportions may have been somewhat overestimated, as in the preliminary test.

These findings are not definitive, but along with the data on racial distributions in previous years, they suggest that nonreporting hospitals may have a higher proportion of white discharges and a lower proportion of black discharges than reporting hospitals.

Hispanic patients

Race and ethnicity are separate data items for the NHDS. On the ethnicity variable, patients are identified as being of Hispanic origin, non-Hispanic origin, or not stated. Ethnicity, in general, is not well reported. For example, in 1992, only 24.6 percent of all NHDS discharges were identified as Hispanic or non-Hispanic. Because ethnicity data are not reliable, these data are not released from the NHDS.

Data on Hispanic origin are discussed here because patients identified as Hispanic usually have missing race data. As shown in table 4, more than half of Hispanic patients were in the race-not-stated category in 1990–92. Another 13–17 percent were reported in the “other” race category, so only 25–35 percent were identified as a specific race during this 3-year period.

The lack of race data for Hispanic patients is separate from the problem of

hospitals not reporting race. Hospitals that do not report race almost never report ethnicity. However, certain other hospitals report all or almost all patients identified as Hispanic in the race not stated category. In 1992, for example, 112 hospitals reported race for less than 3 percent of their Hispanic discharges, and these hospitals accounted for two-thirds of the Hispanic discharges not identified by race.

These 112 hospitals were more likely to provide data through the manual data collection system than the automated system. In the manual system, NCHS staff are instructed to code records as “race not stated” when Hispanic is written in as a race. Automated system data are not coded by NCHS staff and do not necessarily follow this practice. In 1992, a total of 32 NHDS hospitals were found in which all Hispanic discharges were assigned to the “other” race category. These were predominantly hospitals using the automated data collection system.

Some of the hospitals that have all their Hispanic discharges assigned to the “race not stated” or “other” race categories are known to be using data collection forms that do not separate race and ethnicity. Other hospitals probably also use combined categories. The Federal standards for reporting race and ethnic statistics (11) allow race and ethnicity to be collected in a combined format in which Hispanics are not identified by race.

If identified by race, the evidence indicates that most Hispanics in the “race not stated” and “other” categories would be classified as white. Among

Table 3. Percent distribution of discharges by race for nonreporting hospitals based on county population and for reporting hospitals, according to year: United States, 1990–92

[Discharges of inpatients from non-Federal short-stay hospitals. Excludes newborn infants]

Race	1990		1991		1992	
	Nonreporting hospitals ¹	Reporting hospitals ²	Nonreporting hospitals ¹	Reporting hospitals ²	Nonreporting hospitals ¹	Reporting hospitals ²
	Percent distribution					
All races	100.0	100.0	100.0	100.0	100.0	100.0
White	83.0	77.7	83.8	76.4	83.2	75.2
Black	11.4	13.1	10.5	13.6	10.6	13.9
All other races	5.6	3.5	5.7	3.8	6.2	4.2
Race not stated	—	5.7	—	6.2	—	6.7

¹Nonreporting hospitals reported race for less than 3 percent of discharges. Race distribution was based on the population of the county where the hospital was located.

²Hospitals that reported race for 3–100 percent of discharges.

Table 4. Percent distribution of discharges by race for patients identified as Hispanic, according to year: United States, 1990–92

[Discharges of inpatients from non-Federal short-stay hospitals. Excludes newborn infants]

Race	1990	1991	1992
	Percent distribution		
All races	100.0	100.0	100.0
White	33.3	28.0	23.1
Black	0.8	0.6	0.8
American Indian/Eskimo/Aleut or Asian/Pacific Islander	0.9	3.5	1.7
Other	13.3	14.4	17.2
Race not stated	51.8	53.4	57.3

Hispanic discharges reported as a specific race in 1992, 90.4 percent were identified as white, 3.1 percent as black, and 6.5 percent as American Indian/Eskimo/Aleut or Asian/Pacific Islander. In addition, the U.S. Bureau of the Census estimated that in 1990 the Hispanic population was 91.3 percent white, 5.4 percent black, and 3.3 percent American Indian/Eskimo/Aleut or Asian/Pacific Islander (12). Thus, the lack of information on the race of the majority of discharges identified as Hispanic is likely to affect NHDS estimates of white discharges disproportionately.

Comparisons

National Health Interview Survey

If discharges of white patients are underestimated to a greater extent than discharges of patients of other races in the NHDS, this should be evident in comparisons of estimates from the NHDS to data from other sources. A comparison was made of NHDS data with data from the National Health Interview Survey (NHIS), which also produces estimates of hospital use by race (13–15).

The NHIS is based on a different universe and uses different definitions and data collection procedures than the NHDS. The estimates of hospitalizations are obtained from interview questions about overnight stays in short-stay hospitals during the previous 6 months. Hospitalizations of persons who died or were institutionalized during the reference period are excluded, as are hospitalizations of healthy newborn infants.

Before comparing NHIS estimates with NHDS estimates of hospital use, the NHDS estimates were adjusted. Patients hospitalized for less than 1 day were excluded because the NHIS data were only for overnight stays. Persons discharged dead and those transferred to long-term care institutions were excluded, although the NHDS data would probably still include some persons who died or were institutionalized during a 6-month period. All newborn infants were excluded, as is usual for NHDS estimates, although some sick newborn infants may be included in the NHIS estimates. The adjustments do not make the NHDS and NHIS data completely alike, but they should be more comparable.

The adjusted NHDS estimates and the NHIS estimates of discharges from short-stay hospitals are shown in table 5

for 1990 through 1992. In each of the 3 years, the NHIS estimate of total discharges was not significantly different from the adjusted NHDS estimate. However, the estimated number of discharges for white patients from the NHIS was significantly higher than the adjusted NHDS estimate each year. The NHIS estimate was 22 percent higher in 1990, 26 percent higher in 1991, and 30 percent higher in 1992. The estimated number of discharges for black patients from the NHIS was not significantly different from the adjusted NHDS estimate of black discharges in any of the years. NHIS estimates of discharges for other racial groups were not available.

Medicare

Another source of information on the race of hospital discharges is the Health Care Financing Administration (HCFA), which obtains data on the hospitalizations of Medicare beneficiaries. In 1990, HCFA reported 10,522,000 discharges from short-stay hospitals for Medicare beneficiaries (16). Of these, 9,037,000 (85.9 percent) were identified as white, 1,185,000 (11.3 percent) were other than white, and 300,000 (2.9 percent) were not identified by race.

The NHDS estimate of discharges with Medicare as the principal expected

Table 5. Number of discharges estimated from the National Hospital Discharge Survey and the National Health Interview Survey, by year and race: United States, 1990–92

[Discharges of inpatients from short-stay hospitals]

Year and race	National Hospital Discharge Survey ¹	National Health Interview Survey
	Number in thousands	
1990		
All races ²	27,250	27,058
White	18,713	22,821
Black	3,300	3,692
1991		
All races ²	27,275	26,873
White	18,084	22,778
Black	3,395	3,420
1992		
All races ²	27,289	27,039
White	17,429	22,607
Black	3,363	3,654

¹Discharges from non-Federal hospitals. Excludes newborn infants, discharges to long-term care institutions, patients discharged dead, and discharges with inpatient stays of less than 1 day.

²Includes patients of all races and patients whose race was not stated.

Table 6. Number of discharges for women with deliveries and number of live births, by year and race: United States, 1990–92

Year and race	Discharges for women with deliveries ¹	Live births ²
	Number in thousands	
1990		
All races	4,025	4,158
White	2,431	3,290
Black	584	684
All other races	262	184
Race not stated	748	—
1991		
All races	3,973	4,111
White	2,244	3,241
Black	557	683
All other races	289	187
Race not stated	883	—
1992		
All races	3,910	4,065
White	2,148	3,202
Black	511	674
All other races	334	190
Race not stated	916	—

¹Discharges of inpatients from non-Federal short-stay hospitals estimated from the National Hospital Discharge Survey.

²Data from birth certificates. Race of mother assigned to child.

source of payment was 10,625,000 discharges in 1990. Of these, 8,135,000 (76.6 percent) were identified as white, and 1,037,000 (9.8 percent) were black and other races. The remaining 1,452,000 (13.7 percent) were in the race-not-stated category.

The estimates of total Medicare discharges from these two sources were not significantly different. Likewise, the estimate of discharges for Medicare patients of black and other races from HCFA was not significantly different from the NHDS estimate for this group. However, the HCFA estimate of white Medicare discharges was significantly higher than the NHDS estimate. Thus, these findings also suggest that white patients are more likely to be underestimated in the NHDS than patients of other races.

Birth certificates

Information about race from birth certificates was also compared to NHDS data on the race of women hospitalized for deliveries. Beginning with 1989, the data from birth certificates have been tabulated by the race of the mother. The number of births would be expected to be somewhat higher than the number of women with deliveries estimated from the NHDS because not all births take

place in non-Federal short-stay hospitals, and because one delivery can result in multiple births. However, the differences in total number of deliveries and births were not significantly different in the 1990–92 period.

The racial distribution of live births reported from birth certificates (17) is compared to the racial distribution of women with deliveries from the NHDS in table 6. The number of live births identified as white was 35 percent higher than the number of white women with deliveries in 1990, 44 percent higher in 1991, and 49 percent higher in 1992. In 1990, the number of black live births was 17 percent higher than the NHDS estimate of black women with deliveries; it was 22 percent higher in 1991, and 32 percent higher in 1992.

The number of live births that were other races was not significantly different from the estimate of women with deliveries of other races in 1990. However, in 1991 and 1992, there were more women with deliveries in the “other races” category than live births. This was due to a large number of women with deliveries in the NHDS who were reported as an unspecified other race. These data suggest problems with NHDS estimates for all the racial categories of women with deliveries, but

also support the thesis that white patients are markedly underestimated in the NHDS.

Adjustments for underreporting

Table 7 shows the number and rate of discharges by race as estimated from the NHDS in 1990–92. These estimates are compared with estimates produced by two types of adjustments. The first is proportional adjustment, a strategy used by researchers to compensate for the underreporting of race in the NHDS (1, 4, 8). In this approach, the discharges in the race-not-stated category are assigned to specific race categories based on the distribution of the discharges whose race is known.

For example, in the 1992 NHDS, 24,838,000 of the estimated 30,951,000 discharges were identified by race. Among the discharges identified by race, 80.6 percent were white, 14.9 percent were black, and 4.5 percent were other races. Distributing the 6,113,000 discharges in the race-not-stated category in the same proportions, 4,927,000 were added to the white category, 909,000 to the black category, and 278,000 to the other races category.

Proportional adjustment would be appropriate if the evidence suggested that patients of all races were equally underreported. Because white patients appear to be underreported to a greater extent than patients of other races in the NHDS, proportional adjustment would not be expected to correct accurately for nonresponse. Using this adjustment, white discharges would still be underestimated, and discharges of patients in the other race categories would be overestimated. The relative differences in discharge rates between racial groups are not affected by proportional adjustment. Thus, comparisons of proportionally adjusted rates across racial categories are no different than comparisons of unadjusted rates.

Numbers and rates of discharges resulting from a population-based adjustment are also shown in table 7. The population-based adjustment used the populations of the counties in which nonreporting hospitals were located to estimate the racial distribution of

Table 7. Number and rate of discharges, by year, race, and type of estimate: United States, 1990–92

[Discharges of inpatients from non-Federal short-stay hospitals. Excludes newborn infants]

Year and race	Discharges in thousands			Discharge rate per 1,000 population		
	NHDS estimate ¹	Proportional adjustment ²	Population-based adjustment ³	NHDS estimate ¹	Proportional adjustment ²	Population-based adjustment ³
1990						
White	21,376	25,366	24,995	102.8	122.0	120.2
Black	3,611	4,285	4,038	119.2	141.4	133.3
All other races	958	1,137	974	99.8	118.5	101.5
Race not stated.	4,843	—	781	...	...	...
1991						
White	20,816	25,317	25,078	99.3	120.8	119.6
Black	3,717	4,521	4,184	120.5	146.5	135.6
All other races	1,036	1,260	1,046	103.0	125.2	104.0
Race not stated.	5,528	—	790	...	...	...
1992						
White	20,018	24,945	24,778	94.6	117.8	117.1
Black	3,692	4,601	4,219	117.9	146.9	134.7
All other races	1,128	1,405	1,142	107.5	134.0	108.9
Race not stated.	6,113	—	811	...	...	...

¹Unadjusted race data from National Hospital Discharge Survey (NHDS).²NHDS race data with discharges in race not stated category distributed to race categories in proportions of discharges with known race.³NHDS race data with discharges from nonreporting hospitals distributed to race categories based on county populations and Hispanic discharges not identified as specific race distributed to race categories in the proportions of the Hispanic population.

discharges in those hospitals. This procedure is described in the section, "Race for nonreporting hospitals." In addition, Hispanic discharges in the race-not-stated category and the "other race" category were assigned a race using the racial distribution of the Hispanic population as estimated by the U.S. Bureau of the Census.

The population-based adjustment assumes that patients are hospitalized in the same proportions that they are in the population, which is probably not the case (13–15). In addition, the population-based adjustment does not result in an assignment of race to all discharges, only to those from the nonreporting hospitals and Hispanic patients. In 1990–92, 781,000 to 811,000 discharges remained in the race-not-stated category after the population-based adjustment. Thus, the numbers and rates of discharges for specific race categories, while probably more accurate, remain underestimated.

Using either method, adjusted numbers and rates of discharges for white patients were significantly higher than unadjusted estimates. Although calculated differently, the numbers and rates of white discharges produced by proportional adjustment and population-

based adjustment were similar. It should be noted, however, that both of these adjustments are expected to underestimate white discharges to some extent. The adjusted estimates of black discharges and discharges of all other races were not significantly different from the unadjusted rates.

Discussion

Race data from the NHDS became increasingly incomplete in recent years primarily because a growing number of hospitals that participated in the survey did not provide racial data on any of their patients. Most of these hospitals used the automated data collection method. They submitted tapes of data that were usually collected for other purposes to the NHDS. These data were often collected using the National Uniform Bill (UB-82 and UB-92), which does not include an item on race.

One solution to this problem would be for the NHDS to stop using automated data collection. However, even before 1985, when all data were collected manually using NHDS abstracts, the proportion of discharges with no race reported was a concern, ranging from 9–14 percent. In addition,

the automated data collection system has become an integral part of the NHDS survey design. Approximately one third of the hospitals that participate in the survey now provide data through the automated method, and many are unwilling to participate in a manual system.

Another solution would be to add race to the UB-92 form. This could greatly increase the amount of race data reported through the automated method. However, the NHDS is only a secondary user of UB-92 data. The principal users, insurance companies and the Health Care Financing Administration, do not view a billing form as the best place to collect race data. They have enrollment forms that provide information on the race of beneficiaries (18).

The other main problem with the NHDS race data, lack of racial information for Hispanic patients, is also related to data collection forms. Hospitals and data systems that use a combined race/ethnicity item cannot supply the NHDS with information on the race of Hispanic patients. The Federal standards for reporting racial and ethnic statistics have been undergoing a wide-ranging review (19). It is uncertain whether one standard approach to reporting will be

established, or whether it will continue to be acceptable to report race and ethnicity either separately or in a combined format.

In 1990–92, the hospitals that did not report race to the NHDS apparently had a larger proportion of white patients than the reporting hospitals. Estimates based on racial distributions of discharges in previous years and on racial distributions of county populations both suggested that white patients made up a larger share of discharges in nonreporting hospitals than in reporting hospitals. The Hispanic patients not reported by race were also likely to be white in larger proportions than all patients, based on the distribution of those with a reported race and on the racial distribution of the Hispanic population. Therefore, discharges of white patients were probably underestimated to a greater extent than discharges of other racial groups.

Comparisons of NHDS data with data from other sources supported the hypothesis that white patients were disproportionately underestimated. The National Health Interview Survey estimated significantly larger numbers of white discharges than the NHDS, but similar numbers of black discharges. A larger number of Medicare discharges were white according to data from the Health Care Financing Administration than estimated by NHDS. However, the number of Medicare discharges of other races reported by these two sources were not significantly different. The number of live births that were white or black were larger than the NHDS estimates of white or black women hospitalized for deliveries, but differences were greater for the white category.

Because white patients are probably underreported to a greater extent than patients of other races, proportional adjustment of NHDS data would not be expected to produce completely accurate estimates of the number of discharges in each race group. This adjustment would probably produce a more accurate estimate of white discharges, but it would overestimate discharges of other races and would not affect comparisons between racial groups. The population-based adjustment may also produce a

more accurate estimate of white discharges, but because it is based on the assumption that all racial groups have the same discharge rates, the estimates of racial groups with higher rates would be underestimated to some extent, and comparisons between racial groups could be distorted.

At present, no ideal solution exists to eliminate the problem of underreporting of race in the NHDS. Therefore, the NHDS race data need to be used cautiously and not overinterpreted. The data can still be useful for some types of analyses. General inferences can be drawn if the differences between racial groups are large. For example, the rate of HIV hospitalizations for black patients was so much larger than the rate for white patients that even if all the patients in the race-not-stated category were added to the white category, the difference would remain highly significant (2).

When white patients have a higher rate than other racial groups despite the underestimate, such as for coronary artery bypass grafts (20), it is reasonable to conclude that the rate for white patients is higher. Research can also be done on hospital use patterns within racial groups, such as investigation of major diagnostic categories for black patients or sex differences in discharge rates for white patients. In all these areas, though, it must be recognized that the numbers and rates produced from the NHDS for specific racial groups will be underestimated to an unknown extent.

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Technical notes

Survey methodology

Source of data

The National Hospital Discharge Survey covers discharges from noninstitutional hospitals, except Federal, military, and Department of Veterans Affairs hospitals located in the 50 States and the District of Columbia. Only short-stay hospitals (hospitals with an average length of stay for all patients of fewer than 30 days) or those whose specialty is general (medical or surgical) or children's general are included in the survey. These hospitals must also have six beds or more staffed for patient use.

From 1988 through 1990, the NHDS sampling frame consisted of hospitals that were listed in the April 1987 SMG Hospital Market Database (21), met the above criteria, and began accepting patients by August 1987. In 1991 the sampling frame was updated to include hospitals from the 1991 SMG Hospital Database (22). The sample consisted of 542 hospitals in 1990 and 528 hospitals in 1991 and 1992. In 1990, 23 of the sample hospitals were found to be out of scope (ineligible) because they went out of business or otherwise failed to meet the criteria for the NHDS universe. Seven hospitals were out of scope in 1991, and 14 were out of scope in 1992. In 1990, 474 of the 519 in-scope (eligible) hospitals responded to the survey. In 1991, 484 of 521 in-scope hospitals responded, and 494 of 514 in-scope hospitals responded in 1992.

Sample design and data collection

The NCHS has conducted the NHDS continuously since 1965. The original sample was selected in 1964 from a frame of short-stay hospitals listed in the National Master Facility Inventory. That sample was updated periodically with samples of newly opened hospitals. Sample hospitals were selected with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals. Within each sample hospital, a systematic random sample of discharges was selected. A report on the design and

development of the original NHDS has been published (23).

Beginning in 1988, the NHDS sample included with certainty all hospitals with 1,000 beds or more or 40,000 discharges or more annually. The remaining sample of hospitals is based on a stratified three-stage design. The first stage consists of a selection of 112 primary sampling units (PSU's) that comprise a probability subsample of PSU's used in the 1985-94 National Health Interview Survey. The second stage consists of a selection of noncertainty hospitals from the sample PSU's. At the third stage, a sample of discharges was selected by a systematic random sampling technique. A detailed comparison of the old and new survey designs has been published (24).

Two data collection procedures are used for the survey. The first is a manual system of sample selection and data abstraction. The second is an automated method that involves the purchase of data tapes from abstracting service organizations, State data systems, or hospitals. Approximately one third of the respondent hospitals used the automated method in 1990 through 1992.

In the manual system, the sample selection and the transcription of information from the hospital records to abstract forms are performed at the hospitals. The completed forms, along with sample selection control sheets, are forwarded to NCHS for coding, editing, and weighting. Of the hospitals using the manual system, about two-thirds had the work performed by their own medical records staff in 1990 and 1991 and 58 percent in 1992. In the remaining hospitals using the manual system, personnel of the U.S. Bureau of the Census do the work on behalf of NCHS. For the automated system, NCHS purchases tapes containing machine-readable medical record data that are systematically sampled by NCHS.

The medical abstract form and the automated data tapes contain items relating to the personal characteristics of the patients, including birth date, sex, race, and marital status, but not name and address; administrative information, including admission and discharge dates, discharge status, and medical record

number; and medical information, including diagnoses and surgical and nonsurgical operations or procedures. Since 1977, patient ZIP Code, expected source of payment, and dates of surgery have also been collected. (The medical record number, birth date, and patient ZIP Code are confidential information and are not available to the public.)

Presentation of estimates

The relative standard error of the estimate and the number of sample records on which the estimate is based (referred to as the sample size) are used to identify estimates with relatively low reliability.

Because of the complex sample design of the NHDS, estimates of less than 5,000 are not presented; only an asterisk (*) appears in the tables. These estimates generally have a relative standard error of more than 30 percent or are based on a sample of fewer than 30 cases. Estimates based on fewer than 60 cases are preceded by an asterisk (*) to indicate that they should not be assumed to be reliable. These estimates are generally 5,000 to 9,000.

Sampling errors and rounding of numbers

The standard error is primarily a measure of sampling variability that occurs by chance because only a sample rather than the entire universe is surveyed. The relative standard error of the estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. The resulting value is multiplied by 100, so the relative standard error is expressed as a percent of the estimate.

Estimates of sampling variability were calculated with SESUDAAN software, which computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach has been published (25).

The constants for relative standard error curves for estimates of discharges by race from the 1990-92 NHDS are presented in table I. The relative

Table I. Estimated parameters for relative standard error equations for number of discharges, by race: National Hospital Discharge Survey, 1991-92

Race	1990		1991		1992	
	a	b	a	b	a	b
All races	0.00213	228.834	0.00101	546.321	0.00097	449.059
White	0.00212	298.564	0.00234	927.094	0.00241	419.274
Black	0.00537	264.999	0.00569	273.368	0.00740	363.901
All other races	0.02899	119.661	0.02889	280.075	0.02271	182.649
Race not stated	0.02252	226.201	0.01666	427.619	0.01496	301.892

standard error [RSE(X)] of an estimate X may be estimated from the formula:

$$RSE(X) = 100 \sqrt{a + b/X}$$

where X, a, and b are defined in table I.

Estimates have been rounded to the nearest thousand. For this reason, figures within tables do not always add to the totals. Rates and percents were calculated from original, unrounded figures and will not necessarily agree precisely with rates or percents calculated from rounded data.

Tests of significance

In general, statistical inference was based on the two-tailed t-test using the Bonferroni critical values for post-hoc multiple comparisons (0.05 level of significance). Critical values were determined for each set of comparisons, that is, within each table. For comparisons of NHDS estimates with the Medicare data from the Health Care Financing Administration (HCFA) and numbers of live births from birth certificates, confidence intervals at the 95 percent level (plus and minus 1.96 times the standard error) were constructed around the NHDS estimates. If the number of HCFA Medicare discharges or live births fell outside the confidence interval, it was reported as significantly different from the NHDS estimate.

In this report, terms such as "higher" and "less" indicate that differences are statistically significant. Terms such as "similar" or "no difference" mean that no statistically significant difference exists between the estimates being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found to not be significant.

Definitions of terms

Discharge—The formal release of a patient by a hospital; that is the termination of a period of hospitalization by death or by disposition to place of residence, nursing home, or another hospital. The terms "discharges" and "patients discharged" are used synonymously.

Discharge rate—The ratio of the number of hospital discharges during a year to the number of persons in the civilian population on July 1 of that year.

Ethnicity—In the NHDS, the ethnicity of discharges can be reported in three categories, which are Hispanic origin, non-Hispanic, and not stated.

Hospital—All hospitals with an average length of stay for all patients of less than 30 days or hospitals whose specialty is general (medical or surgical) or children's general are eligible for inclusion in the National Hospital Discharge Survey except Federal hospitals, hospital units of institutions, and hospitals with fewer than six beds staffed for patients' use.

- *Reporting hospital*—In this report, a reporting hospital is one that reported race for 3-100 percent of discharges.

- *Nonreporting hospital*—In this report, a nonreporting hospital is one that reported race for less than 3 percent of discharges.

Live birth—A live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after separation, breathes or shows any evidence of life.

Newborn infant—A newborn infant is a patient admitted by birth to the hospital.

Patient—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment is a patient. The terms "patient" and "inpatient" are used synonymously.

Population—The U.S. civilian population, which is the resident population of the United States, excluding members of the Armed Forces, was used to compute rates. The U.S. resident population was used to make population-based adjustments in estimates of discharges by race.

Race—In the NHDS, the race of discharges can be reported in six categories, which are white, black, American Indian/Eskimo/Aleut, Asian/Pacific Islander, other, and not stated.

Symbols

- - - Data not available
- . . . Category not applicable
- Quantity zero
- 0.0 Quantity more than zero but less than 0.05
- Z Quantity more than zero but less than 500 where numbers are rounded to thousands
- * Figure does not meet standard of reliability or precision (see Technical notes)
- # Figure suppressed to comply with confidentiality requirements

Suggested citation

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Advance Data

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Urban and Rural Classification of National Health Provider Inventory Providers: United States, 1991

by Renee Delfosse, M.A., Division of Health Care Statistics

Highlights

This report presents information from the National Health Provider Inventory (NHPI) on the numbers of home health care agencies, hospices, nursing homes, and board and care homes classified according to their location. These data are provided to aid in studies of the differential availability

and use of health care. Table 1 compares the total numbers of providers according to an urban-rural continuum. Subsequent tables compare the total numbers of providers in urban and rural locations within Census Divisions (table 2) and within States (tables 3-5).

Previous inventories conducted by the National Center for Health Statistics (NCHS) included health providers such

as hospitals, homes for the blind, deaf, mentally retarded, and emotionally disturbed in addition to nursing homes and board and care homes. The 1991 inventory includes nursing homes, board and care homes, plus two providers, home health care agencies, and hospices, the large majority of whom care for patients in an outpatient setting, the home (1).

Table 1. Number and percent of home health agencies, hospices, nursing homes, and board and care homes by rural-urban continuum codes: United States, 1991

Rural-urban continuum codes for metropolitan and nonmetropolitan counties	Total		Home health care agencies		Hospices		Nursing homes		Board and care homes	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States	41,492	100.0	6,846	16.5	946	2.3	15,487	37.3	18,213	43.9
Metropolitan counties:										
Central counties of 1 million population or more	14,403	100.0	2,098	14.6	253	1.8	4,791	33.3	7,261	50.4
Fringe counties of 1 million population or more	1,503	100.0	218	14.5	43	2.9	621	41.3	621	41.3
Counties of 250,000 to 1 million population	9,027	100.0	1,409	15.6	176	1.9	3,071	34.0	4,371	48.4
Counties of fewer than 250,000 population	3,615	100.0	613	17.0	106	2.9	1,374	38.0	1,522	42.1
Nonmetropolitan counties:										
Urban population of 20,000 or more, adjacent to a metropolitan area	1,943	100.0	315	16.2	60	3.1	762	39.2	806	41.5
Urban population of 20,000 or more, not adjacent to a metropolitan area	1,345	100.0	245	18.2	66	4.9	539	40.1	495	36.8
Urban population of 2,500-19,000, adjacent to a metropolitan area	4,013	100.0	719	17.9	100	2.5	1,767	44.0	1,427	35.6
Urban population of 2,500-19,000, not adjacent to a metropolitan area	3,663	100.0	781	21.3	107	2.9	1,620	44.2	1,155	31.5
Completely rural or fewer than 2,500 urban population, adjacent to a metropolitan area	702	100.0	139	19.8	6	0.9	338	48.1	219	31.2
Completely rural or fewer than 2,500 urban population, not adjacent to a metropolitan area	1,278	100.0	309	24.2	29	2.3	604	47.3	336	26.3

NOTES: Excludes board and care homes for the mentally retarded. Excludes nonresponding board and care homes. A total of 85 places could not be coded urban/rural.



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Table 2. Number and percent distribution of home health agencies, hospices, nursing homes, and board and care homes in urban and rural locations by Census Division: United States, 1991

Division	Total		Home health care agencies		Hospices		Nursing homes		Board and care homes	
	Number	Percent distribution	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All locations	41,577	100.0	6,853	16.5	951	2.3	15,511	37.3	18,262	43.9
New England	2,666	100.0	433	16.2	75	2.8	1,188	44.6	970	36.4
Middle Atlantic	4,734	100.0	838	17.7	82	1.7	1,604	33.9	2,210	46.7
East North Central	7,209	100.0	1,062	14.7	182	2.5	3,147	43.7	2,818	39.1
West North Central	4,469	100.0	902	20.2	111	2.5	2,269	50.8	1,187	26.6
South Atlantic	6,819	100.0	1,129	16.6	184	2.7	1,968	28.9	3,538	51.9
East South Central	2,465	100.0	617	25.0	50	2.0	946	38.4	852	34.6
West South Central	3,389	100.0	945	27.9	77	2.3	1,966	58.0	401	11.8
Mountain	2,035	100.0	414	20.3	69	3.4	703	34.5	849	41.7
Pacific	7,791	100.0	513	6.6	121	1.6	1,720	22.1	5,437	69.8
Urban locations	31,836	100.0	4,898	15.4	704	2.2	11,158	35.0	15,076	47.4
New England	2,271	100.0	390	17.2	56	2.5	1,068	47.0	757	33.3
Middle Atlantic	4,269	100.0	776	18.2	76	1.8	1,469	34.4	1,948	45.6
East North Central	5,437	100.0	802	14.8	126	2.3	2,364	43.5	2,145	39.5
West North Central	2,128	100.0	377	17.7	58	2.7	1,004	47.2	689	32.4
South Atlantic	5,244	100.0	854	16.3	144	2.7	1,479	28.2	2,767	52.8
East South Central	1,430	100.0	333	23.3	35	2.4	512	35.8	550	38.5
West South Central	2,202	100.0	637	28.9	61	2.8	1,186	53.9	318	14.4
Mountain	1,445	100.0	263	18.2	40	2.8	457	31.6	685	47.4
Pacific	7,410	100.0	466	6.3	108	1.5	1,619	21.8	5,217	70.4
Rural locations	9,656	100.0	1,948	20.2	242	2.5	4,329	44.8	3,137	32.5
New England	382	100.0	43	11.3	19	5.0	116	30.4	204	53.4
Middle Atlantic	452	100.0	62	13.7	6	1.3	131	29.0	253	56.0
East North Central	1,766	100.0	259	14.7	56	3.2	782	44.3	669	37.9
West North Central	2,334	100.0	524	22.5	53	2.3	1,263	54.1	494	21.2
South Atlantic	1,562	100.0	273	17.5	37	2.4	487	31.2	765	49.0
East South Central	1,027	100.0	282	27.5	15	1.5	431	42.0	299	29.1
West South Central	1,184	100.0	308	26.0	16	1.4	777	65.6	83	7.0
Mountain	587	100.0	151	25.7	29	4.9	244	41.6	163	27.8
Pacific	362	100.0	46	12.7	11	3.0	98	27.1	207	57.2

NOTES: Excludes board and care homes for the mentally retarded. Excludes nonresponding board and care homes. A total of 85 places could not be coded urban/rural.

There were 18,262 board and care homes, 15,511 nursing homes, 6,853 home health care agencies, and 951 hospices in the United States in 1991 (table 2). Of the 31,836 providers in urban locations, 47 percent were board and care homes, 35 percent were nursing homes, 15 percent were home health care agencies, and 2 percent were hospices. In rural locations the distribution differed: 45 percent of the 9,656 providers were nursing homes, 33 percent were board and care homes, 20 percent were home health care agencies, and 3 percent were hospices.

The majority of patients served by the NHPI providers were elderly. Approximately 75 percent of home health care agency and hospice clients, 92 percent of nursing home patients, and 68 percent of board and care home residents were 65 years and over (2,3). These percentages were found to hold

on the divisional level for all providers (4), and on the State level for most nursing homes and board and care homes (tables 6-7).

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Table 3. Number and percent distribution of home health care agencies, hospices, nursing homes, and board and care homes by State: United States, 1991

State	Total		Home health care agencies		Hospices		Nursing homes		Board and care homes	
	Number	Percent distribution	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States	41,577	100.0	6,853	16.5	951	2.3	15,511	37.3	18,262	43.9
Alabama	561	100.0	127	22.6	19	3.4	214	38.1	201	35.8
Alaska	48	100.0	10	20.8	5	10.4	18	37.5	15	31.3
Arizona	417	100.0	71	17.0	9	2.2	120	28.8	217	52.0
Arkansas	446	100.0	133	29.8	11	2.5	225	50.4	77	17.3
California	5,316	100.0	333	6.3	83	1.6	1,178	22.2	3,722	70.0
Colorado	515	100.0	101	19.6	19	3.7	191	37.1	204	39.6
Connecticut	482	100.0	110	22.8	9	1.9	244	50.6	119	24.7
Delaware	141	100.0	19	13.5	3	2.1	47	33.3	72	51.1
District of Columbia	144	100.0	18	12.5	3	2.1	18	12.5	105	72.9
Florida	2,103	100.0	413	19.6	34	1.6	552	26.2	1,104	52.5
Georgia	935	100.0	70	7.5	18	1.9	342	36.6	505	54.0
Hawaii	380	100.0	18	4.7	8	2.1	54	14.2	300	78.9
Idaho	199	100.0	26	13.1	14	7.0	71	35.7	88	44.2
Illinois	1,267	100.0	309	24.4	49	3.9	813	64.2	96	7.6
Indiana	744	100.0	150	20.2	13	1.7	531	71.4	50	6.7
Iowa	767	100.0	155	20.2	25	3.3	459	59.8	128	16.7
Kansas	698	100.0	153	21.9	23	3.3	386	55.3	136	19.5
Kentucky	728	100.0	112	15.4	19	2.6	287	39.4	310	42.6
Louisiana	561	100.0	180	32.1	11	2.0	319	56.9	51	9.1
Maine	403	100.0	35	8.7	15	3.7	138	34.2	215	53.3
Maryland	580	100.0	96	16.6	25	4.3	219	37.8	240	41.4
Massachusetts	1,063	100.0	166	15.6	26	2.4	560	52.7	311	29.3
Michigan	2,497	100.0	196	7.8	57	2.3	495	19.8	1,749	70.0
Minnesota	1,022	100.0	196	19.2	33	3.2	451	44.1	342	33.5
Mississippi	355	100.0	116	32.7	1	0.3	160	45.1	78	22.0
Missouri	1,115	100.0	173	15.5	15	1.3	535	48.0	392	35.2
Montana	225	100.0	49	21.8	12	5.3	98	43.6	66	29.3
Nebraska	395	100.0	75	19.0	6	1.5	229	58.0	85	21.5
Nevada	198	100.0	28	20.3	2	1.4	94	24.6	74	53.6
New Hampshire	295	100.0	80	20.3	13	4.4	87	29.5	135	45.8
New Jersey	762	100.0	111	14.6	19	2.5	319	41.9	313	41.1
New Mexico	250	100.0	45	18.0	3	1.2	68	27.2	134	53.6
New York	1,904	100.0	410	21.5	35	1.8	595	31.3	864	45.4
North Carolina	1,210	100.0	155	12.8	48	4.0	309	25.5	698	57.7
North Dakota	200	100.0	70	35.0	2	1.0	85	42.5	43	21.5
Ohio	1,570	100.0	252	16.1	39	2.5	877	55.9	402	25.6
Oklahoma	592	100.0	75	14.1	13	2.4	389	73.1	55	10.3
Oregon	1,203	100.0	71	5.9	14	1.2	191	15.9	927	77.1
Pennsylvania	2,068	100.0	317	15.3	28	1.4	690	33.4	1,033	50.0
Rhode Island	204	100.0	43	21.1	5	2.5	104	51.0	52	25.5
South Carolina	508	100.0	101	20.0	13	2.6	140	27.7	252	49.8
South Dakota	272	100.0	80	29.4	7	2.6	124	45.6	61	22.4
Tennessee	821	100.0	262	31.9	11	1.3	285	34.7	263	32.0
Texas	1,850	100.0	557	30.1	42	2.3	1,033	55.8	218	11.8
Utah	193	100.0	53	27.5	4	2.1	90	46.6	46	23.8
Vermont	219	100.0	19	8.7	7	3.2	55	25.1	138	63.0
Virginia	788	100.0	193	24.5	28	3.6	227	28.8	340	43.1
Washington	844	100.0	81	9.6	11	1.3	279	33.1	473	56.0
West Virginia	412	100.0	64	15.5	12	2.9	114	27.7	222	53.9
Wisconsin	1,131	100.0	155	13.7	24	2.1	431	38.1	521	46.1
Wyoming	98	100.0	41	41.8	6	6.1	31	31.6	20	20.4

NOTES: Excludes board and care homes for the mentally retarded. Excludes a percentage of nonresponding board and care homes.

Table 4. Number and percent of home health agencies, hospices, nursing homes, and board and care homes in urban areas: United States, 1991

State	Total		Home health care agencies		Hospices		Nursing homes		Board and care homes	
	Number	Percent distribution	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States	31,836	100.0	4,898	15.4	704	2.2	11,158	35.0	15,076	47.4
Alabama	386	100.0	72	18.7	14	3.6	141	36.5	159	41.2
Alaska	27	100.0	6	22.2	2	7.4	9	33.3	10	37.0
Arizona	411	100.0	70	17.0	9	2.2	117	28.5	215	52.3
Arkansas	200	100.0	39	19.5	6	3.0	104	52.0	51	25.5
California	5,187	100.0	320	6.2	75	1.4	1,151	22.2	3,641	70.2
Colorado	374	100.0	69	18.4	10	2.7	129	34.5	166	44.4
Connecticut	480	100.0	110	22.9	9	1.9	244	50.8	117	24.4
Delaware	104	100.0	12	11.5	2	1.9	33	31.7	57	54.8
District of Columbia	144	100.0	18	12.5	3	2.1	18	12.5	105	72.9
Florida	1,963	100.0	377	19.2	33	1.7	515	26.2	1,038	52.9
Georgia	582	100.0	41	7.0	16	2.7	186	32.0	339	58.2
Hawaii	377	100.0	18	4.8	8	2.1	54	14.3	297	78.8
Idaho	111	100.0	15	13.5	8	7.2	31	27.9	57	51.4
Illinois	962	100.0	250	26	39	4.1	593	61.6	80	8.3
Indiana	527	100.0	103	19.5	12	2.3	373	70.8	39	7.4
Iowa	298	100.0	56	18.8	9	3.0	177	59.4	56	18.8
Kansas	351	100.0	74	21.1	14	4.0	159	45.3	104	29.6
Kentucky	328	100.0	48	14.6	11	3.4	125	38.1	144	43.9
Louisiana	412	100.0	134	32.5	9	2.2	223	54.1	46	11.2
Maine	275	100.0	25	9.1	9	3.3	89	32.4	152	55.3
Maryland	532	100.0	84	15.8	23	4.3	199	37.4	226	42.5
Massachusetts	1,053	100.0	164	15.6	24	2.3	557	52.9	308	29.2
Michigan	1,810	100.0	135	7.5	27	1.5	378	20.9	1,270	70.2
Minnesota	578	100.0	98	17.0	13	2.2	242	41.9	225	38.9
Mississippi	172	100.0	42	24.4	1	0.6	68	39.5	61	35.5
Missouri	615	100.0	95	15.4	11	1.8	291	47.3	218	35.4
Montana	88	100.0	12	13.6	4	4.5	30	34.1	42	47.7
Nebraska	175	100.0	31	17.7	5	2.9	85	48.6	54	30.9
Nevada	117	100.0	21	17.9	2	1.7	25	21.4	69	59.0
New Hampshire	217	100.0	45	20.7	9	4.1	66	30.4	97	44.7
New Jersey	750	100.0	111	14.8	19	2.5	315	42.0	305	40.7
New Mexico	168	100.0	30	17.9	3	1.8	47	28.0	88	52.4
New York	1,751	100.0	383	21.9	33	1.9	555	31.7	780	44.5
North Carolina	786	100.0	95	12.1	28	3.6	208	26.5	455	57.9
North Dakota	49	100.0	13	26.5	2	4.1	20	40.8	14	28.6
Ohio	1,367	100.0	214	15.7	31	2.3	750	54.9	372	27.2
Oklahoma	277	100.0	43	15.5	11	4.0	197	71.1	26	9.4
Oregon	1,056	100.0	49	4.6	13	1.2	163	15.4	831	78.7
Pennsylvania	1,768	100.0	282	16.0	24	1.4	599	33.9	863	48.8
Rhode Island	199	100.0	43	21.6	5	2.5	101	50.8	50	25.1
South Carolina	377	100.0	67	17.8	9	2.4	102	27.1	199	52.8
South Dakota	62	100.0	10	16.1	4	6.5	30	48.4	18	29.0
Tennessee	544	100.0	171	31.4	9	1.7	178	32.7	186	34.2
Texas	1,313	100.0	421	32.1	35	2.7	662	50.4	195	14.9
Utah	146	100.0	32	21.9	2	1.4	70	47.9	42	28.8
Vermont	47	100.0	3	6.4	11	23.4	33	70.2	-	-
Virginia	547	100.0	126	23.0	21	3.8	159	29.1	241	44.1
Washington	763	100.0	73	9.6	10	1.3	242	31.7	438	57.4
West Virginia	209	100.0	34	16.3	9	4.3	59	28.2	107	51.2
Wisconsin	771	100.0	100	13.0	17	2.2	270	35.0	384	49.8
Wyoming	30	100.0	14	46.7	2	6.7	8	26.7	6	20.0

NOTES: Excludes board and care homes for the mentally retarded. Excludes nonresponding board and care homes. A total of 85 places could not be coded urban/rural.

Table 5. Number and percent of home health agencies, hospices, nursing homes, and board and care homes in rural areas: United States, 1991

State	Total		Home health care agencies		Hospices		Nursing homes		Board and care homes	
	Number	Percent distribution	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States	9,656	100.0	1,948	20.2	242	2.5	4,329	44.8	3,137	32.5
Alabama	167	100.0	53	31.7	5	3.0	70	41.9	39	23.4
Alaska	17	100.0	3	17.6	1	5.9	9	52.9	4	23.5
Arizona	5	100.0	1	20.0	2	40.0	2	40.0	—	—
Arkansas	246	100.0	94	38.2	5	2.0	121	49.2	26	10.6
California	124	100.0	13	10.5	8	6.5	25	20.2	78	62.9
Colorado	140	100.0	32	22.9	9	6.4	62	44.3	37	26.4
Connecticut . . . . .	...	...	...	...	...	...	...	...	...	...
Delaware	36	100.0	7	19.4	1	2.8	13	36.1	15	41.7
District of Columbia . . . . .	...	...	...	...	...	...	...	...	...	...
Florida	137	100.0	36	26.3	1	0.7	37	27.0	63	46.0
Georgia	351	100.0	28	8.0	2	0.6	155	44.2	166	47.3
Hawaii . . . . .	...	...	...	...	...	...	...	...	...	...
Idaho	88	100.0	11	12.5	6	6.8	40	45.5	31	35.2
Illinois	305	100.0	59	19.3	10	3.3	220	72.1	16	5.2
Indiana	217	100.0	47	21.7	1	0.5	158	72.8	11	5.1
Iowa	466	100.0	99	21.2	16	3.4	281	60.3	70	15.0
Kansas	345	100.0	78	22.6	9	2.6	227	65.8	31	9.0
Kentucky	400	100.0	64	16.0	8	2.0	162	40.5	166	41.5
Louisiana	149	100.0	46	30.9	2	1.3	96	64.4	5	3.4
Maine	126	100.0	10	7.9	6	4.8	49	38.9	61	48.4
Maryland	47	100.0	12	25.5	2	4.3	20	42.6	13	27.7
Massachusetts . . . . .	...	...	...	...	...	...	...	...	...	...
Michigan	682	100.0	60	8.8	30	4.4	117	17.2	475	69.6
Minnesota	444	100.0	98	22.1	20	4.5	209	47.1	117	26.4
Mississippi	183	100.0	74	40.4	92	50.3	17	9.3	—	—
Missouri	498	100.0	78	15.7	4	0.8	243	48.8	173	34.7
Montana	137	100.0	37	27.0	8	5.8	68	49.6	24	17.5
Nebraska	220	100.0	44	20.0	1	0.5	144	65.5	31	14.1
Nevada	21	100.0	7	33.3	9	42.9	5	23.8	—	—
New Hampshire	78	100.0	15	19.2	4	5.1	21	26.9	38	48.7
New Jersey . . . . .	...	...	...	...	...	...	...	...	...	...
New Mexico	82	100.0	15	18.3	21	25.6	46	56.1	—	—
New York	153	100.0	27	17.6	2	1.3	40	26.1	84	54.9
North Carolina	424	100.0	60	14.2	20	4.7	101	23.8	243	57.3
North Dakota	151	100.0	57	37.7	65	43.0	29	19.2	—	—
Ohio	203	100.0	38	18.7	8	3.9	127	62.6	30	14.8
Oklahoma	255	100.0	32	12.5	2	0.8	192	75.3	29	11.4
Oregon	144	100.0	22	15.3	1	0.7	28	19.4	93	64.6
Pennsylvania	299	100.0	35	11.7	4	1.3	91	30.4	169	56.5
Rhode Island . . . . .	...	...	...	...	...	...	...	...	...	...
South Carolina	125	100.0	33	26.4	3	2.4	38	30.4	51	40.8
South Dakota	210	100.0	70	33.3	3	1.4	94	44.8	43	20.5
Tennessee	277	100.0	91	32.9	2	0.7	107	38.6	77	27.8
Texas	534	100.0	136	25.5	7	1.3	368	68.9	23	4.3
Utah	46	100.0	21	45.7	2	4.3	19	41.3	4	8.7
Vermont	172	100.0	16	9.3	7	4.1	44	25.6	105	61.0
Virginia	239	100.0	67	28.0	5	2.1	68	28.5	99	41.4
Washington	77	100.0	8	10.4	1	1.3	36	46.8	32	41.6
West Virginia	203	100.0	30	14.8	3	1.5	55	27.1	115	56.7
Wisconsin	359	100.0	55	15.3	7	1.9	160	44.6	137	38.2
Wyoming	68	100.0	27	39.7	4	5.9	23	33.8	14	20.6

NOTES: Excludes board and care homes for the mentally retarded. Excludes nonresponding board and care homes. A total of 85 places could not be coded urban/rural.

Table 6. Number of residents 65 years of age and over in board and care homes: United States, 1991

State	Residents	Residents	Residents	Percent of all residents 65 years of age and over
		with reported age	65 years of age and over	
Number				
United States	302,820	267,514	182,469	68.2
Alabama	2,645	2,351	1,328	56.5
Alaska	149	146	15	10.3
Arizona	3,692	3,150	2,291	72.7
Arkansas	1,815	1,681	1,051	62.5
California	54,722	48,448	35,384	73.0
Colorado	3,698	3,421	2,569	75.1
Connecticut	2,298	1,981	1,330	67.1
Delaware	500	304	175	57.6
District of Columbia	1,408	1,082	414	38.3
Florida	27,529	22,617	17,953	79.4
Georgia	4,532	3,976	2,728	68.6
Hawaii	2,267	1,289	849	65.9
Idaho	1,429	1,135	835	73.6
Illinois	3,064	2,984	1,685	56.5
Indiana	1,396	1,289	603	46.8
Iowa	4,340	3,861	1,637	42.4
Kansas	810	754	245	32.5
Kentucky	3,442	3,018	1,846	61.2
Louisiana	697	641	67	10.5
Maine	2,768	2,541	1,834	72.2
Maryland	2,373	2,233	1,318	59.0
Massachusetts	5,767	5,538	3,023	54.6
Michigan	18,190	16,331	10,579	64.8
Minnesota	5,017	4,502	1,178	26.2
Mississippi	1,131	930	554	59.6
Missouri	7,556	6,887	4,237	61.5
Montana	1,101	961	793	82.5
Nebraska	2,005	1,942	1,349	69.5
Nevada	812	612	400	65.4
New Hampshire	1,329	1,204	891	74.0
New Jersey	8,174	6,938	4,186	60.3
New Mexico	1,501	1,412	520	36.8
New York	27,544	25,145	16,660	66.3
North Carolina	15,321	13,589	10,099	74.3
North Dakota	910	793	683	86.1
Ohio	4,234	3,800	1,908	50.2
Oklahoma	1,435	1,349	557	41.3
Oregon	6,886	5,717	4,814	84.2
Pennsylvania	23,811	21,210	16,271	76.7
Rhode Island	920	574	308	53.7
South Carolina	4,810	4,146	2,704	65.2
South Dakota	331	305	175	57.4
Tennessee	3,799	3,440	2,507	72.9
Texas	3,899	3,425	2,158	63.0
Utah	1,250	962	816	84.8
Vermont	1,830	1,679	1,285	76.5
Virginia	10,296	9,556	6,810	71.3
Washington	8,489	7,374	5,233	71.0
West Virginia	1,996	1,819	1,428	78.5
Wisconsin	6,464	6,110	3,913	64.0
Wyoming	438	362	273	75.4

NOTES: Excludes board and care homes for the mentally retarded. Excludes nonresponding board and care homes.

Table 7. Number of residents 65 years of age and over in nursing homes: United States, 1991

State	Residents	Residents	Residents	Percent of all residents 65 years of age and over
		with reported age	65 years of age and over	
Number				
United States	1,478,903	1,287,279	1,188,308	92.3
Alabama	21,675	19,435	17,972	92.5
Alaska	808	657	517	78.7
Arizona	12,103	10,806	9,931	91.9
Arkansas	20,298	17,298	15,650	90.5
California	98,885	89,420	79,398	88.8
Colorado	15,871	14,316	13,017	90.9
Connecticut	27,921	22,366	20,651	92.3
Delaware	4,308	3,660	3,378	92.3
District of Columbia	2,881	2,408	2,246	93.3
Florida	59,878	52,276	49,628	94.9
Georgia	34,728	31,324	28,407	90.7
Hawaii	2,840	2,721	2,504	92.0
Idaho	4,871	4,408	3,997	90.7
Illinois	87,540	74,418	66,207	89.0
Indiana	46,231	40,765	37,140	91.1
Iowa	33,214	29,965	28,524	95.2
Kansas	25,304	22,116	20,495	92.7
Kentucky	24,966	22,020	20,283	92.1
Louisiana	32,367	26,863	23,934	89.1
Maine	9,241	8,610	8,229	95.6
Maryland	25,977	20,745	19,081	92.0
Massachusetts	48,276	42,620	39,848	93.5
Michigan	46,198	40,067	36,643	91.5
Minnesota	43,298	36,095	34,054	94.3
Mississippi	14,819	11,145	10,355	92.9
Missouri	45,745	38,302	35,666	93.1
Montana	6,297	5,922	5,480	92.5
Nebraska	17,779	16,752	15,738	93.9
Nevada	3,043	2,765	2,434	88.0
New Hampshire	7,523	7,202	6,846	95.1
New Jersey	40,068	34,619	32,325	93.4
New Mexico	5,834	5,003	4,602	92.0
New York	99,372	88,233	83,060	94.1
North Carolina	28,546	24,827	22,907	92.3
North Dakota	6,784	5,965	5,688	95.4
Ohio	77,676	68,252	62,560	91.7
Oklahoma	27,456	24,994	23,206	92.8
Oregon	13,392	11,262	10,473	93.0
Pennsylvania	83,107	71,095	66,824	94.0
Rhode Island	9,440	8,524	8,226	96.5
South Carolina	13,089	11,907	11,026	92.6
South Dakota	8,192	7,378	7,064	95.7
Tennessee	32,304	28,277	26,211	92.7
Texas	90,405	77,246	71,875	93.0
Utah	5,544	5,037	4,357	86.5
Vermont	3,591	3,137	2,963	94.5
Virginia	25,775	22,567	20,852	92.4
Washington	24,525	20,985	19,321	92.1
West Virginia	9,809	8,236	7,761	94.2
Wisconsin	46,898	40,150	36,772	91.6
Wyoming	2,211	2,118	1,982	93.6

Technical notes

Creating a mailing list

The 1991 NHPI was a mail survey conducted by NCHS. The inventory's mailing list of home health care agencies and hospices contained 14,089 addresses; the mailing list of nursing homes and board and care homes (including those for the mentally retarded) contained 73,106. Both the agency and facility lists were constructed using NCHS's Agency Reporting System, which is an ongoing system designed to update periodically the NHPI listings (5).

Mail survey

The Bureau of Census under an interagency agreement with NCHS served as the data collection and data-processing agent. Three questionnaire mailouts plus a field followup were used to complete the inventory. At the end of the mail survey, refusals, postmaster returns, and nonresponses were contacted by telephone. Also contacted were places who did not respond to questionnaire items considered critical for selecting samples for the Long-Term Care Component of the National Health Care Survey (6).

Because of the large number (17,156) of nonresponding board and care homes, resource constraints made it possible to follow up only one-half of these nonrespondents. As a result, nonresponding board and care homes will not be included in the data presented in this report.

Results of mail survey

Home health care agencies and hospices

Of the 14,089 agencies to which questionnaires were mailed, 7,804 responded and classified as home health agencies or hospices. Of the remaining 6,285, 116 agencies were nonrespondents, and 6,169 agencies were out of scope or not in operation (questionnaires were returned by the post office and/or field interviewers were unable to locate by telephone). The

overall agency response rate was 98.5 percent. The numerator is 7,804, the number of responding agencies. The denominator is 7,920, the number of responding agencies plus 116 refusing agencies and nonresponding agencies.

Nursing homes and board and care homes

The facility response rate, excluding those board and care places not in the followup, was 99 percent (there were 262 refusals). If the 8,578 were counted in the calculation as in business and nonresponses, the response rate for facilities would be 84 percent. Because some of these 8,578 agencies were either out of scope or out of business, the response rate was probably somewhat higher than 84 percent.

Classification system

Home health care agencies and hospices

NCHS classified the 7,804 agencies using the questionnaire item "type of client." The client data were used because they allowed for the classification of the largest numbers of agencies into either the home health care agency category (6,797) or hospice category (943), with only 64 agencies remaining in the category of agencies providing both home health and hospice care. Based upon additional information in an agency's record, 56 of the agencies providing both home health and hospice care are included with home health agencies, and 8 are included with hospices.

Nursing homes and board and care homes

Excluding the 8,578 nonresponding board and care homes and the 262 facilities that refused to participate, each of the remaining facilities was classified as either a nursing home (15,511) or a board and care home (31,431). For purposes of this survey, no facilities for the mentally retarded were classified as nursing homes. However, if a facility was primarily a nursing home and happened to be certified as an intermediate care facility for the mentally retarded (ICF-MR), it would

have been classified as a nursing home. As a result this file contains 24 nursing homes that were also ICF-MR's, and 11,204 board and care homes that were not ICF-MR facilities for the mentally retarded. The classification system used to separate nursing homes from board and care homes relied heavily on criteria such as the respondent's categorization of the home, the home's certification, the number of beds set up and staffed for use, the employment of registered nurses or licensed practical nurses, the services provided, and the number of mentally retarded patients.

Note that a more detailed technical notes section for the 1991 NHPI is included in other reports (1,3).

Definitions

Home health care agency—An agency providing health services to individuals in their homes for the purpose of (a) promoting, maintaining, or restoring health; or (b) maximizing the level of independence, while minimizing the effects of disability and illness (including terminal illness).

Hospice—An agency providing specialized services for terminally ill people and their families, including medical services, social and emotional support for patients and families, volunteer support, and bereavement services for families following the death of the patient.

Nursing homes—A nursing home is a facility with three beds or more that is either licensed as a nursing home, certified as a nursing facility under Medicare or Medicaid, identified as a nursing care unit of a retirement center, or determined to provide nursing or medical care.

Board and care homes—This generic term describes a residential setting that provides either routine general protective oversight or assistance with activities necessary for independent living to physically limited persons (excludes those for the mentally retarded).

Rural-urban continuum codes for metropolitan and nonmetropolitan counties—These codes are based on the 1990 census. Rural counties included nonmetropolitan counties that had an

urban population fewer than 2,500. Urban counties included counties not considered rural. Nonmetropolitan counties are those counties that are not considered metropolitan. Metropolitan areas, as defined by the Office of Management and Budget, include core counties containing a city of 50,000 or more people and a total area population of at least 100,000. Additional contiguous counties are included in metropolitan areas if they are economically and socially integrated with the core county (7).

Geographic divisions—The U.S. Bureau of the Census groups the 50 States plus the District of Columbia into the following divisions:

<i>Division</i>	<i>States included</i>		
New England	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	South Atlantic	Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
Middle Atlantic	New Jersey, New York, Pennsylvania	East South Central	Alabama, Kentucky, Mississippi, Tennessee
East North Central	Illinois, Indiana, Michigan, Ohio, Wisconsin	West South Central	Arkansas, Louisiana, Oklahoma, Texas
West North Central	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota	Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
		Pacific	Alaska, California, Hawaii, Oregon, Washington

Symbols

- - - Data not available
 - . . . Category not applicable
 - Quantity zero
 - * Figure does not meet standard of reliability or precision (more than 30-percent relative standard error in numerator of percent or rate)
 - *- Figure does not meet standard of reliability and quantity zero
-

Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Office Visits to Neurologists: United States, 1991–92

by Susan M. Schappert, M.A., Division of Health Care Statistics

Introduction

During 1991–92 an estimated 14.5 million visits were made in the United States to nonfederally employed, office-based physicians specializing in neurology, the diagnosis and treatment of disorders of the nervous system—an average of 7.3 million visits per year. This report summarizes data pertaining to office visits to neurologists in terms of physician practice characteristics, patient characteristics, and visit characteristics.

The information presented in this report is based on data collected by the National Ambulatory Medical Care Survey (NAMCS), a national probability sample survey conducted by the Division of Health Care Statistics of the National Center for Health Statistics, Centers for Disease Control and Prevention. This survey was conducted yearly from 1973 through 1981, again in 1985, and has resumed an annual schedule with the 1989 survey.

The 1991 and 1992 NAMCS shared identical survey instruments, definitions, and procedures. The resulting 2 years of data have been combined to provide more reliable estimates, and the reader should note that the estimates, percent distributions, and rates presented in this report reflect average annual estimates based on the combined 1991 and 1992 data, unless otherwise stated. Figure 1

shows the Patient Record form, which is the survey instrument used by participating physicians to record information about their patients' office visits.

Only visits to the offices of nonfederally employed physicians who were classified by the American Medical Association or the American Osteopathic Association as "office-based, patient care" were included in the NAMCS sample. Visits to private nonhospital-based clinics and health maintenance organizations were considered to be within scope of the survey, but those that took place in government-operated facilities were not. Physicians specializing in anesthesiology, pathology, or radiology were not included in the sample, nor were visits to hospital-based physicians or physicians primarily engaged in training, research, or administration. Telephone contacts and visits made outside the physician's office were also excluded. The National Hospital Ambulatory Medical Care Survey (NHAMCS) collects patient and visit data from hospital-based outpatient departments and emergency departments. Results from that survey are available in other published reports (1–4).

It is necessary to keep in mind that the estimates presented in this report are based on a sample, rather than on the entire universe of office visits, and, as

such, they are subject to sampling variability. The Technical notes at the end of this report discuss briefly the sample design, sampling errors, and guidelines for judging the precision of NAMCS estimates. Additional publications summarizing NAMCS data from 1991 and 1992 are available (5–7).

Physician practice characteristics

On average, 2.9 visits per 100 persons per year were made to neurologists during 1991 and 1992 (table 1). This specialty received 1.0 percent of all office visits made to ambulatory care physicians during the 2-year period.

Visit rates did not differ by geographic region, except that the West had a higher annual visit rate (3.8 visits per 100 persons) than did the Northeast (2.4 visits per 100 persons). The majority of neurology visits (95.4 percent) were made to doctors of medicine; 4.6 percent were made to doctors of osteopathy (table 2).

Patient characteristics

Visits to neurologists are shown by patient's age, sex, and race in table 3. The visit rate was significantly higher for persons 25 years and over compared with those under age 25. However, no



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics



Assurance of Confidentiality—All information which would permit identification of an individual, a practice, or an establishment will be held confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to other persons or used for any other purpose.		Department of Health and Human Services Centers for Disease Control Public Health Service National Center for Health Statistics		D		
1. DATE OF VISIT ____/____/____ Month Day Year		PATIENT RECORD NATIONAL AMBULATORY MEDICAL CARE SURVEY			OMB No. 0920-0234 Expires 4-30-93 CDC 64.21D	
2. DATE OF BIRTH ____/____/____ Month Day Year	4. COLOR OR RACE 1 <input type="checkbox"/> White 2 <input type="checkbox"/> Black 3 <input type="checkbox"/> Asian / Pacific Islander 4 <input type="checkbox"/> American Indian / Eskimo / Aleut	5. ETHNICITY 1 <input type="checkbox"/> Hispanic origin 2 <input type="checkbox"/> Not Hispanic	6. EXPECTED SOURCE(S) OF PAYMENT [Check all that apply] 1 <input type="checkbox"/> HMO/other prepaid 5 <input type="checkbox"/> Private / commercial 2 <input type="checkbox"/> Medicare 6 <input type="checkbox"/> Patient paid 3 <input type="checkbox"/> Medicaid 7 <input type="checkbox"/> No charge 4 <input type="checkbox"/> Other government 8 <input type="checkbox"/> Other		7. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	8. IS THIS VISIT INJURY RELATED? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
3. SEX 1 <input type="checkbox"/> Female 2 <input type="checkbox"/> Male		9. DOES PATIENT SMOKE CIGARETTES? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Unknown				
10. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT [In patient's own words] a. Most important: _____ b. Other: _____ c. Other: _____		11. PHYSICIAN'S DIAGNOSES a. Principal diagnosis / problem associated with item 10 a: _____ b. Other: _____ c. Other: _____		12. HAVE YOU OR ANYONE IN YOUR PRACTICE SEEN PATIENT BEFORE? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No If yes, for the condition in item 11a? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No		13. DOES PATIENT NOW HAVE: [Check all that apply regardless of any entry in item 11] 1 <input type="checkbox"/> None of below 2 <input type="checkbox"/> Depression 3 <input type="checkbox"/> Hypertension 4 <input type="checkbox"/> Hypercholesterolemia 5 <input type="checkbox"/> Obesity
14. AMBULATORY SURGICAL PROCEDURE(S) [Record any outpatient diagnostic or therapeutic procedure. For the first, check appropriate boxes.] a. 1 <input type="checkbox"/> Scheduled 3 <input type="checkbox"/> Local anesthesia 2 <input type="checkbox"/> Performed 4 <input type="checkbox"/> Regional anesthesia 5 <input type="checkbox"/> General anesthesia b.		15. DIAGNOSTIC / SCREENING SERVICES [Check all ordered or provided] 1 <input type="checkbox"/> None 11 <input type="checkbox"/> Pap test 2 <input type="checkbox"/> Blood pressure 12 <input type="checkbox"/> Strep throat test 3 <input type="checkbox"/> Urinalysis 13 <input type="checkbox"/> HIV serology 4 <input type="checkbox"/> EKG - resting 14 <input type="checkbox"/> Cholesterol measure 5 <input type="checkbox"/> EKG - exercise 15 <input type="checkbox"/> Other lab test 6 <input type="checkbox"/> Mammogram 16 <input type="checkbox"/> Hearing test 7 <input type="checkbox"/> Chest x-ray 17 <input type="checkbox"/> Visual acuity 8 <input type="checkbox"/> Other radiology 18 <input type="checkbox"/> Mental status exam 9 <input type="checkbox"/> Allergy testing 19 <input type="checkbox"/> Other [Specify] _____ 10 <input type="checkbox"/> Spirometry		16. THERAPEUTIC SERVICES [Check all ordered or provided. Exclude medication] 1 <input type="checkbox"/> None 6 <input type="checkbox"/> Drug abuse COUNSELING / EDUCATION: 2 <input type="checkbox"/> Diet 7 <input type="checkbox"/> Alcohol abuse 3 <input type="checkbox"/> Exercise 8 <input type="checkbox"/> Smoking cessation 4 <input type="checkbox"/> Cholesterol reduction 9 <input type="checkbox"/> Family / social 5 <input type="checkbox"/> Weight reduction 10 <input type="checkbox"/> Growth / development 11 <input type="checkbox"/> Family planning 12 <input type="checkbox"/> Other counseling _____ OTHER THERAPY: 13 <input type="checkbox"/> Psychotherapy 14 <input type="checkbox"/> Corrective lenses 15 <input type="checkbox"/> Hearing aid 16 <input type="checkbox"/> Physiotherapy 17 <input type="checkbox"/> Other therapy [Specify] _____		
17. MEDICATION [Record all new or continued medications ordered or provided at this visit. Use the same brand name or generic name entered on any file or office medical record. Include immunizing and desensitizing agents.] If none, check here <input type="checkbox"/> 1. _____ Yes No 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2. _____ 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3. _____ 1 <input type="checkbox"/> 2 <input type="checkbox"/> 4. _____ 1 <input type="checkbox"/> 2 <input type="checkbox"/> 5. _____ 1 <input type="checkbox"/> 2 <input type="checkbox"/>		18. DISPOSITION THIS VISIT [Check all that apply] 1 <input type="checkbox"/> No follow-up planned 2 <input type="checkbox"/> Return at specified time 3 <input type="checkbox"/> Return if needed, P.R.N. 4 <input type="checkbox"/> Telephone follow-up planned 5 <input type="checkbox"/> Referred to other physician 6 <input type="checkbox"/> Returned to referring physician 7 <input type="checkbox"/> Admit to hospital 8 <input type="checkbox"/> Other [Specify] _____		19. DURATION OF THIS VISIT [Time actually spent with physician] _____ Minutes		

Figure 1. Patient Record form

significant differences were noted among visit rates for those in the age groups 24–44 years, 45–64 years, 65–74 years, and 75 years and over. In addition, visit rates for persons under 15 years and 15–24 years of age did not differ significantly from each other. Females had a higher visit rate to neurologists than did males (3.3 visits per 100 females per year compared with 2.5 visits per 100 males). Significant differences were confined to the age group 25–44 years, with females in that group making 4.0 visits per 100 compared with 2.3 visits per 100 males. White persons had a significantly higher

rate of visits to neurologists (3.2 visits per 100 persons per year) than did black persons (1.6 visits per 100 persons per year).

Persons 25–44 years of age accounted for more than one-third (35.3 percent) of all office visits to neurologists; those 44 years and over accounted for slightly less than half of the visits (46.1 percent). Females made a higher proportion of visits to neurologists than did males, 58.0 percent and 42.0 percent, respectively. White persons made 91.1 percent of the visits to this specialty, and black persons accounted for 7.0 percent.

Visit characteristics

Referral status and prior-visit status

Nearly one-third (30.2 percent) of office visits to neurologists were the result of a referral by another physician compared with 6.0 percent of the visits to all other physicians (figure 2). While 60.5 percent of neurology visits were made by patients returning for care of a previously treated problem, more than one-third (35.8 percent) were made by new patients. In comparison, only 15.5 percent of the visits to all other

Table 1. Annual number, percent distribution, and rate of office visits by physician specialty, averaged over a 2-year period: United States, 1991–92

Physician specialty	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year ¹
All visits	715,867	100.0	286.3
General and family practice	192,051	26.8	76.8
Internal medicine	101,598	14.2	40.6
Pediatrics	85,387	11.9	34.1
Obstetrics and gynecology	62,601	8.7	25.0
Ophthalmology	43,884	6.1	17.5
Orthopedic surgery	36,958	5.2	14.8
Dermatology	29,179	4.1	11.7
General surgery	22,797	3.2	9.1
Otolaryngology	21,007	2.9	8.4
Psychiatry	17,769	2.5	7.1
Urological surgery	13,857	1.9	5.5
Cardiovascular diseases	13,146	1.8	5.3
Neurology	7,253	1.0	2.9
All other specialties	68,382	9.6	27.3

¹Based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized population of the United States for July 1, 1991, and July 1, 1992, averaged over the 2-year period.

Table 2. Annual number, percent distribution, and rate of office visits to neurologists by selected physician practice characteristics, averaged over a 2-year period: United States, 1991–92

Physician practice characteristics	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year ¹
All visits	7,253	100.0	2.9
Geographic region			
Northeast	1,191	16.4	2.4
Midwest	1,815	25.0	3.0
South	2,172	30.0	2.6
West	2,076	28.6	3.8
Professional identity			
Doctor of medicine	6,921	95.4	2.8
Doctor of osteopathy	332	4.6	0.1

¹Based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized population of the United States for July 1, 1991, and July 1, 1992, averaged over the 2-year period.

physicians were by new patients (figure 3). Visits by referral status and prior-visit status are summarized in table 4.

Expected sources of payment

Private insurance was an expected source of payment at nearly one-half (44.4 percent) of all visits to neurologists compared with one-third (34.1 percent) of visits to all other specialties. Medicare was an expected pay source at one-fifth of all neurology visits (21.8 percent). Data on expected sources of payment are shown in table 5. It should be noted that more than one expected source of payment could be recorded per visit.

Patient's principal reason for visit

Table 6 shows the patient's principal reason for visiting the physician, according to the eight modules, or groups of reasons, outlined in *A Reason for Visit Classification for Ambulatory Care (RVC)* (8). Principal reason for visit (item 10a on the Patient Record form) is the patient's most important complaint(s), symptom(s), or other reason(s) for this visit expressed in the patient's (or patient's spokesperson's) own words. Up to three reasons per visit may be coded based upon the classification system found in the RVC.

Eight out of ten visits to this specialty (81.1 percent) were due to a

symptomatic problem or complaint, with the largest proportion of symptoms being those referable to the nervous system (excluding sense organs) (43.3 percent). Musculoskeletal symptoms were listed at 22.9 percent of the visits.

Specific reasons for visit are listed in table 7. The single most frequently mentioned principal reason for visiting the neurologist was headache or pain in head, accounting for 18.4 percent of the visits. A higher proportion of visits by females were for this reason (22.5 percent) compared with males (12.7 percent). Convulsions, mentioned at 9.1 percent of visits, was the second most frequent reason, followed by disturbances of sensation (5.5 percent). It should be noted that estimates that differ in rank order may not be significantly different from each other.

Diagnostic services

About one-third of all visits to neurologists included no diagnostic or screening services; 4 of every 10 visits (42.2 percent) included one service. The most frequently mentioned specific category was blood pressure check, which was reported at more than one-third of the visits (37.3 percent).

Mental status exams were more likely to be ordered or provided at visits to neurologists compared with visits to all other physicians (8.8 percent and 1.1 percent, respectively), as was "other radiology" (radiology other than chest x ray). Unspecified diagnostic services were reported at 29.6 percent of all visits to neurologists. Table 8 displays visits by the number and type of diagnostic services ordered or provided.

Principal diagnosis

Data on principal diagnoses rendered at office visits are obtained from item 11a of the Patient Record form where physicians are asked to record the principal diagnosis associated with the patient's most important reason for visit. Diagnoses are classified and coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* (9).

Table 3. Annual number, percent distribution, and rate of office visits to neurologists by selected patient characteristics, averaged over a 2-year period: United States, 1991-92

<i>Patient characteristic</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Visit rate per 100 persons¹</i>
All visits	7,253	100.0	2.9
<i>Age</i>			
Under 15 years	770	10.6	1.4
15-24 years	577	8.0	1.7
25-44 years	2,559	35.3	3.2
45-64 years	1,893	26.1	4.0
65-74 years	820	11.3	4.5
75 years and over	633	8.7	5.2
<i>Sex and age</i>			
Female	4,210	58.0	3.3
Under 15 years	329	4.5	1.2
15-24 years	312	4.3	1.8
25-44 years	1,647	22.7	4.0
45-64 years	1,071	14.8	4.3
65-74 years	441	6.1	4.3
75 years and over	410	5.6	5.4
Male	3,044	42.0	2.5
Under 15 years	442	6.1	1.5
15-24 years	265	3.7	1.5
25-44 years	912	12.6	2.3
45-64 years	822	11.3	3.6
65-74 years	380	5.2	4.6
75 years and over	224	3.1	4.9
<i>Race</i>			
White	6,605	91.1	3.2
Black	508	7.0	1.6
Asian/Pacific Islander	113	1.6	---
American Indian/Eskimo/Aleut	*27	*0.4	---

¹Visit rates are based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized U.S. population for July 1, 1991, and July 1, 1992, averaged over the 2-year period.

More than one-third (36.1 percent) of all visits to neurologists resulted in a principal diagnosis that was classifiable to a disease of the nervous system and sense organs (table 9). About one-fifth of the visits (21.3 percent) were recorded as "symptoms, signs, and ill-defined conditions." Diseases of the musculoskeletal system and connective tissue accounted for 14.6 percent of the visits.

The top 20 principal diagnoses at visits to neurologists are shown in table 10. The most frequently listed specific diagnosis was "general symptoms" (ICD-9-CM code 780), occurring at 13.3 percent of visits. This category falls within the larger classification of "symptoms, signs, and ill-defined conditions" of the ICD-9-CM. This classification includes signs and symptoms for which no more specific diagnosis can be made even after investigation of the facts, transient

symptoms whose causes could not be determined, provisional diagnoses, cases referred elsewhere before a diagnosis was made, cases in which a precise diagnosis was unavailable for any other reason, and certain symptoms that represent important problems in medical care and that might be desired to classify in addition to a known cause. General symptoms (ICD-9-CM code 780) may include any of the following subcategories: coma and stupor, hallucinations, syncope (fainting) and collapse, convulsions, dizziness and giddiness, sleep disturbances, pyrexia (fever) of unknown origin, malaise and fatigue, hyperhidrosis (excessive sweating), and other general symptoms. Among the neurology visits reported here, convulsions (ICD-9-CM code 780.3) accounted for more than three-quarters of the "general symptoms" diagnoses.

The second and third most frequently reported diagnoses at

neurology visits were migraine (10.3 percent) and symptoms involving head and neck (5.7 percent). A higher proportion of visits by females listed diagnoses of migraine and symptoms involving head and neck than did visits by males. (Among visits with the latter diagnosis, 97.1 percent were coded to ICD-9-CM subcategory 784.0, headache). Parkinson's disease, which accounted for 4.6 percent of the visits overall, was listed at 6.6 percent of visits by males compared with 3.1 percent of visits by females. The most frequently reported diagnoses by age group are presented in table 11.

Interestingly, one-fifth (19.8 percent) of visits to neurologists were reported to be injury related in item 13 of the Patient Record form compared with about one-tenth (9.1 percent) of visits to all other physicians. This is not readily apparent from an examination of the reported ICD-9-CM codes, however, as only 6.7 percent of neurology visits were classified to the "injury and poisoning" category of the ICD-9-CM.

Therapeutic services

Table 12 presents data on therapeutic services ordered or provided at visits to neurologists. Medication therapy was mentioned at nearly two-thirds of the visits (63.7 percent), and nonmedication therapy was ordered or provided at more than one-quarter of the visits (27.9 percent). The most frequently mentioned types of nonmedication therapy included "other counseling" (8.0 percent), exercise counseling or education (7.1 percent), physiotherapy (6.4 percent), and diet counseling or education (5.2 percent). Ambulatory surgery was scheduled or performed at 1.3 percent of visits to neurologists, significantly less than the corresponding 6.1 percent of visits to all other physicians.

Tables 13, 14, and 15 present more detailed drug data relating to neurology visits. As used in the NAMCS, the term "drug" is interchangeable with the term "medication" and includes all new or continued medications ordered or provided at the visit. This includes both prescription and nonprescription preparations, immunizing agents, and desensitizing agents. "Drug mentions" refer to the total number of medications

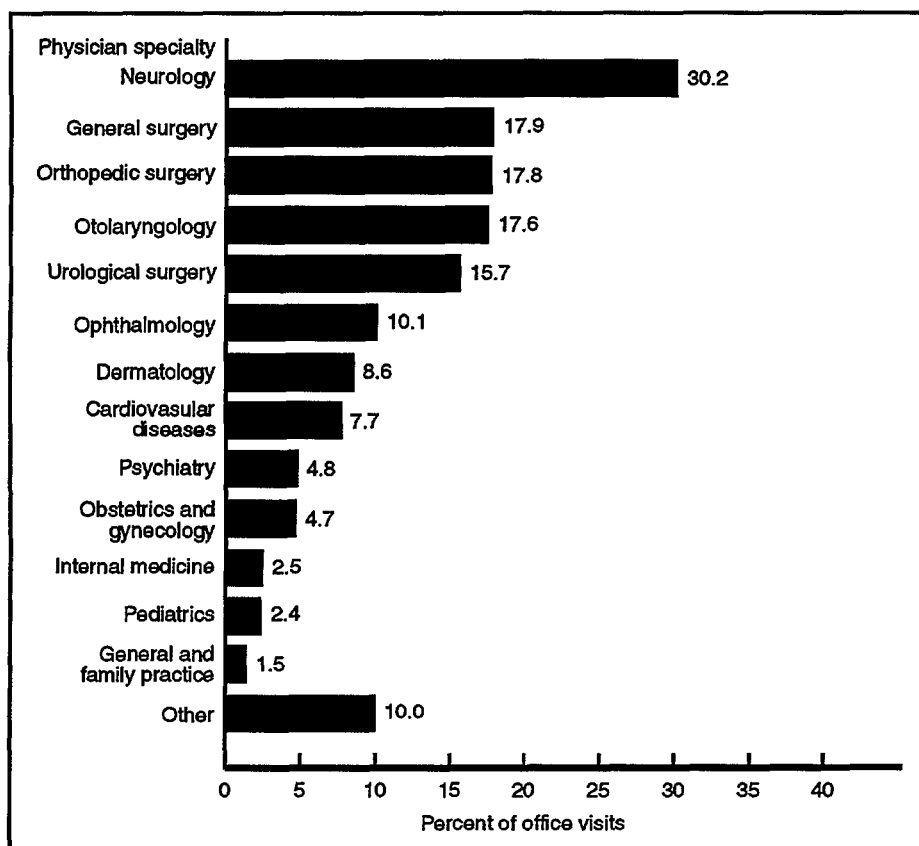


Figure 2. Percent of office visits that are referrals, according to physician specialty: United States, 1991-92

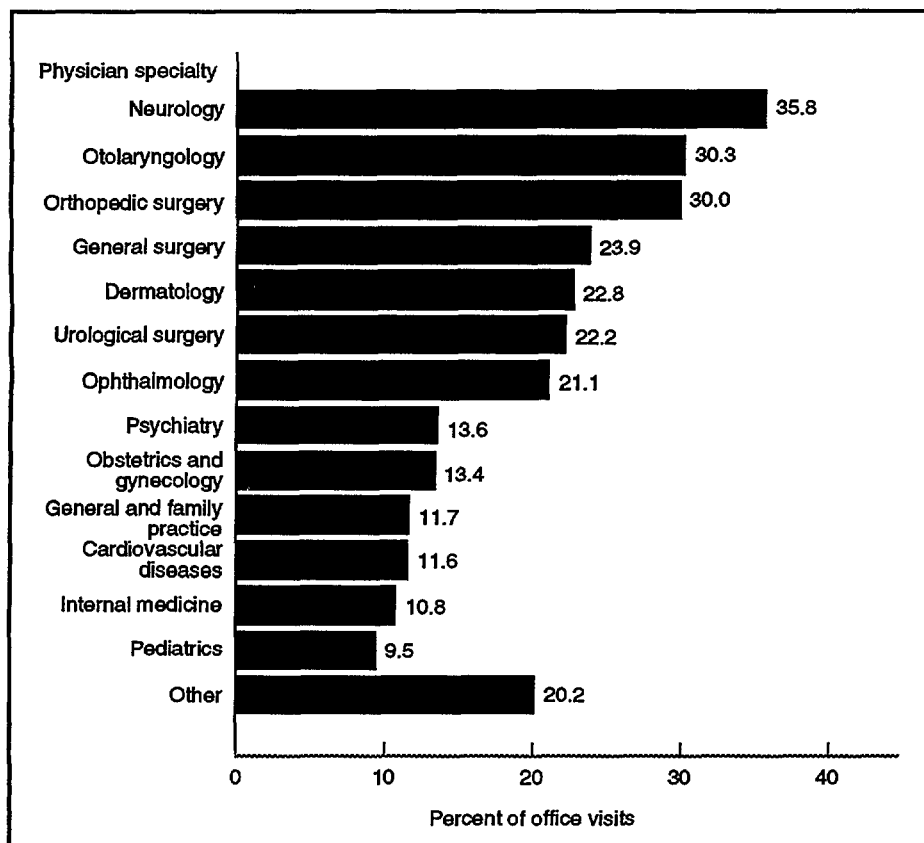


Figure 3. Percent of office visits made by new patients, according to physician specialty: United States, 1991-92

listed in item 17 of the Patient Record form. Physicians may record more than one medication per visit, so that the total number of drug mentions may exceed the total number of visits. "Drug visits" refer to visits with at least one mention of medication ordered or provided by the physician. An earlier report describes in detail the method and instruments used in the collection and processing of NAMCS drug data (10).

Among visits to neurologists, there was an average of 8.1 million drug mentions per year for 1991 and 1992, yielding 1.8 mentions per drug visit and 1.1 mentions per visit overall. Table 13 shows the number of drug mentions by therapeutic classification, adapted from therapeutic categories used in the *National Drug Code, 1985 edition* (11). In cases where a particular drug was classifiable to more than one therapeutic category, it was listed under the category that occurred with the greatest frequency. Neurologic drugs (25.9 percent), drugs used for pain relief (22.4 percent), and psychopharmacologic drugs (20.2 percent) were reported most frequently, together accounting for about two-thirds (68.5 percent) of the drugs mentioned at visits to neurologists.

The generic substances used most frequently in medications ordered or provided at neurology visits are shown in table 14. Acetaminophen was the most frequently occurring substance (8.3 percent of mentions), followed by carbamazepine (6.0 percent) and amitriptyline (4.9 percent). It should be noted that drugs containing more than one ingredient are listed in the data for each ingredient. For example, acetaminophen with codeine would be listed both under the count for acetaminophen as well as the count for codeine.

Table 15 displays drug mentions according to entry name, that is, the name recorded by the physician in item 17 of the Patient Record form. This could be a trade name, generic name, or simply a desired therapeutic effect. Tegretol was the specific entry listed most frequently (6.0 percent of mentions), followed by Dilantin (4.3 percent) and Sinemet (3.5 percent).

Disposition of visit

Visits to neurologists were more likely to include instructions to return at

Table 4. Annual number and percent distribution of office visits to neurologists and to all other physicians by patient's referral status and prior-visit status, averaged over a 2-year period: United States, 1991-92

Visit characteristic	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	7,253	100.0	708,614	100.0
Referral status				
Referred by another physician	2,189	30.2	42,598	6.0
Not referred by another physician	5,064	69.8	666,016	94.0
Prior-visit status				
New patient	2,597	35.8	109,494	15.5
Old patient, new problem	269	3.7	159,512	22.5
Old patient, old problem	4,388	60.5	439,608	62.0

Table 5. Annual number and percent distribution of office visits to neurologists and to all other physicians by patient's expected source(s) of payment, averaged over a 2-year period: United States, 1991-92

Expected source(s) of payment ¹	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	7,253	100.0	708,614	100.0
Private/commercial insurance	3,220	44.4	241,927	34.1
Medicare	1,581	21.8	145,086	20.5
Patient-paid	983	13.5	150,664	21.3
HMO/other prepaid plan	827	11.4	122,833	17.3
Medicaid	523	7.2	73,231	10.3
Other government	221	3.1	14,795	2.1
No charge	64	0.9	11,381	1.6
Other	736	10.1	28,123	4.0
Unknown	68	0.9	15,732	2.2

¹Total may exceed total number of visits because more than one category may be reported per visit.

Table 6. Annual number and percent distribution of office visits to neurologists by patient's principal reason for visit, averaged over a 2-year period: United States, 1991-92

Principal reason for visit and RVC code ¹	Number of visits in thousands	Percent distribution
All visits	7,253	100.0
Symptom module	5,881	81.1
Symptoms referable to the nervous system (excluding sense organs)S200-S259	3,141	43.3
Symptoms referable to the musculoskeletal systemS900-S999	1,662	22.9
General symptomsS001-S099	508	7.0
Symptoms referable to psychological and mental disordersS100-S199	262	3.6
Symptoms referable to the eyes and earsS300-S399	193	2.7
Symptoms referable to the respiratory systemS400-S499	51	0.7
All other symptoms ²	65	0.9
Disease moduleD001-D999	459	6.3
Diagnostic, screening, and preventive moduleX100-X599	95	1.3
Treatment moduleT100-T899	382	5.3
Injury and adverse effects moduleJ001-J999	83	1.1
Test results moduleR100-R700	58	0.8
Administrative moduleA100-A140	*6	*0.1
Other ³U990-U999	289	4.0

¹Based on A Reason for Visit Classification for Ambulatory Care (RVC) (8).

²Includes symptoms referable to the cardiovascular and lymphatic system (S260-S289); symptoms referable to the digestive system (S500-S639); symptoms referable to the genitourinary system (S640-S829); and symptoms referable to the skin, hair, and nails (S830-S889).

³Includes blanks, problems, and complaints not elsewhere classified, entries of "none," and illegible entries.

a specific time (70.5 percent) than were visits to all other specialties (62.3 percent). Also, a higher proportion of these visits resulted in instructions for the patient to return to the referring physician (7.7 percent) compared with visits to all other physicians (0.9 percent). This is a reflection, to some degree, of the large number of referrals made to this specialty relative to other physician specialties. Data on disposition of visit are displayed in table 16.

Duration of visit

About three-quarters (73.3 percent) of visits to neurologists lasted more than 15 minutes, compared with one-third (32.3 percent) of visits to all other physicians. Average duration of neurology visits was 30.5 minutes compared with 17.2 minutes for all other visits. Average duration is based on the time spent in direct, face-to-face contact between the physician and the patient. It does not include visits of "zero" minutes duration, that is, visits in which the patient did not meet with the physician directly. Data on duration of visits are shown in table 17.

Visits to neurologists between 1975 and 1992

The overall number of visits to neurologists increased by 283.3 percent,

Table 7. Annual number and percent distribution of office visits to neurologists by the 20 most frequently mentioned principal reasons for visit, according to patient's sex, averaged over a 2-year period: United States, 1991–92

Principal reason for visit and RVC code ¹	Number of visits in thousands	Total	Patient's sex	
			Male	Female
			Percent distribution	
All visits	7,253	100.0	100.0	100.0
Headache, pain in headS210	1,334	18.4	12.7	22.5
ConvulsionsS205	659	9.1	10.1	8.3
Disturbances of sensationS220	397	5.5	5.5	5.4
Neck symptomsS900	374	5.2	3.8	6.1
Back symptomsS905	344	4.7	5.2	4.4
Vertigo-dizzinessS225	256	3.5	3.9	3.2
Progress visit, not otherwise specifiedT800	254	3.5	3.0	3.9
Leg symptomsS920	251	3.5	4.0	3.1
Abnormal involuntary movementsS200	239	3.3	4.7	2.3
Low back symptomsS910	198	2.7	3.2	2.4
Disorders of motor functionsS095	135	1.9	1.6	2.1
Vision dysfunctionsS305	131	1.8	1.3	2.2
Hand and finger symptomsS960	117	1.6	1.2	1.9
Arm symptomsS945	113	1.6	1.7	1.4
Disturbances of memoryS215	105	1.4	1.3	1.6
Migraine headacheD365	85	1.2	*0.8	1.4
Shoulder symptomsS940	84	1.2	1.2	1.1
General weaknessS020	84	1.2	*0.6	1.6
Disturbances of sleepS135	74	1.0	1.3	*0.8
Other diseases of central nervous systemD370	69	1.0	*1.1	0.9
All other reasons	1,951	26.9	31.8	23.4

¹Based on A Reason for Visit Classification for Ambulatory Care (RVC) (8).

Table 8. Annual number and percent distribution of office visits to neurologists and to all other physicians by diagnostic services ordered or performed, averaged over a 2-year period: United States, 1991–92

Visit characteristic	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	7,253	100.0	708,614	100.0
Number of diagnostic services ordered or performed				
None	2,388	32.9	250,765	35.4
One	3,061	42.2	246,957	34.9
Two	1,154	15.9	123,726	17.5
Three	450	6.2	52,095	7.4
Four	122	1.7	21,450	3.0
Five or more	78	1.1	13,621	1.9
Diagnostic services ordered or performed ¹				
None	2,388	32.9	250,765	35.4
Blood pressure check	2,702	37.3	307,770	43.4
Urinalysis	130	1.8	95,565	13.5
EKG-resting ²	86	1.2	21,419	3.0
Other radiology	602	8.3	38,315	5.4
Cholesterol measure	42	0.6	25,360	3.6
Other lab test	977	13.5	119,980	16.9
Hearing test	66	0.9	10,130	1.4
Visual acuity	165	2.3	41,088	5.8
Mental status exam	638	8.8	8,102	1.1
Other ³	2,196	30.3	143,983	20.3

¹Total may exceed total number of visits because more than one category may be reported per visit.

²EKG is electrocardiogram.

³The following diagnostic service categories were not reported at visits to neurologists: allergy testing, spirometry, and pap test. The following diagnostic service categories were reported at visits to neurologists, but with frequencies that were too low to produce reliable estimates: EKG-exercise, mammogram, strep throat test, chest x ray, and HIV (human immunodeficiency virus) serology. These services have been included in the "other" category. Unspecified diagnostic services accounted for 29.6 percent of all reported services at visits to neurologists.

from a 2-year total of 3.8 million in 1975–76 to 14.5 million in 1991–92. The 1975–76 total represented approximately 0.3 percent of all visits to office-based physicians during that time period. The 1991–92 share, 1.0 percent, was significantly higher. According to data from the American Medical Association, there were 6,257 nonfederally employed, office-based neurologists in the United States (excluding possessions) in 1992 compared with 1,847 in 1975, an increase of 238.8 percent (12,13).

The rate of visits to neurologists increased from an average of 0.9 visits per 100 persons per year in 1975–76 to 2.9 visits per 100 persons per year in 1991–92. The age-adjusted visit rate for 1991–92 was 2.3 visits per 100 persons, using the 1975–76 U.S. population as the standard (figure 4). Visits to neurologists during 1975–92 are shown by patient's age in table 18.

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Table 9. Annual number and percent distribution of office visits to neurologists by principal diagnosis, averaged over a 2-year period: United States, 1991-92

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Percent distribution	
		Total	Female
All visits	7,253	100.0	100.0
Infectious and parasitic diseases001-139	65	0.9	0.9
Neoplasms140-239	60	0.8	0.8
Endocrine, nutritional and metabolic diseases, and immunity disorders.240-279	75	1.0	1.0
Mental disorders290-319	602	8.3	8.3
Diseases of the nervous system and sense organs320-389	2,618	36.1	36.1
Diseases of the circulatory system390-459	344	4.7	4.7
Diseases of the respiratory system460-519	41	0.6	0.6
Diseases of the musculoskeletal system and connective tissue710-739	1,060	14.6	14.6
Symptoms, signs, and ill-defined conditions780-799	1,544	21.3	21.3
Injury and poisoning800-999	484	6.7	6.7
Supplementary classificationV01-V82	159	2.2	2.2
All other diagnoses ²	71	1.0	1.0
Unknown ³	132	1.8	1.8

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (9)*.

²Includes diseases of the blood and blood-forming organs (280-289); diseases of the digestive system (520-579); diseases of the genitourinary system (580-629); complications of pregnancy, childbirth, and the puerperium (630-676); diseases of the skin and subcutaneous tissue (680-709); congenital anomalies (740-759); and certain conditions originating in the perinatal period (760-779).

³Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

Table 10. Annual number and percent distribution of office visits to neurologists by the 20 most frequently mentioned principal diagnoses, according to patient's sex, averaged over a 2-year period: United States, 1991-92

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Patient's sex		
		Total	Male	Female
All visits	7,253	100.0	100.0	100.0
General symptoms780	965	13.3	15.8	11.5
Convulsions780.3	769	10.6	13.1	8.8
Coma and stupor, hallucinations, syncope and collapse, dizziness and giddiness, sleep disturbances, malaise and fatigue, other general symptoms.780.0-780.2, 780.4-780.5, 780.7, 780.9	195	2.7	2.7	2.7
Migraine346	746	10.3	5.7	13.6
Symptoms involving head and neck784	414	5.7	3.4	7.4
Headache784.0	402	5.5	3.3	7.2
Aphasia, other speech disturbance, other symbolic dysfunction, epistaxis784.3, 784.5-784.7	*12	*0.2	*0.1	*0.2
Parkinson's disease332	331	4.6	6.6	3.1
Other and unspecified disorders of back724	274	3.8	4.2	3.5
Mononeuritis of upper limb and mononeuritis multiplex354	269	3.7	2.5	4.6
Multiple sclerosis340	244	3.4	*0.8	5.2
Sprains and strains of other and unspecified parts of back847	231	3.2	3.2	3.5
Other disorders of soft tissues729	198	2.7	3.6	2.1
Other disorders of cervical region723	197	2.7	3.1	2.5
Special symptoms or syndromes, not elsewhere classified307	152	2.1	1.3	2.7
Epilepsy345	150	2.1	1.9	2.2
Acute, but ill-defined, cerebrovascular disease436	131	1.8	2.2	1.5
Hyperkinetic syndrome of childhood314	121	1.7	3.0	*0.7
Spondylosis and allied disorders721	119	1.6	1.5	1.8
Intervertebral disc disorders722	115	1.6	*1.1	2.0
Other extrapyramidal disease and abnormal movement disorders.333	114	1.6	1.6	1.5
Hereditary and idiopathic peripheral neuropathy356	108	1.5	1.6	1.4
Mononeuritis of lower limb355	90	1.2	1.9	*0.7
Neurotic disorders300	79	1.1	*0.6	1.5
All other diagnoses	839	11.6	15.3	8.4

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (9)*.

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Table 11. Annual number and percent distribution of office visits to neurologists by the most frequently mentioned principal diagnoses, according to patient's age, averaged over a 2-year period: United States, 1991-92

<i>Principal diagnosis and ICD-9-CM code¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Cumulative percent</i>
Under 15 years			
All visits	770	100.0	...
General symptoms780	287	37.3	37.3
Hyperkinetic syndrome of childhood314	102	13.3	50.6
Migraine346	53	6.8	57.4
Symptoms involving head and neck784	41	5.4	62.8
All other diagnoses	287	37.2	100.0
15-24 years			
All visits	577	100.0	...
General symptoms780	120	20.8	20.8
Migraine346	64	11.1	31.9
Symptoms involving head and neck784	57	9.8	41.7
Sprains and strains of other and unspecified parts of back847	56	9.7	51.3
All other diagnoses	281	48.7	100.0
25-44 years			
All visits	2,559	100.0	...
Migraine346	421	16.4	16.4
General symptoms780	256	10.0	26.4
Symptoms involving head and neck784	198	7.8	34.1
Multiple sclerosis340	139	5.4	39.6
Sprains and strains of other and unspecified parts of back847	126	4.9	44.5
Other and unspecified disorders of back724	120	4.7	49.2
Mononeuritis of upper limb and mononeuritis multiplex354	100	3.9	53.1
Other disorders of soft tissues729	95	3.7	56.8
Other disorders of cervical region723	95	3.7	60.5
Epilepsy345	79	3.1	63.6
All other diagnoses	930	36.4	100.0
45-64 years			
All visits	1,893	100.0	...
General symptoms780	194	10.2	10.2
Migraine346	183	9.6	19.8
Other and unspecified disorders of back724	97	5.1	25.0
Symptoms involving head and neck784	96	5.1	30.1
Multiple sclerosis340	94	5.0	35.0
Mononeuritis of upper limb and mononeuritis multiplex354	86	4.5	39.6
Parkinson's disease332	83	4.4	44.0
Other disorders of soft tissues729	69	3.6	47.6
Other disorders of cervical region723	69	3.6	51.2
Spondylosis and allied disorders721	56	3.0	54.2
All other diagnoses	867	45.8	100.0
65 years and over			
All visits	1,454	100.0	...
Parkinson's disease332	246	16.9	16.9
General symptoms780	108	7.4	24.3
Acute, but ill-defined, cerebrovascular disease436	86	5.9	30.2
Mononeuritis of upper limb and mononeuritis multiplex354	78	5.4	35.6
Hereditary and idiopathic peripheral neuropathy356	58	4.0	39.6
Other extrapyramidal disease and abnormal movement disorders333	53	3.7	43.2
Other and unspecified disorders of back724	53	3.6	46.8
All other diagnoses	772	53.1	100.0

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (9)*.

NOTE: A maximum of 10 diagnoses were listed per age group. Only reliable estimates were included in the table, so some categories may have fewer than 10 diagnoses.

Table 12. Annual number and percent distribution of office visits to neurologists and to all other physicians by therapeutic services ordered or provided, averaged over a 2-year period: United States, 1991-92

Therapeutic service ordered or provided ¹	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	7,253	100.0	708,614	100.0
Medication therapy				
New or continued medication	4,624	63.7	450,237	63.5
No medication reported	2,629	36.3	258,377	36.5
Counseling, education, and other nonmedication therapy				
None	5,230	72.1	481,938	68.0
Diet	379	5.2	82,639	11.7
Exercise	513	7.1	54,426	7.7
Cholesterol reduction	73	1.0	21,567	3.0
Weight reduction	174	2.4	27,773	3.9
Drug abuse	37	0.5	1,787	0.3
Alcohol abuse	*17	*0.2	3,157	0.4
Smoking cessation	49	0.7	15,621	2.2
Family/social	152	2.1	13,574	1.9
Growth/development	90	1.2	17,145	2.4
Family planning	*14	*0.2	6,220	0.9
Other counseling	579	8.0	58,119	8.2
Psychotherapy	163	2.2	18,970	2.7
Corrective lenses	-	-	7,763	1.1
Hearing aid	-	-	432	0.1
Physiotherapy	465	6.4	14,829	2.1
Other	178	2.5	20,163	2.8
Ambulatory surgery scheduled or performed				
No procedures	7,159	98.7	665,389	93.9
One or more procedures	94	1.3	43,225	6.1

¹Total may exceed total number of visits because more than one category may be reported per visit.

Table 13. Annual number and percent distribution of drug mentions at office visits to neurologists by therapeutic classification, averaged over a 2-year period: United States, 1991-92

<i>Therapeutic classification¹</i>	<i>Number of drug mentions in thousands</i>	<i>Percent distribution</i>
All mentions	8,143	100.0
Neurologic drugs	2,109	25.9
Anticonvulsants	1,294	15.9
Drugs used to treat skeletal muscle hyperactivity	419	5.1
Drugs used in extrapyramidal movement disorders	375	4.6
Drugs used in myasthenia gravis	*20	*0.2
Drugs used for relief of pain	1,825	22.4
General analgesics	910	11.2
Antiarthritics	612	7.5
Drugs used to treat migraine and other headaches	280	3.4
Other	*23	*0.3
Psychopharmacologic drugs	1,642	20.2
Antidepressants	920	11.3
Anti-anxiety drugs	269	3.3
Sedatives and hypnotics	224	2.7
Antipsychotic drugs	116	1.4
CNS stimulants, anorexigants	113	1.4
Cardiovascular-renal drugs	929	11.4
Antihypertensive agents	435	5.3
Antiarrhythmic agents	166	2.0
Diuretics	137	1.7
Other	191	2.3
Hormones and agents affecting hormonal mechanisms	310	3.8
Respiratory tract drugs	184	2.3
Antimicrobial drugs	178	2.2
Gastrointestinal drugs	145	1.8
Metabolic and nutrient agents	127	1.6
Hematologic drugs	79	1.0
Otologic drugs	70	0.9
Skin/mucous membrane	55	0.7
Other ²	68	0.8
Unclassified, miscellaneous	423	5.2

¹Therapeutic classification is based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition (NDC) (11).

²Includes anesthetics, radiopharmaceuticals/contrast media, oncolytics, immunologic agents, ophthalmic drugs, and antiparasitic agents.

Table 14. Number and percent of drug mentions at office visits to neurologists by the 20 most frequently used generic substances, averaged over a 2-year period: United States, 1991-92

<i>Generic substance</i>	<i>Number of occurrences in thousands¹</i>	<i>Percent of all drug mentions²</i>
All mentions	10,186	...
Acetaminophen	673	8.3
Carbamazepine	491	6.0
Amitriptyline	398	4.9
Phenytoin	352	4.3
Aspirin	345	4.2
Caffeine	283	3.5
Levodopa	281	3.5
Carbidopa	281	3.5
Butalbital	241	3.0
Naproxen	230	2.8
Divalproex sodium	216	2.7
Propranolol	213	2.6
Verapamil	175	2.1
Dichloralantpyrine	162	2.0
Isometheptene mucate	162	2.0
Nortriptyline	159	2.0
Phenobarbital	147	1.8
Codaine	139	1.7
Ibuprofen	139	1.7
Cyclobenzaprine	125	1.5

¹Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.

²Based on an average of 8,143,000 drug mentions per year at office visits to neurologists during 1991-92.

Table 15. Annual number, percent distribution, and therapeutic classification of the 20 drugs most frequently prescribed at office visits to neurologists by entry name, averaged over a 2-year period: United States, 1991-92

<i>Entry name of drug¹</i>	<i>Number of drug mentions in thousands</i>	<i>Percent distribution</i>	<i>Therapeutic classification²</i>
All mentions	8,143	100.0	...
Tegretol	491	6.0	Neurologic drugs (anticonvulsants)
Dilantin	352	4.3	Neurologic drugs (anticonvulsants)
Simemet	281	3.5	Neurologic drugs (drugs used in extrapyramidal movement disorders)
Elavil	251	3.1	Psychopharmacologic drugs (antidepressants)
Depakote	216	2.7	Neurologic drugs (anticonvulsants)
Inderal	211	2.6	Cardiovascular-renal drugs (antihypertensive agents)
Midrin	162	2.0	Drugs used for relief of pain (drugs used to treat migraine and other headaches)
Pamelor	145	1.8	Psychopharmacologic drugs (antidepressants)
Anaprox	131	1.6	Drugs used for relief of pain (antiarthritics)
Phenobarbital	126	1.5	Psychopharmacologic drugs (sedatives and hypnotics)
Amitriptyline	125	1.5	Psychopharmacologic drugs (antidepressants)
Flexeril	125	1.5	Neurologic drugs (drugs used to treat skeletal muscle hyperactivity)
Calan	113	1.4	Cardiovascular-renal drugs (antiarrhythmic agents)
Prozac	109	1.3	Psychopharmacologic drugs (antidepressants)
Naprosyn	98	1.2	Drugs used for relief of pain (antiarthritics)
Mysoline	95	1.2	Neurologic drugs (anticonvulsants)
Aspirin	92	1.1	Drugs used for relief of pain (general analgesics)
Ritalin	92	1.1	Psychopharmacologic drugs (CNS stimulants, anorexiant)
Darvocet-N	90	1.1	Drugs used for relief of pain (general analgesics)
Floriset	85	1.0	Drugs used for relief of pain (general analgesics)
All other	4,754	58.4	...

¹The trade or generic name used by the physician on the prescription or other medical records.

²Therapeutic classification is based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition (NDC) (11).

Table 16. Annual number and percent distribution of office visits to neurologists and to all other physicians by disposition of visit, averaged over a 2-year period: United States, 1991-92

Disposition of visit ¹	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	7,253	100.0	708,614	100.0
Return at specified time	5,117	70.5	441,353	62.3
Return if needed	827	11.4	163,592	23.1
Return to referring physician	560	7.7	6,285	0.9
No followup planned	490	6.8	67,719	9.6
Telephone followup planned	433	6.0	21,575	3.0
Refer to other physician	276	3.8	21,838	3.1
Admit to hospital	50	0.7	5,570	0.8
Other disposition	47	0.6	7,115	1.0

¹Total may exceed total number of visits because more than one category may be reported for each visit.

Table 17. Annual number and percent distribution of office visits to neurologists and to all other physicians by duration of visit, averaged over a 2-year period: United States, 1991-92

Duration of visit	Visits to neurologists		Visits to all other physicians	
	Number of visits in thousands	Percent distribution	Number of visits in thousands	Percent distribution
All visits	7,253	100.0	708,614	100.0
0 minutes ¹	*9	*0.1	8,502	1.2
1-5 minutes	*20	*0.3	57,800	8.2
6-10 minutes	399	5.5	186,473	26.3
11-15 minutes	1,502	20.7	227,145	32.1
16-30 minutes	2,964	40.9	179,208	25.3
31-60 minutes	2,088	28.8	45,710	6.5
More than 60 minutes	271	3.7	3,777	0.5

¹Visits in which there was no face-to-face contact between the physician and the patient.

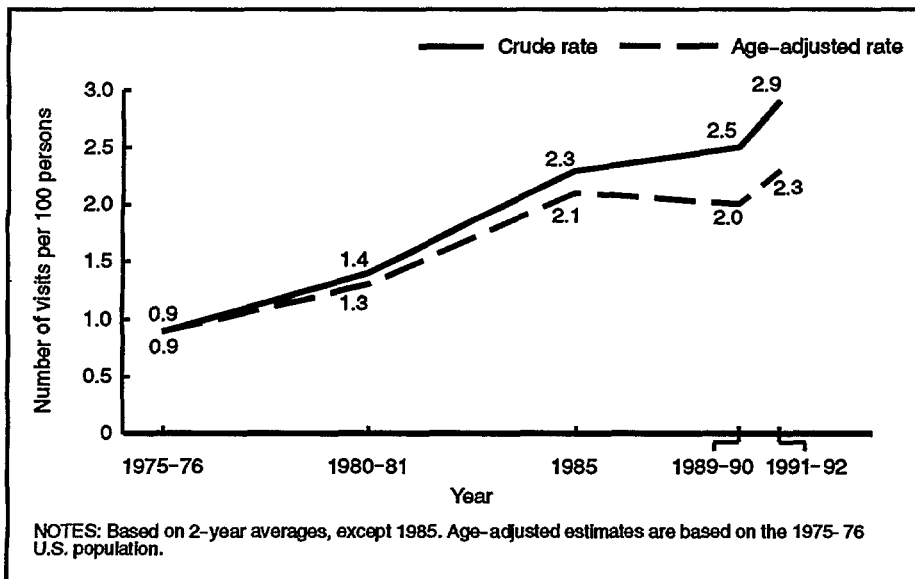


Figure 4. Annual rate of office visits to neurologists: United States, 1975-92

Table 18. Number, percent distribution, and rate of office visits to neurologists, by patient's age: United States, 1975-92

Patient's age	1975-76	1980-81	1985	1989-90	1991-92
Number of visits in thousands ¹					
All visits	1,892	3,013	4,992	6,167	7,253
Under 15 years	*147	338	403	311	770
15-24 years	248	311	500	542	577
25-44 years	669	991	1,587	2,341	2,559
45-64 years	577	1,029	1,454	1,612	1,893
65-74 years	173	345	626	839	820
75 years and over	*78	*176	422	521	633
Percent distribution					
All visits	100.0	100.0	100.0	100.0	100.0
Under 15 years	*7.8	11.2	8.1	5.0	10.6
15-24 years	13.1	10.3	10.0	8.8	8.0
25-44 years	35.4	32.9	31.8	38.0	35.3
45-64 years	30.5	34.1	29.1	26.1	26.1
65-74 years	9.1	11.4	12.5	13.6	11.3
75 years and over	*4.1	*5.5	8.5	8.4	8.7
Visit rate per 100 persons ²					
All visits	0.9	1.4	2.3	2.5	2.9
Under 15 years	*0.3	0.7	0.8	0.6	1.4
15-24 years	0.6	0.8	1.3	1.5	1.7
25-44 years	1.3	1.6	2.7	2.9	3.2
45-64 years	1.3	2.4	3.3	3.5	4.0
65-74 years	1.3	2.2	3.8	4.7	4.5
75 years and over	*1.0	*2.0	4.1	4.5	5.2

¹Numbers are shown as 2-year averages except for 1985.

²Based on Bureau of the Census estimates of the civilian noninstitutionalized population for July 1 of each survey year. Rates for combined years are based on an average of the population estimates for July 1 of each year of the 2-year period. Survey years from 1975-1985 did not include Alaska or Hawaii.

Technical notes

Source of data and sample design

The information presented in this report is based on data collected in the National Ambulatory Medical Care Survey (NAMCS) over the 2-year period from January 1991 through December 1992. The target universe of NAMCS includes office visits made in the United States by ambulatory patients to nonfederally employed physicians who are principally engaged in office practice, but not in the specialties of anesthesiology, pathology, or radiology. Telephone contacts and nonoffice visits are excluded.

A multistage probability sample design is used in NAMCS, involving samples of primary sampling units (PSU's), physician practices within PSU's, and patient visits within physician practices. The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU's in New England). For 1991, a sample of 2,540 nonfederal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Physicians were screened at the time of the survey to ensure that they were eligible for survey participation. Of those screened, 1,887 physicians were eligible (in-scope) to participate in the survey. The remaining 653 physicians were ineligible (out-of-scope) due to reasons of being retired, employed primarily in teaching, research, or administration, or other reasons. The physician response rate for the 1991 NAMCS was 72 percent.

For 1992, a sample of 3,000 nonfederal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Of those screened, 858 physicians were ruled ineligible (out-of-scope); 2,142 were in-scope for the survey. The physician response rate for the 1992 NAMCS was 71 percent.

Sample physicians were asked to complete Patient Record forms (figure 1) for a systematic random sample of office

visits occurring during a randomly assigned 1-week reporting period. Responding physicians completed 33,795 Patient Record forms in 1991 and 34,606 Patient Record forms in 1992.

Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained from the physicians during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Survey Section, Research Triangle Park, North Carolina.

For 1992, several changes were made in the sample design of the NAMCS that should be considered in the interpretation of the survey results. In an effort to even the precision of estimates across each of the physician specialty strata in the sample design, the decision was made to increase the proportion in the sample of specialists in general surgery, psychiatry, otolaryngology, and neurology. Although this would result in a corresponding decrease in the sample of the larger physician specialties, most notably general and family practice, internal medicine, and pediatrics, the precision of these estimates tended to be much higher relative to the smaller specialties, and it was expected that the end result would be an acceptable balance of precision levels across all strata.

However, the reduced numbers of general practitioners, internists, and pediatricians sampled in 1992, coupled with the high percents of sampled physicians in these specialties who were determined to be ineligible (out-of-scope) for survey participation, resulted in low numbers of survey respondents in these categories and a lowering of the precision of these estimates relative to other survey years, especially when disaggregated by other variables such as race. Because visits made by black patients were often found to be clustered among the sampled physicians and were more likely to be made to general and family practitioners, which were undersampled in 1992, it is recommended that caution be exercised

when interpreting differences in race data and individual physician specialties.

Despite the difference in sample sizes, the 1991 and 1992 surveys were identical in terms of survey instruments, definitions, and procedures. The resulting 2 years of data have been combined to provide more reliable estimates. All estimates, percent distributions, and rates presented here, unless otherwise noted, reflect 1991 and 1992 data that were averaged over the 2-year period.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing the standard error by the estimate itself; the result is then expressed as a percent of the estimate.

Relative standard errors (RSE's) for estimated numbers of office visits, expressed as 2-year averages for the period 1991-92, are shown in table I. Relative standard errors for estimated numbers of drug mentions, also expressed as 2-year averages, are presented in table II. Standard errors for estimated percents of visits and drug mentions are displayed in tables III-VI.

Alternatively, relative standard errors for 2-year averages may be calculated using the following general formula, where x is the average of interest in thousands multiplied by 2 to obtain the 2-year total, and A and B are the appropriate coefficients from table VII. The relative standard error obtained in this way applies to both the 2-year total and the 2-year average.

$$RSE(x) = \sqrt{A + \frac{B}{x}} \cdot 100$$

Similarly, relative standard errors for percents may be calculated using the following general formula, where p is the percent of interest and x is the denominator of the percent in thousands (and the denominator is the 2-year aggregate estimate rather than the average itself), using the appropriate coefficient from table VII. (The 2-year

Table I. Approximate relative standard errors for estimated numbers of office visits by selected physician specialties: National Ambulatory Medical Care Survey, 1991-92

Estimated number of office visits (expressed as annual average) In thousands	Physician specialty	
	All ¹	Neurology ²
Relative standard error in percent		
25	110.8	34.7
35	93.7	30.0
50	78.4	25.9
100	55.5	20.0
250	35.2	15.5
346	30.0	14.5
500	25.0	13.6
1,000	17.8	12.6
2,500	11.6	11.9
5,000	8.5	11.7
10,000	6.5	11.6
25,000	4.9	11.5
50,000	4.2	11.5
100,000	3.8	11.5
250,000	3.6	11.5
500,000	3.5	11.5

¹The smallest reliable estimate for visits to aggregated specialties is 346,000 visits per year (or a 2-year total of 691,000 visits). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

²The smallest reliable estimate for visits to neurologists is 35,000 visits per year (or a 2-year total of 70,000 visits). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards. Example of use of table: For visits to neurologists, an estimate of 10 million visits per year has a relative standard error of 11.6 percent or a standard error of 1,160,000 visits (11.6 percent of 10 million).

Table II. Approximate relative standard errors for estimated numbers of drug mentions by selected physician specialties: National Ambulatory Medical Care Survey, 1991-92

Estimated number of office visits (expressed as annual average) In thousands	Physician specialty	
	All ¹	Neurology ²
Relative standard error in percent		
25	154.1	38.7
46	114.3	30.0
100	77.2	22.2
250	48.9	17.1
500	34.7	15.0
674	30.0	14.5
1,000	24.7	13.9
2,500	16.0	13.1
5,000	11.7	12.9
10,000	8.8	12.8
25,000	6.5	12.7
50,000	5.5	12.6
100,000	4.9	12.6
250,000	4.6	12.6
500,000	4.4	12.6

¹The smallest reliable estimate of drug mentions at visits to aggregated specialties is 674,000 drug mentions per year (or a 2-year total of 1,347,000 mentions). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

²The smallest reliable estimate of drug mentions at visits to neurologists is 46,000 drug mentions per year (or a 2-year total of 91,000 mentions). Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: For neurologists, an estimate of 25 million drug mentions per year has a relative standard error of 12.7 percent or a standard error of 3,175,000 drug mentions (12.7 percent of 25 million).

aggregate is obtained by multiplying the average estimate by 2.)

$$RSE(p) = \sqrt{\frac{B \cdot (1-p)}{p \cdot x}} \cdot 100$$

Adjustments for nonresponse

Estimates from NAMCS data were adjusted to account for sample physicians who were in-scope but did not participate in the study. This

adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding physicians data from visits to similar physicians. For this purpose, physicians were judged similar if they had the same specialty designation and practiced in the same PSU.

Test of significance and rounding

In this report, the determination of statistical inference is based on the two-tailed t-test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of significance) based on the number of possible comparisons within a particular variable or (combination of variables) of interest. Terms relating to differences such as "greater than" or "less than" indicate that the difference is statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of office visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not necessarily agree with percents calculated from rounded data.

Definition of terms

Ambulatory patient—An ambulatory patient is an individual seeking personal health services who is not currently admitted to any health care institution on the premises.

Drug mention—A drug mention is the physician's entry on the Patient Record form of a pharmaceutical agent—by any route of administration—for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included, as are nonprescription and prescription drugs. Along with all new drugs, the physician also records continued medications if the patient was specifically instructed during the visit to continue the

Table III. Approximate standard errors of percents of estimated numbers of office visits to aggregated specialties: National Ambulatory Medical Care Survey, 1991-92

Base of percent (visits, expressed as annual average, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
50	7.8	17.1	23.5	31.3	35.9	38.4	39.2
100	5.5	12.1	16.6	22.2	25.4	27.1	27.7
250	3.5	7.6	10.5	14.0	16.1	17.2	17.5
500	2.5	5.4	7.4	9.9	11.4	12.1	12.4
1,000	1.7	3.8	5.3	7.0	8.0	8.6	8.8
2,500	1.1	2.4	3.3	4.4	5.1	5.4	5.5
5,000	0.8	1.7	2.4	3.1	3.6	3.8	3.9
10,000	0.6	1.2	1.7	2.2	2.5	2.7	2.8
25,000	0.4	0.8	1.1	1.4	1.6	1.7	1.8
50,000	0.3	0.5	0.7	1.0	1.1	1.2	1.2
100,000	0.2	0.4	0.5	0.7	0.8	0.9	0.9
250,000	0.1	0.2	0.3	0.4	0.5	0.6	0.6
500,000	0.1	0.2	0.2	0.3	0.4	0.4	0.4

NOTE: Example of use of table: An estimate of 20 percent based on an estimate of 25 million visits per year has a standard error of 1.4 percent or a relative standard error of 7.0 percent (1.4 percent divided by 20 percent).

Table IV. Approximate standard errors of percents of estimated numbers of office visits to neurologists: National Ambulatory Medical Care Survey, 1991-92

Base of percent (visits, expressed as annual average, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
50	2.3	5.1	7.0	9.3	10.6	11.4	11.6
100	1.6	3.6	4.9	6.6	7.5	8.0	8.2
250	1.0	2.3	3.1	4.1	4.8	5.1	5.2
500	0.7	1.6	2.2	2.9	3.4	3.6	3.7
1,000	0.5	1.1	1.6	2.1	2.4	2.5	2.6
2,500	0.3	0.7	1.0	1.3	1.5	1.6	1.6
5,000	0.2	0.5	0.7	0.9	1.1	1.1	1.2
7,250	0.2	0.4	0.6	0.8	0.9	0.9	1.0
10,000	0.2	0.4	0.5	0.7	0.8	0.8	0.8

NOTE: Example of use of table: An estimate of 20 percent based on an estimate of 7,250,000 neurology visits per year has a standard error of 0.8 percent or a relative standard error of 4.0 percent (0.8 percent divided by 20 percent).

Table V. Approximate standard errors of percents of estimated numbers of drug mentions at visits to aggregated specialties: National Ambulatory Medical Care Survey, 1991-92

Base of percent (visits, expressed as annual average, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
50	10.8	23.7	32.7	43.6	49.9	53.4	54.5
100	7.7	16.8	23.1	30.8	35.3	37.7	38.5
250	4.9	10.6	14.6	19.5	22.3	23.9	24.4
500	3.4	7.5	10.3	13.8	15.8	16.9	17.2
1,000	2.4	5.3	7.3	9.7	11.2	11.9	12.2
2,500	1.5	3.4	4.6	6.2	7.1	7.6	7.7
5,000	1.1	2.4	3.3	4.4	5.0	5.3	5.5
10,000	0.8	1.7	2.3	3.1	3.5	3.8	3.9
25,000	0.5	1.1	1.5	2.0	2.2	2.4	2.4
50,000	0.3	0.8	1.0	1.4	1.6	1.7	1.7
100,000	0.2	0.5	0.7	1.0	1.0	1.2	1.2
250,000	0.2	0.3	0.5	0.6	0.7	0.8	0.8
500,000	0.1	0.2	0.3	0.4	0.5	0.5	0.6

NOTE: Example of use of table: An estimate of 20 percent based on an estimate of 10 million drug mentions has a standard error of 3.1 percent or a relative standard error of 15.5 percent (3.1 percent divided by 20 percent).

medication. Physicians may report up to five medications per visit.

Drug visit—A drug visit is a visit at which medication was prescribed or provided by the physician.

Neurologist—As defined in the NAMCS, a neurologist is a physician who has self-designated the practice specialty of neurology or child neurology on the American Medical Association's Physicians' Professional Activities Questionnaire. The physician's specialty is also verified during the NAMCS interview. The practice specialty of neurology is defined in the category of "other specialties" by the American Medical Association (additional categories include family/general practice, medical specialties, and surgical specialties), and the American Board of Psychiatry and Neurology certifies physicians in that specialty.

Office—An office is the space identified by a physician as a location for his or her ambulatory practice. Offices customarily include consultation, examination, or treatment spaces that patients associate with the particular physician.

Physician—A physician is a duly licensed doctor of medicine (M.D.) or doctor of osteopathy (D.O.) who is currently in office-based practice and who spends some time caring for ambulatory patients. Excluded from the NAMCS are physicians who are hospital based; who specialize in anesthesiology, pathology, or radiology; who are federally employed; who treat only institutionalized patients; or who are employed full time by an institution and spend no time seeing ambulatory patients.

Visit—A visit is a direct personal exchange between an ambulatory patient and a physician or a staff member working under the physician's supervision, for the purpose of seeking care and rendering personal health services. Excluded from the NAMCS are visits where medical care was not provided, such as visits made to drop off specimens, pay bills, make appointments, and walk-outs.

Table VI. Approximate standard errors of percents of estimated numbers of drug mentions at office visits to neurologists: National Ambulatory Medical Care Survey, 1991-92

Base of percent (visits, expressed as annual average, in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
50	2.6	5.6	7.8	10.3	11.8	12.7	12.9
100	1.8	4.0	5.5	7.3	8.4	9.0	9.1
250	1.2	2.5	3.5	4.6	5.3	5.7	5.8
500	0.8	1.8	2.5	3.3	3.7	4.0	4.1
1,000	0.6	1.3	1.7	2.3	2.7	2.8	2.9
2,500	0.4	0.8	1.1	1.5	1.7	1.8	1.8
5,000	0.3	0.6	0.8	1.0	1.2	1.3	1.3
8,000	0.2	0.5	0.6	0.8	0.9	1.0	1.0
10,000	0.2	0.4	0.6	0.7	0.8	0.9	0.9
25,000	0.1	0.3	0.4	0.5	0.5	0.6	0.6

NOTE: Example of use of table: An estimate of 20 percent based on an estimate of 8 million drug mentions per year at neurology visits has a standard error of 0.8 percent or a relative standard error of 4.0 percent (0.8 percent divided by 20 percent).

Table VII. Coefficients appropriate for determining relative standard errors by type of estimate and physician specialty: National Ambulatory Medical Care Survey, 1991-92

Type of estimate and physician specialty	Coefficient for use with estimates in thousands	
	A	B
Visits		
Overall totals	0.001157131	61.31199989
General and family practice	0.007330504	54.54704362
Osteopathy	0.01402452	18.13642054
Internal medicine	0.008718567	55.2168744
Pediatrics	0.007994386	35.33091768
General surgery	0.006685247	10.65103125
Obstetrics and gynecology	0.00919584	25.59962011
Orthopedic surgery	0.005641337	24.20372144
Cardiovascular diseases	0.01383253	12.58489271
Dermatology	0.01275351	10.28901849
Urological surgery	0.008000282	11.92853664
Psychiatry	0.009414736	12.88530675
Neurology	0.01314774	5.36720816
Ophthalmology	0.007938148	23.84517495
Otolaryngology	0.007549396	8.0936265
All other specialties	0.01537018	35.00317779
Drug mentions		
Overall totals	0.001853163	118.69462
General and family practice	0.009085669	100.96778
Osteopathy	0.01658477	23.4739982
Internal medicine	0.01148498	103.21387
Pediatrics	0.01245118	26.73517786
General surgery	0.03935224	8.06806796
Obstetrics and gynecology	0.01454044	31.24058408
Orthopedic surgery	0.01568053	23.3833057
Cardiovascular diseases	0.01575914	24.23751806
Dermatology	0.01299377	15.94507357
Urological surgery	0.01867719	10.6886669
Psychiatry	0.01430555	15.99374434
Neurology	0.01593433	6.67244993
Ophthalmology	0.0251486	25.1381195
Otolaryngology	0.008374063	12.25916054
All other specialties	0.0226229	57.79950436

Symbols

- Data not available
 - ... Category not applicable
 - Quantity zero
 - 0.0 Quantity more than zero but less than 0.05
 - Z Quantity more than zero but less than 500 where numbers are rounded to thousands
 - * Figure does not meet standard of reliability or precision (see Technical notes)
 - # Figure suppressed to comply with confidentiality requirements
-

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Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

National Hospital Ambulatory Medical Care Survey: 1993 Outpatient Department Summary

Karen L. Lipkind, M.Ed., Division of Health Care Statistics

Introduction

During the 12-month period January–December 1993, an estimated 62.5 million visits were made to outpatient departments (OPD's) of non-Federal, short-stay, and general hospitals in the United States—24.6 visits per 100 persons. This was not significantly different from the 1992 rate of 22.5 visits per 100 persons.

This report presents data on OPD visits from the 1993 National Hospital Ambulatory Medical Care Survey (NHAMCS), a national probability survey conducted by the Division of Health Care Statistics, National Center for Health Statistics, Centers for Disease Control and Prevention. The survey was inaugurated in December 1991 to gather and disseminate information about the health care provided by hospital emergency and outpatient departments to the population of the United States. It is endorsed by the American Hospital Association, the Emergency Nurses Association, and the American College of Emergency Physicians.

This report presents data on OPD patient characteristics and visit characteristics. Data from the 1992 NHAMCS have been published (1–4), and a report on 1993 NHAMCS

emergency department visits is forthcoming (5).

Because the estimates presented in this report are based on a sample rather than on the entire universe of hospital OPD visits, they are subject to sampling variability. The Technical notes at the end of this report include a brief overview of the sample design used in the 1993 NHAMCS and an explanation of sampling errors. A detailed description of the NHAMCS sample design and survey methodology has been published (6).

The OPD Patient Record form is used by hospitals participating in the NHAMCS to record information about patient visits. This form (figure 1) is intended to serve as a reference for readers as they review the survey findings presented in this document.

Patient characteristics

OPD visits by patient's age, sex, and race are shown in table 1. There were no significant differences in OPD visit rates among any of the age groups. Females made 62.3 percent of all OPD visits and had a higher visit rate (29.8 visits per 100 persons) than males (19.1 visits per 100 persons) did.

White persons made 74.1 percent of all OPD visits, with black persons and

Asian/Pacific Islanders accounting for 22.4 percent and 3.2 percent, respectively. The visit rate for black persons was significantly higher than for white persons overall and in all age categories (figure 2).

Outpatient department visit characteristics

Geographic region

By region, the largest proportion of OPD visits was made in the Northeast (34.6 percent). Visit rates in the Northeast (43.3 visits per 100 persons) and the Midwest (31.1 visits per 100 persons) were higher than those in the West (10.3 visits per 100 persons).

Clinic type

A clinic was defined as an administrative unit of the OPD where ambulatory medical care is provided under the supervision of a physician. Clinics where only ancillary services, such as radiology, renal dialysis, and pharmacy, were provided or other settings in which physician services were not typically provided, were out of scope for the survey. In addition, ambulatory surgery centers were out of scope since they are included in the National Survey of Ambulatory Surgery.



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 CDC 64.54

NOTICE — Information contained on this form which would permit identification of any individual or establishment has been collected with a guarantee that it will be held in strict confidence, will be used only for purposes stated for this study, and will not be disclosed or released to others without the consent of the individual or the establishment in accordance with section 308(d) of the Public Health Service Act (42 USC 242m). Public reporting burden for this phase of the survey is estimated to average 3 minutes per response. If you have any comments regarding the burden estimate or any other aspect of this survey, including suggestions for reducing this burden, send them to the PHS Reports Clearance Officer, Attn: PRA: HHH Building, Rm. 721-B; 200 Independence Ave., S.W., Washington, DC 20201, and to the Office of Management and Budget; Paperwork Reduction Project (0920-0278); Washington, DC 20503.

**NATIONAL HOSPITAL AMBULATORY
 MEDICAL CARE SURVEY
 OUTPATIENT DEPARTMENT
 PATIENT RECORD
 1993-94**

1. PATIENT NAME

 2. PATIENT RECORD NO.

<p>3. DATE OF VISIT</p> <p>____/____/____ Month Day Year</p>	<p>5. SEX</p> <p>1 <input type="checkbox"/> Female</p> <p>2 <input type="checkbox"/> Male</p>	<p>6. RACE</p> <p>1 <input type="checkbox"/> White</p> <p>2 <input type="checkbox"/> Black</p> <p>3 <input type="checkbox"/> Asian / Pacific Islander</p> <p>4 <input type="checkbox"/> American Indian / Eskimo / Aleut</p>	<p>7. ETHNICITY</p> <p>1 <input type="checkbox"/> Hispanic origin</p> <p>2 <input type="checkbox"/> Not Hispanic</p>	<p>8. EXPECTED SOURCE(S) OF PAYMENT <i>(Check all that apply)</i></p> <p>1 <input type="checkbox"/> Private / commercial 5 <input type="checkbox"/> HMO/ other prepaid</p> <p>2 <input type="checkbox"/> Medicare 6 <input type="checkbox"/> Patient paid</p> <p>3 <input type="checkbox"/> Medicaid 7 <input type="checkbox"/> No charge</p> <p>4 <input type="checkbox"/> Other government 8 <input type="checkbox"/> Other</p>	<p>9. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN?</p> <p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p>						
<p>4. DATE OF BIRTH</p> <p>____/____/____ Month Day Year</p>											
<p>10. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT <i>(In patient's own words)</i></p> <p>a. Most important: _____</p> <p>b. Other: _____</p> <p>c. Other: _____</p>			<p>11. PHYSICIAN'S DIAGNOSES</p> <p>a. Principal diagnosis / problem associated with item 10.a: _____</p> <p>b. Other: _____</p> <p>c. Other: _____</p>		<p>12. HAS PATIENT BEEN SEEN IN THIS CLINIC BEFORE</p> <p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p style="text-align: center;">↓</p> <p>If yes, for the condition in item 11a?</p> <p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>						
<p>13. TESTS, SURGICAL AND NONSURGICAL PROCEDURES, AND THERAPIES None <input type="checkbox"/></p> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%; vertical-align: top;"> <p>a. SELECTED SERVICES <i>(Check all ordered or provided)</i></p> <p>1 <input type="checkbox"/> Blood pressure</p> <p>2 <input type="checkbox"/> Urinalysis</p> <p>3 <input type="checkbox"/> Spirometry</p> <p>4 <input type="checkbox"/> Allergy testing</p> <p>5 <input type="checkbox"/> HIV serology</p> <p>6 <input type="checkbox"/> Other blood test</p> </td> <td style="width:30%; vertical-align: top;"> <p>b. ALL OTHER SERVICES</p> <p>Includes:</p> <ul style="list-style-type: none"> • Tests • Imagings • Surgeries and other procedures • Other therapies (such as contact lenses, psychotherapy, or physiotherapy) <p>Exclude:</p> <ul style="list-style-type: none"> • Services in item 13a • Counseling / education • Medications <p><i>(Record one on each line and check performed or ordered for each.)</i></p> </td> <td style="width:10%; vertical-align: top;"> <p>1 _____</p> <p>2 _____</p> <p>3 _____</p> <p>4 _____</p> <p>6 _____</p> <p>6 _____</p> </td> <td style="width:10%; vertical-align: top;"> <p>Performed</p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> </td> <td style="width:10%; vertical-align: top;"> <p>Ordered</p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> </td> </tr> </table>					<p>a. SELECTED SERVICES <i>(Check all ordered or provided)</i></p> <p>1 <input type="checkbox"/> Blood pressure</p> <p>2 <input type="checkbox"/> Urinalysis</p> <p>3 <input type="checkbox"/> Spirometry</p> <p>4 <input type="checkbox"/> Allergy testing</p> <p>5 <input type="checkbox"/> HIV serology</p> <p>6 <input type="checkbox"/> Other blood test</p>	<p>b. ALL OTHER SERVICES</p> <p>Includes:</p> <ul style="list-style-type: none"> • Tests • Imagings • Surgeries and other procedures • Other therapies (such as contact lenses, psychotherapy, or physiotherapy) <p>Exclude:</p> <ul style="list-style-type: none"> • Services in item 13a • Counseling / education • Medications <p><i>(Record one on each line and check performed or ordered for each.)</i></p>	<p>1 _____</p> <p>2 _____</p> <p>3 _____</p> <p>4 _____</p> <p>6 _____</p> <p>6 _____</p>	<p>Performed</p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p>	<p>Ordered</p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p>	<p>14. COUNSELING/EDUCATION <i>(Check all ordered or provided)</i></p> <p>1 <input type="checkbox"/> None</p> <p>2 <input type="checkbox"/> Exercise</p> <p>3 <input type="checkbox"/> Cholesterol reduction</p> <p>4 <input type="checkbox"/> Weight reduction</p> <p>5 <input type="checkbox"/> Smoking cessation</p> <p>6 <input type="checkbox"/> Growth / development</p> <p>7 <input type="checkbox"/> Injury prevention</p> <p>8 <input type="checkbox"/> HIV transmission</p> <p>9 <input type="checkbox"/> Other STD transmission</p> <p>10 <input type="checkbox"/> Other</p>	
<p>a. SELECTED SERVICES <i>(Check all ordered or provided)</i></p> <p>1 <input type="checkbox"/> Blood pressure</p> <p>2 <input type="checkbox"/> Urinalysis</p> <p>3 <input type="checkbox"/> Spirometry</p> <p>4 <input type="checkbox"/> Allergy testing</p> <p>5 <input type="checkbox"/> HIV serology</p> <p>6 <input type="checkbox"/> Other blood test</p>	<p>b. ALL OTHER SERVICES</p> <p>Includes:</p> <ul style="list-style-type: none"> • Tests • Imagings • Surgeries and other procedures • Other therapies (such as contact lenses, psychotherapy, or physiotherapy) <p>Exclude:</p> <ul style="list-style-type: none"> • Services in item 13a • Counseling / education • Medications <p><i>(Record one on each line and check performed or ordered for each.)</i></p>	<p>1 _____</p> <p>2 _____</p> <p>3 _____</p> <p>4 _____</p> <p>6 _____</p> <p>6 _____</p>	<p>Performed</p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p>	<p>Ordered</p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p> <p>2 <input type="checkbox"/></p>							
<p>15. MEDICATIONS / INJECTIONS None <input type="checkbox"/></p> <p>Include:</p> <ul style="list-style-type: none"> • Rx and OTC • Immunizations • Allergy shots • Anesthetics • Meds ordered, supplied, or administered • New meds • Continuing meds (with or without new orders) <p>1 _____</p> <p>2 _____</p> <p>3 _____</p> <p>4 _____</p> <p>5 _____</p>			<p>16. DISPOSITION THIS VISIT <i>(Check all that apply)</i></p> <p>1 <input type="checkbox"/> No follow-up planned</p> <p>2 <input type="checkbox"/> Return to clinic PRN</p> <p>3 <input type="checkbox"/> Return to clinic - appointment</p> <p>4 <input type="checkbox"/> Telephone follow-up planned</p> <p>5 <input type="checkbox"/> Return to referring physician</p> <p>6 <input type="checkbox"/> Refer to other physician/clinic</p> <p>7 <input type="checkbox"/> Admit to hospital</p> <p>8 <input type="checkbox"/> Other <i>(Specify)</i></p>		<p>17. PROVIDERS SEEN THIS VISIT <i>(Check all that apply)</i></p> <p>1 <input type="checkbox"/> Resident/Intern</p> <p>2 <input type="checkbox"/> Staff physician</p> <p>3 <input type="checkbox"/> Other physician</p> <p>4 <input type="checkbox"/> Physician assistant/ Nurse practitioner</p> <p>5 <input type="checkbox"/> Registered nurse</p> <p>6 <input type="checkbox"/> Licensed practical nurse</p> <p>7 <input type="checkbox"/> Nurse's aide</p> <p>8 <input type="checkbox"/> Other <i>(Specify)</i></p>						

Figure 1. National Hospital Ambulatory Medical Care Survey Outpatient Department Patient Record.

Table 1. Number, percent distribution, and annual rate of outpatient department visits with corresponding standard errors by selected patient and outpatient department characteristics: United States, 1993

<i>Patient and outpatient department characteristics</i>	<i>Number of visits in thousands</i>	<i>Standard error in thousands</i>	<i>Percent distribution</i>	<i>Standard error of percent</i>	<i>Number of visits per 100 persons per year¹</i>	<i>Standard error of rate</i>
All visits	62,534	7,330	100.0	...	24.6	2.9
Patient characteristic						
Age:						
Under 15 years	12,927	1,990	20.7	2.0	22.6	3.5
15-24 years	8,512	1,248	13.6	0.9	24.8	3.6
25-44 years	18,299	2,248	29.3	1.0	22.4	2.8
45-64 years	12,365	1,371	19.8	0.8	24.8	2.8
65-74 years	5,865	893	9.4	0.7	31.5	4.8
75 years and over	4,567	868	7.3	0.9	36.1	6.9
Sex and age:						
Female						
Under 15 years	38,935	4,648	62.3	0.9	29.8	3.6
15-24 years	6,420	1,018	10.3	1.0	23.0	3.6
25-44 years	6,698	1,020	10.7	0.9	38.9	5.9
45-64 years	12,081	1,576	19.3	0.8	29.2	3.8
65-74 years	7,388	804	11.8	0.5	28.6	3.1
75 years and over	3,440	494	5.5	0.4	33.5	4.8
Male	23,600	2,783	37.7	0.9	19.1	2.2
Under 15 years	6,507	991	10.4	1.0	22.2	3.4
15-24 years	1,814	282	2.9	0.2	10.6	1.6
25-44 years	6,218	749	9.9	0.5	15.5	1.9
45-64 years	4,977	605	8.0	0.4	20.8	2.5
65-74 years	2,426	424	3.9	0.4	29.0	5.1
75 years and over	1,659	321	2.7	0.3	34.8	6.7
Race and age:						
White						
Under 15 years	46,337	6,519	74.1	2.2	21.9	3.1
15-24 years	9,026	1,576	14.4	1.5	19.9	3.5
25-44 years	6,257	1,109	10.0	0.9	22.8	4.0
45-64 years	13,449	1,939	21.5	1.0	19.9	2.9
65-74 years	9,156	1,191	14.6	0.7	21.4	2.8
75 years and over	4,676	827	7.5	0.7	28.3	5.0
Black	3,772	844	6.0	0.9	33.0	7.4
Under 15 years	14,015	1,320	22.4	2.1	43.8	4.1
15-24 years	3,398	534	5.4	0.8	37.2	5.8
25-44 years	1,970	242	3.2	0.4	38.3	4.7
45-64 years	4,159	429	6.7	0.7	41.9	4.3
65-74 years	2,751	328	4.4	0.5	53.6	6.4
75 years and over	1,006	130	1.6	0.2	60.1	7.8
All other races:	731	115	1.2	0.2	73.2	11.5
Asian/Pacific Islander	2,006	321	3.2	0.4	...	...
American Indian/Eskimo/Aleut	177	534	0.3	0.1	...	...
Outpatient department characteristic						
Geographic region:						
Northeast	21,668	4,155	34.7	5.1	43.3	8.3
Midwest	17,694	5,140	28.3	5.8	28.5	8.3
South	14,389	2,328	23.0	3.6	16.9	2.7
West	8,783	2,150	14.0	3.1	15.5	3.8

¹Based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized population of the United States as of July 1, 1993.

Clinics were classified into five types as presented in table 2. About half of all OPD visits (47.1 percent) were made to general medicine clinics that included internal medicine and primary

care clinics. Pediatric, obstetrics and gynecology, and surgery clinics accounted for 18.0 percent, 14.7 percent, and 13.4 percent of visits, respectively. The "other" clinic category, which

included such clinics as psychiatry and neurology, accounted for 6.8 percent of visits.

Expected sources of payment

Expected sources of payment were most often Medicaid (31.1 percent), private/commercial insurance (27.0 percent), and Medicare (16.9 percent) (table 3). "Patient paid" and "HMO/Other prepaid" were indicated at 12.1 and 8.8 percent of OPD visits, respectively. The patient-paid category includes the patient's contribution toward "copayments" and "deductibles."

Referral status and prior visit status

Approximately one-fifth (19.7 percent) of OPD visits were made as the result of a referral from another physician (table 4). About three-quarters (79.5 percent) of OPD visits were made by patients who had been seen in the clinic on a previous occasion, and more than half (63.7 percent) of all visits were made by persons who were returning to the clinic for care of a previously treated problem. One-fifth (20.5 percent) of visits were made by new patients, that is, patients who had not been seen in that clinic before.

Reason for visit

In item 10 of the Patient Record form, the patient's (or patient surrogate's) "complaint(s), symptom(s), or other reason(s) for this visit in the patient's own words" is recorded. Up to three reasons for visit are classified and coded according to *A Reason for Visit Classification for Ambulatory Care (RVC)* (7). The principal reason is the problem, complaint, or reason listed in item 10a of the OPD Patient Record form.

The RVC is divided into the eight modules or groups of reasons displayed in table 5. About 4 of every 10 visits were made for reasons classified as symptoms, with the diagnostic/screening and preventive module and the treatment module each accounting for about one fifth of the visits (19.5 and 18.7 percent respectively). The 20 most frequently mentioned principal reasons for visit, representing 42.6 percent of all visits, are shown in table 6. It is important to note that estimates differing in ranked

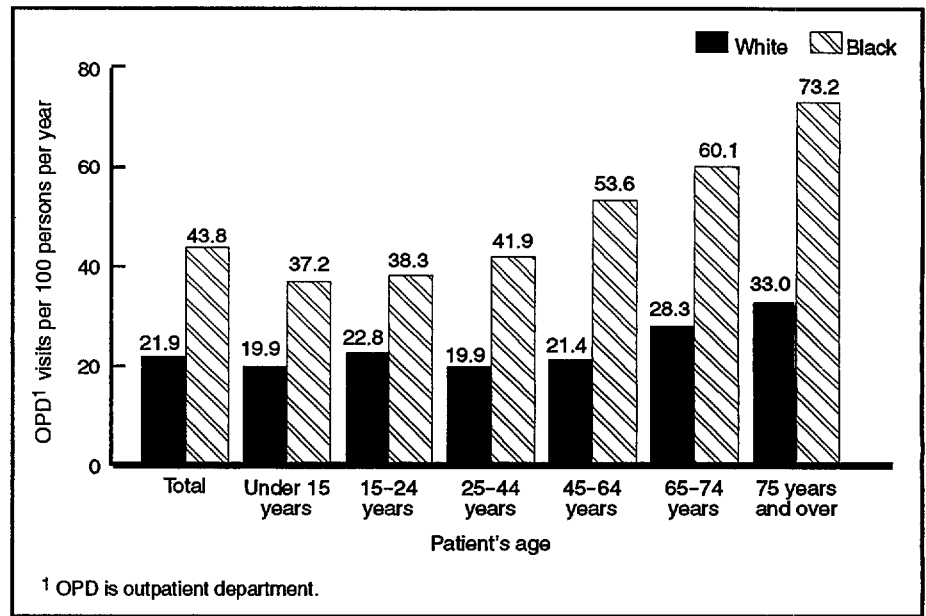


Figure 2. Annual rate of outpatient department visits by patient's age and race: United States, 1993

Table 2. Number and percent distribution of outpatient department visits with corresponding standard errors by type of clinic: United States, 1993

Type of clinic	Number of visits in thousands	Standard error in thousands	Percent distribution	Standard error of percent
All visits	62,534	7,330	100.0	...
General medicine	29,443	4,265	47.1	2.9
Surgery	8,382	1,517	13.4	1.9
Pediatrics	11,274	1,728	18.0	1.8
Obstetrics and gynecology	9,169	1,722	14.7	1.8
Other	4,266	808	6.8	1.2

Table 3. Number and percent of outpatient department visits with corresponding standard errors by patient's expected source of payment: United States, 1993

Expected source of payment	Number of visits in thousands ¹	Standard error in thousands	Percent	Standard error of percent
All visits	62,534	7,330	...	...
Medicaid	19,442	2,124	31.1	2.3
Private/commercial	16,906	3,390	27.0	2.6
Medicare	10,542	1,693	16.9	1.4
Patient-paid	7,592	989	12.1	1.1
HMO/other prepaid ²	5,496	1,216	8.8	1.5
Other	2,835	605	4.5	0.7
Other government	2,755	557	4.4	0.7
No charge	1,392	431	2.2	0.6
Unspecified	2,243	749	3.6	1.1

¹Numbers may exceed total number of visits because more than one source of payment may be coded for each visit.

²HMO is health maintenance organization.

order may not be significantly different from each other. "Progress visit" was the most frequently mentioned visit (10.5 percent), reflecting the large number of return visits for a previously treated problem. Five of the top 20 reasons for visit, which accounted for 15 percent of all OPD visits, were classified in the diagnostic screening and preventive module. The reasons were "Routine prenatal examination," "General medical examination," "Well baby examination," "Other and unspecified diagnostic tests," and "Prophylactic inoculations." "Stomach and abdominal pain, cramps and spasms," and "Cough" were the most frequently mentioned reasons for visit in the symptom module each accounting for 1.8 percent of the visits.

Principal diagnosis

The principal diagnosis or problem associated with the patient's most important reason for visit and any other significant current diagnoses are recorded in item 11. Up to three diagnoses are coded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* (8). Displayed in table 7 are OPD visits by principal diagnosis using the major

Table 4. Number and percent distribution of outpatient department visits with corresponding standard errors by referral status and prior visit status: United States, 1993

Visit characteristic	Number of visits in thousands	Standard error in thousands	Percent distribution	Standard error of percent
All visits	62,534	7,390	100.0	...
Referral status				
Not referred by another physician	50,185	6,261	80.3	1.6
Referred by another physician	12,350	1,566	19.7	1.6
Prior visit status				
Old patient	49,727	6,061	79.5	1.1
Old problem	39,823	4,858	63.7	1.3
New problem	9,904	1,473	15.8	1.2
New patient	12,807	1,510	20.5	1.1

disease categories specified by the ICD-9-CM. The supplementary classification is provided to deal with situations in which circumstances other than a disease or injury are recorded as diagnoses. It accounted for 22.6 percent of all OPD visits, and was followed by diseases of the respiratory system (8.7 percent).

The 20 most frequently reported principal diagnoses are shown in table 8. These are categorized at the three-digit coding level of the ICD-9-CM and accounted for more than one third (35.2 percent) of all OPD visits. The most commonly recorded diagnosis was

"Normal pregnancy," occurring at 7.9 percent of all visits.

Tests, surgical and nonsurgical procedures, and therapies

Statistics on various diagnostic tests, surgical and nonsurgical procedures, and therapies performed or ordered by hospital staff during an OPD visit are shown in table 9. Approximately three quarters of all OPD visits included one or more diagnostic or screening service. The most frequently mentioned checkbox category (item 13a) was blood pressure check, recorded at 54.4 percent of visits. Other frequently mentioned services included

Table 5. Number and percent distribution of outpatient department visits with corresponding standard errors by patient's principal reason for visit: United States, 1993

Principal reason for visit and RVC code ¹	Number of visits in thousands	Standard error in thousands	Percent distribution	Standard error of percent
All visits	62,534	7,390	100.0	...
Symptom module S001-S999				
General symptoms S001-S099	24,846	3,275	39.7	1.7
Symptoms referable to psychological/mental disorders S100-S199	3,419	420	5.5	0.5
Symptoms referable to the nervous system (excluding sense organs) S200-S259	2,191	428	3.5	0.6
Symptoms referable to the cardiovascular/lymphatic system S260-S299	1,565	201	2.5	0.2
Symptoms referable to the eyes and ears S300-S399	187	43	0.3	0.1
Symptoms referable to the respiratory system S400-S499	2,167	340	3.5	0.3
Symptoms referable to the digestive system S500-S639	3,273	642	5.2	0.6
Symptoms referable to the genitourinary system S640-S829	2,707	381	4.3	0.3
Symptoms referable to the skin, hair, and nails S830-S899	2,837	629	4.5	0.7
Symptoms referable to the musculoskeletal system S900-S999	2,318	522	3.7	0.5
Disease module D001-D999				
Diagnostic/screening and preventive module X100-X599	4,182	696	6.7	0.7
Treatment module T100-T899	6,078	825	9.7	0.8
Injuries and adverse effects module J001-J999	12,223	1,785	19.5	1.4
Test results module R100-R700	11,676	1,648	18.7	1.7
Administrative module A100-A140	2,374	397	3.8	0.4
Other ² U990-U999	777	127	1.2	0.1
	491	138	0.8	0.2
	4,068	854	6.5	1.0

¹Based on *A Reason for Visit Classification for Ambulatory Care (RVC)* (7).
²Includes problems and complaints not elsewhere classified, entries of "none", blanks, and illegible entries.

other blood tests (20.5 percent) and urinalysis (13.9 percent). Readers should note that for items 8, 13, 14, 16, and 17 on the OPD Patient Record form, hospital staff were asked to check all of the applicable categories for that item. Therefore, multiple responses could be coded for each visit.

Up to six entries for tests, surgical and nonsurgical procedures, and therapies not listed in the checkbox categories were made in item 13b. Results of the open-ended responses were coded according to volume 3 of the ICD-9-CM (8). There were an estimated 33 million procedures of this type reported. Approximately two-thirds of the procedures were reported as being performed (not just ordered) during the visit. The 20 most frequently reported procedures are shown in table 10. Other individual psychotherapy, eye examinations, and Pap smears were among the most frequently mentioned procedures.

Counseling/education

Almost half (46.6 percent) of all OPD visits included some form of counseling or education either ordered or provided (table 11). "Other" counseling was recorded at one-third of visits (36.9 percent), followed by counseling on growth/development (5.3 percent of visits).

Medications/injections

Hospital staff were instructed to record all new or continued medications ordered, supplied, or administered at the visit, including prescription and nonprescription preparations, and immunizations and desensitizing agents. Up to five medications or drug mentions were coded for each visit. As used in the NHAMCS, the term "drug" is interchangeable with the term "medication". The NHAMCS drug data base permits classification by a wide range of variables, including specific drug entry name, trade name, generic class, therapeutic category, prescription or nonprescription status, federally controlled substance status, and composition status (that is, whether the drug is a single- or multiple-ingredient product). A report describing the method

Table 6. Number and percent distribution of outpatient department visits with corresponding standard errors by the 20 principal reasons for visit most frequently mentioned by patients: United States, 1993

<i>Reason for visit and RVC code¹</i>	<i>Number of visits in thousands</i>	<i>Standard error in thousands</i>	<i>Percent distribution</i>	<i>Standard error of percent</i>
All visits	62,534	7,330	100.0	...
Progress visit T800	6,593	1,254	10.5	1.8
Routine prenatal examination X205	3,900	818	6.2	1.0
General medical examination X100	3,140	506	5.0	0.5
Postoperative visit T205	1,394	278	2.2	0.3
Well baby examination X105	1,364	270	2.2	0.4
Stomach and abdominal pain, cramps and spasms S545	1,121	178	1.8	0.2
Cough S440	1,119	264	1.8	0.3
Skin rash S860	806	143	1.3	0.1
Fever S010	795	201	1.3	0.3
Earache or ear infection S355	728	131	1.2	0.1
Back symptoms S905	716	147	1.1	0.2
Medication, other and unspecified T115	655	122	1.0	0.1
Headcold S445	622	155	1.0	0.2
Headache, pain in head S210	620	93	1.0	0.1
Depression S110	608	143	1.0	0.2
Counseling, not otherwise stated T605	510	152	0.8	0.2
Other and unspecified diagnostic tests X370	500	215	0.8	0.3
Prophylactic inoculations X400	492	139	0.8	0.2
Hypertension D510	480	85	0.8	0.1
Knee symptoms S925	479	85	0.8	0.1
All other reasons	35,892	1,701	57.4	0.8

¹Based on A Reason for Visit Classification for Ambulatory Care (RVC) (7).

Table 7. Number and percent distribution of outpatient department visits with corresponding standard errors by principal diagnosis: United States, 1993

<i>Principal diagnosis and ICD-9-CM code¹</i>	<i>Number of visits in thousands</i>	<i>Standard error in thousands</i>	<i>Percent distribution</i>	<i>Standard error of percent</i>
All visits	62,534	7,330	100.0	...
Infectious and parasitic diseases 001-139	1,896	236	3.0	0.3
Neoplasms 140-239	3,780	813	6.0	1.0
Endocrine, nutritional and metabolic diseases and immunity disorders 240-279	2,275	382	3.6	0.4
Mental disorders 290-319	4,489	795	7.2	1.1
Diseases of the nervous system and sense organs 320-389	3,781	542	6.0	0.5
Diseases of the circulatory system 390-459	3,595	531	5.7	0.5
Diseases of the respiratory system 460-519	5,461	993	8.7	0.9
Diseases of the digestive system 520-579	2,091	299	3.3	0.4
Diseases of the genitourinary system 580-629	3,678	727	5.9	0.7
Diseases of the skin and subcutaneous tissue 680-709	2,411	580	3.9	0.6
Diseases of the musculoskeletal system and connective tissue 710-739	3,401	569	5.4	0.6
Symptoms, signs, and ill-defined conditions 780-799	3,590	386	5.7	0.3
Injury and poisoning 800-999	3,498	537	5.6	0.5
Supplementary classification V01-V82	14,156	1,784	22.6	1.5
All other diagnoses ²	*1,530	563	2.4	0.4
Unknown ³	2,902	373	4.6	0.5

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) (8).

²Includes diseases of the blood and blood-forming organs (280-289); complications of pregnancy, childbirth, and the puerperium (630-676); congenital anomalies (740-759); and certain conditions originating in the perinatal period (760-779).

³Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

and instruments used to collect and process drug information has been published (9).

Medication was used at 57.1 percent of the outpatient department visits (table 12). Hospital staff were instructed to record all new or continued medications ordered or provided at the visit, including prescription and nonprescription preparations, and immunizing and desensitizing agents. As many as five medications or drug mentions could be coded per visit.

There was a total of 75.7 million drug mentions, or an average of 1.2 drug mentions, per OPD visit. The 20 medications most frequently prescribed at OPD visits are shown in table 13 by drug entry name and therapeutic classification. The therapeutic classification is based on the therapeutic categories used in the National Drug Code Directory, 1985 edition (10). The top 20 medications account for 23 percent of all drug mentions. Tylenol was the medication most frequently prescribed, with 2.2 million mentions, or 2.9 percent of the total. It was followed by prenatal vitamins (2.5 percent) and amoxicillin (1.7 percent).

Disposition of this visit

Approximately two-thirds of OPD visits (65.6 percent) resulted in an appointment being made to return to the clinic. This and the previously mentioned finding that most OPD patients had been seen in the clinic before are indications of the continuous nature of care provided in the OPD setting. For 17.9 percent of visits, the disposition was "Return to clinic PRN" (as needed) (table 14). Only 1.5 percent of OPD visits resulted in hospital admission.

Providers seen this visit

A staff physician was seen at two-thirds of OPD visits (66.8 percent). Conversely, one-third of the visits had patients who were NOT seen by a staff physician. Registered nurses were seen at 41.8 percent of visits and residents/interns were seen at one-quarter (24.3 percent) of visits (table 15).

Table 8. Number and percent distribution of outpatient department visits by the 20 principal diagnoses most frequently rendered by hospital staff: United States, 1993

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Standard error in thousands	Percent distribution	Standard error of percent
All visits	62,534	7,330	100.0	...
Normal pregnancy V22	4,923	913	7.9	1.1
Health supervision of infant or child V20	1,876	345	3.0	0.5
Essential hypertension 401	1,732	239	2.8	0.3
General medical examination V70	1,286	242	2.1	0.3
Suppurative and unspecified otitis media 382	1,242	220	2.0	0.3
Acute upper respiratory infections of multiple or unspecified sites 465	1,234	309	2.0	0.3
Diabetes mellitus 250	1,103	191	1.8	0.2
Asthma 493	1,022	267	1.6	0.3
Neurotic disorders 300	914	219	1.5	0.3
Other postsurgical states V45	900	219	1.4	0.3
Affective psychoses 296	803	201	1.3	0.3
Malignant neoplasm of female breast 174	648	190	1.0	0.3
General symptoms 780	631	97	1.0	0.1
Other and unspecified disorders of back 724	572	155	0.9	0.2
Acute pharyngitis 462	572	127	0.9	0.2
Alcohol dependence syndrome 303	*565	233	0.9	0.3
Follow-up examination V67	525	109	0.8	0.2
Chronic sinusitis 473	503	127	0.8	0.1
Other disorders of urethra and urinary tract. 599	494	112	0.8	0.2
Bronchitis, not specified as acute or chronic 490	492	106	0.8	0.1
All other diagnoses	40,497	4,762	64.8	1.5

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (8)*.

Table 9. Number and percent of outpatient department visits with corresponding standard errors by selected diagnostic services performed or ordered: United States, 1993.

Selected diagnostic services performed or ordered by hospital staff	Number of visits in thousands ¹	Standard error in thousands	Percent	Standard error of percent
All visits	62,534	7,330	...	...
Blood pressure	34,013	4,012	54.4	1.9
Other blood test	12,843	1,515	20.5	1.0
Urinalysis	8,719	1,238	13.9	1.2
HIV serology ²	488	139	0.8	0.2
Spirometry	*375	122	0.6	0.2
Allergy testing	*182	75	0.3	0.1
None	14,627	1,821	23.4	1.3

¹Numbers may exceed total number of visits because more than one service may be reported per visit.

²HIV is human immunodeficiency virus.

Additional reports utilizing NHAMCS data are forthcoming in the *Advance Data from Vital and Health Statistics* series. In addition, survey data will be available on computer tape and CD-Rom from the National Technical Information Service in early 1996. Questions regarding this report, future reports, or the NHAMCS may be directed to the Ambulatory Care Statistics Branch by calling (301)436-7132.

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Table 10. Number and percent of outpatient department visits by the top write-in diagnostic tests, surgical and non-surgical procedures, or therapies most often performed or ordered in hospital outpatient departments: United States, 1993

Tests, surgical and non-surgical procedures and therapies and ICD-9-CM code ¹	Number of visits in thousands ²	Standard error in thousands	Percent	Standard error of percent	Percent distribution			
					Total	Performed	Ordered	Unknown ³
All visits	62,534	7,330	...	...	...	...	...	...
All visits with procedures written in	33,023	1,570	52.8	0.9	100.0	69.4	22.2	8.5
Other individual psychotherapy94.39	2,045	563	3.3	5.3	100.0	89.2	0.9	9.9
Eye examination not otherwise specified95.09	1,793	608	2.9	5.7	100.0	90.0	1.6	8.4
Pap smear91.46	1,744	379	2.8	5.7	100.0	83.0	9.1	7.9
Other nonoperative measurements and examinations89.39	1,548	526	2.5	6.1	100.0	93.3	2.2	4.5
Routine chest x ray87.44	1,386	216	2.2	6.5	100.0	55.3	34.5	10.2
Microscopic examination of specimen from female genital tract—culture91.42	1,074	209	1.7	7.4	100.0	87.1	7.4	5.6
Other mammography87.37	1,024	213	1.6	7.5	100.0	29.8	64.3	6.0
Electrocardiogram89.52	948	123	1.5	7.8	100.0	65.2	25.7	9.1
Diagnostic ultrasound of gravid uterus88.78	825	185	1.3	8.4	100.0	52.6	43.5	3.9
Microscopic examination of specimen from ear, nose, throat and larynx—culture90.32	574	130	0.9	10.1	100.0	85.9	10.8	3.3
Other diagnostic ultrasound88.79	557	185	0.9	10.3	100.0	55.5	39.3	5.2
Fetal monitoring, not otherwise specified75.34	531	267	0.8	10.5	100.0	94.9	2.1	3.0
Other physical therapy93.39	463	102	0.7	11.3	100.0	28.5	53.3	18.1
Skeletal x ray of ankle and foot88.28	375	71	0.6	12.5	100.0	73.3	19.2	7.5
Skeletal x ray of thigh, knee and lower leg88.27	357	93	0.6	12.8	100.0	74.5	19.0	6.4
Skeletal x ray of wrist and hand88.23	353	115	0.6	12.9	100.0	89.0	8.5	2.5
Gynecological examination89.26	321	89	0.5	13.6	100.0	85.0	10.6	4.4
X ray, other and unspecified88.39	310	60	0.5	13.8	100.0	73.9	19.7	6.5
Tonometry89.11	307	201	0.5	13.9	100.0	97.4	0.0	2.6
Other local excision or destruction of lesion or tissue of skin and subcutaneous tissue86.3	306	63	0.5	13.9	100.0	88.6	6.5	4.9

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (8)*.

²Numbers may exceed total number of visits because more than one procedure may be reported per visit.

³Not known whether ordered or performed.

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Table 11. Number and percent of outpatient department visits with corresponding standard errors by counseling/education services: United States, 1993

Counseling/education ordered or provided by hospital staff	Number of visits in thousands ¹	Standard error in thousands	Percent	Standard error of percent
All visits	62,534	7,330	...	...
Growth/development	3,291	777	5.3	1.1
Exercise	2,954	521	4.7	0.5
Injury prevention	*1,594	489	2.5	0.6
Weight reduction	1,487	227	2.4	2.0
Smoking cessation	1,112	186	1.8	0.2
Cholesterol reduction	790	136	1.3	0.2
Other STD transmission	761	157	1.2	0.2
HIV transmission	722	166	1.2	0.2
Other	23,051	3,121	36.9	1.7
None	33,397	3,937	53.4	2.0

¹Numbers may exceed total number of visits because more than one service may be reported per visit.

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Table 12. Number and percent distribution of outpatient department visits with corresponding standard errors by number of medication codes this visit: United States, 1993

<i>Number of medication codes</i>	<i>Number of visits in thousands</i>	<i>Standard error in thousands</i>	<i>Percent distribution</i>	<i>Standard error of percent</i>
All visits	62,534	7330	100.0	...
None	26,812	3716	42.9	1.9
1	16,002	1983	25.6	1.0
2	9,118	1080	14.6	0.7
3	4,456	530	7.1	0.4
4	2,628	318	4.2	0.4
5 or more	3,518	489	5.6	0.6

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Table 13. Number and percent distribution for the 20 drugs most frequently prescribed at outpatient department visits with corresponding standard errors, by entry name of drug: United States, 1993

<i>Entry name of drug¹</i>	<i>Number of drug mentions in thousands</i>	<i>Standard error in thousands</i>	<i>Percent distribution</i>	<i>Standard error of percent</i>	<i>Therapeutic classification²</i>
All drug mentions	75,710	3,781	100.0	...	
Tylenol	2,191	326	2.9	0.4	General analgesics
Prenatal vitamins	1,879	586	2.5	0.8	Vitamins, minerals
Amoxicillin	1,307	227	1.7	0.3	Penicillins
Diphtheria & tetanus toxoids with pertussis vaccine	934	173	1.2	0.3	Vaccines and antiserums
Motrin	879	148	1.2	0.2	Antiarthritics
Poliomyelitis vaccine	873	170	1.2	0.3	Vaccines and antiserums
Lasix	795	126	1.1	0.1	Diuretics
Prednisone	743	119	1.0	0.2	Adrenal corticosteroids
Zantac	739	109	1.0	0.1	Agents used in disorders of upper GI tract
Bactrim	721	163	1.0	0.2	Antimicrobials
Procardia	698	84	0.9	0.1	Antianginal agents
Iron preparation	685	211	0.9	0.3	Agents used to treat deficiency anemias
Ventolin	682	129	0.9	0.2	Bronchodilators, antiasthmatics
Proventil	657	141	0.9	0.2	Bronchodilators, antiasthmatics
Hepatitis B	657	127	0.9	0.2	Vaccines and antiserums
Haemophilus B conjugate vaccine	656	139	0.9	0.2	Vaccines and antiserums
Vasotec	616	85	0.8	0.1	Antihypertensive agents
Influenza virus vaccine	597	161	0.8	0.2	Vaccines and antiserums
Synthroid	555	92	0.7	0.1	Agents used to treat thyroid disease
Vitamins	550	229	0.7	0.3	Vitamins, minerals
All other	58,296	2,930	77.0	0.6	

¹The entry made by the hospital staff on the prescription or other medical records. This may be a trade name, generic name, or desired therapeutic effect.

²Therapeutic classification is based on the *National Drug Code Directory*, 1985 Edition (10). In cases where a drug had more than one therapeutic use, it was listed in the category that occurred with the greatest frequency.

Table 14. Number and percent of outpatient department visits with corresponding standard errors by disposition of visit: United States, 1993

<i>Disposition</i>	<i>Number of visits in thousands¹</i>	<i>Standard error in thousands</i>	<i>Percent</i>	<i>Standard error of percent</i>
All visits	62,534	7,330	...	...
Return to clinic - appointment	41,017	4,746	65.6	1.9
Return to clinic PRN ²	11,183	1,933	17.9	1.4
Refer to other physician/clinic	4,625	595	7.4	0.8
No follow-up planned	2,805	483	4.5	0.5
Return to referring physician	2,463	559	3.9	0.8
Telephone follow-up planned	2,079	584	3.3	0.8
Admit to hospital	921	179	1.5	0.2
Other	2,058	334	3.3	0.4

¹Numbers may exceed total number of visits because more than one disposition may be reported per visit.

²PRN is as needed.

Table 15. Number and percent of outpatient department visits with corresponding standard errors by type of provider seen: United States, 1993

<i>Type of provider</i>	<i>Number of visits in thousands¹</i>	<i>Standard error in thousands</i>	<i>Percent</i>	<i>Standard error of percent</i>
All visits	62,534	7,330	...	...
Staff physician	41,786	5,720	66.8	2.4
Registered nurse	26,155	2,567	41.8	3.3
Resident/Intern	15,223	2,383	24.3	2.2
Licensed practical nurse	*6,770	2,186	10.8	2.6
Nurse's aide	5,254	998	8.4	1.3
Physician assistant/Nurse practitioner	4,547	892	7.3	1.0
Other physician	2,145	555	3.4	0.8
Other	11,053	2106	17.7	2.2

¹Numbers may exceed total number of visits because more than one provider may be reported per visit.

Symbols

- Data not available
- ... Category not applicable
- Quantity zero
- 0.0 Quantity more than zero but less than 0.05
- Z Quantity more than zero but less than 500 where numbers are rounded to thousands
- * Figure does not meet standard of reliability or precision

Technical notes

Source of data and sample design

The information presented in this report is based on data collected in the 1993 National Hospital Ambulatory Medical Care Survey (NHAMCS) from December 28, 1992 through December 26, 1993. The data were adjusted to produce annual estimates.

The target universe of NHAMCS includes in-person visits made in the United States by patients to emergency departments (ED's) and outpatient departments (OPD's) of non-Federal, short-stay hospitals (hospitals with average length of stays for all patients of fewer than 30 days) or those whose specialty is general (medical or surgical) or children's general. The NHAMCS sampling frame consists of hospitals listed in the April 1991 SMG Hospital Database.

A four-stage probability sample design is used in NHAMCS. The design includes samples of primary sampling units (PSU's), hospitals within PSU's, ED's within hospitals and/or clinics within outpatient departments (OPD's), and patient visits within ED's and/or clinics. The PSU sample consists of 112 PSU's comprising a probability subsample of the PSU's used in the 1985-94 National Health Interview Survey. The hospital sample for 1993 consisted of 489 hospitals. Of this group, 445 hospitals had either an ED or OPD in 1993 to make them in scope or eligible for the survey. During this period, 94 percent of the in-scope hospitals participated. Based on the induction interview, 228 of the sample hospitals had OPD's. Hospital staff were asked to complete Patient Record forms (figure 1) for a systematic random sample of patient visits occurring during a randomly assigned 4-week reporting period. The number of Patient Record forms completed for OPD's was 28,357.

Characteristics of the hospital, such as ownership and expected number of OPD visits, were obtained from the hospital administrator during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Data processing operations

and medical coding were performed by Analytical Sciences Inc., Durham, North Carolina.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The standard error also reflects part of the measurement error, but does not measure any systematic biases in the data. The chances are 95 out of 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error.

The standard errors used in this report (including tests of significance) were approximated using SUDAAN software. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (11). Standard errors for all estimates are presented in each table. The relative standard error (RSE) of an estimate is obtained by dividing the standard error by the estimate itself. The result is then expressed as a percent of the estimate.

Approximate relative standard errors for aggregate estimates may be calculated using the following general formula, where x is the aggregate of interest in thousands, and A and B are the appropriate coefficients from table I.

$$RSE(x) = \sqrt{\frac{B}{A + \frac{B}{x}} \cdot 100}$$

Similarly, relative standard errors for an estimate of a percent may be calculated using the following general formula, where p is the percent of interest, expressed as a proportion, and x is the denominator of the percent in thousands, using the appropriate coefficients from table I.

$$RSE(x) = \sqrt{\frac{B \cdot (1 - p)}{p \cdot x}} \cdot 100$$

The standard error for a rate may be obtained by multiplying the relative standard error of the total estimate by the rate.

Table I. Coefficients appropriate for determining relative standards errors: National Hospital Ambulatory Medical Care Survey, 1993

Type of estimate	Coefficient for use with estimates in thousands	
	A	B
Visits	0.02082	5.924262
Drug mentions . . .	0.02387	8.128418

Adjustments for hospital nonresponse

Estimates from NHAMCS data were adjusted to account for sample hospitals that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding hospitals data from visits to similar hospitals. For this purpose, hospitals were judged similar if they were in the same region, ownership control group, and metropolitan statistical area control group.

Adjustments for ED/clinic nonresponse

Estimates from NHAMCS data were adjusted to account for ED's and sample clinics that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of nonresponse on final estimates by imputing to nonresponding ED's or clinics data from visits to similar ED's or clinics. For this purpose, ED's or clinics were judged similar if they were in the same ED or clinic group.

Test of significance and rounding

The determination of statistical inference is based on the t -test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of significance over all analyses performed on estimates contained in a table). Terms relating to differences such as "higher than" indicate that the difference is statistically significant. A lack of comment regarding the

difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of OPD visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not necessarily agree with percents calculated from rounded data.

Definition of terms

Patient—An individual seeking personal health services who is not currently admitted to any health care institution on the premises.

Hospital—All hospitals with an average length of stay for all patients of

less than 30 days (short-stay) or hospital whose specialty is general (medical or surgical) or children's general. Federal hospitals, hospital units of institutions, and hospitals with less than six beds staffed for patient use are excluded.

Emergency department—Hospital facility for the provision of unscheduled outpatient services to patients whose conditions require immediate care and that is staffed 24 hours a day. If an ED provided emergency services in different areas of the hospital, then all these areas were selected with certainty into the sample. Off-site emergency departments open less than 24 hours are included if staffed by the hospital's emergency department.

Outpatient department—Hospital facility where nonurgent ambulatory

medical care is provided under the supervision of a physician.

Clinic—An administrative unit of the outpatient department where ambulatory medical care is provided under the supervision of a physician. The following are examples of the types of clinics excluded from the NHAMCS: ambulatory surgical centers, chemotherapy, employee health service, renal dialysis, methadone maintenance, and radiology.

Visit—A direct, personal exchange between a patient and a physician or other health care provider working under the physician's supervision, for the purpose of seeking care and receiving personal health services.

Suggested citation

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National Center for Health Statistics

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5-1596 (10/95)

Advance Data No. 268 Errata Sheet

Please insert this sheet in your copy of *National Hospital Ambulatory Medical Care Survey: 1993 outpatient department summary*.

Page	Correction
2	Delete items 1 and 2 from the Patient Record form.
3	Table 1: American Indian/Eskimo/Aleut, Standard error in thousands: 53 [not 534]
9	Table 13: Vitamins, Number of drug mentions in thousands: *550 [not 550]
11	Paragraph 3 under "Source of data . . .": Change "Based on the induction interview, [228] of the sample hospitals . . ." to "Based on the induction interview, 255 of the sample hospitals . . ."

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Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Characteristics of Prepaid Plan Visits to Office-Based Physicians: United States, 1991

David A. Woodwell, Division of Health Care Statistics

Introduction

This report presents data from the National Ambulatory Medical Care Survey (NAMCS) on visits to private office-based physicians at which the expected source of payment was a health maintenance organization or other prepaid health care plan. The NAMCS is a national probability sample survey of visits to nonfederally employed, office-based physicians conducted by the Division of Health Care Statistics, National Center for Health Statistics, Centers for Disease Control and Prevention. This survey is used to collect data on the demographic characteristics, the medical problem(s), and the medical treatment of patients making visits to private office-based physicians. The NAMCS was conducted annually from 1973 through 1981, again in 1985, and resumed as an annual survey in 1989.

Health maintenance organizations (HMO) were first developed in the early 1970's with the passage of the HMO Act of 1973. This new initiative provided grants and loans to enable the development of HMO's in an attempt to halt increasing health care costs. Since then, HMO's and other more recent prepaid plans have attracted younger and healthier enrollees than traditional

fee-for-service plans, which may result in inherently lower costs and affects comparisons between plans (1-5). Much of the current literature compares prepaid plans and traditional fee-for-service plans in regards to health outcomes and quality of care (6-10). This report provides data on health care delivery by private office-based physicians involved with patients seeking care under prepaid health insurance plans.

Because the estimates presented in this report are based on a sample rather than on the entire universe of office visits, they are subject to sampling variability. The Technical notes at the end of this report include an overview of the sample design used in the 1991 NAMCS, an explanation of sampling errors, and guidelines for judging the precision of the estimates.

The Patient Record form is reproduced in figure 1 and is intended to serve as a reference for readers as they review the survey findings. For purposes of this report, visits made by patients 65 years of age and older were excluded from analysis due to their high utilization and type of medical care received as compared with visits made by patients younger than 65 years of age. Since a much larger proportion of

nonprepaid than prepaid plan visits were for patients over 65 years of age (16.2 and 9.1 percent, respectively), inclusion of visits by the elderly would bias comparisons. *Prepaid plan visits* are defined as those at which "HMO/other prepaid" was checked on the Patient Record form, regardless of whether another expected pay source was checked as well. *Nonprepaid visits* are defined as visits for which "HMO/other prepaid" was not checked as an expected source of payment. An expected source of payment was unspecified in 2.1 percent of the visits. These records are also excluded from this report. Visits by expected sources of payment are shown in table 1. The expected sources of payment for nonprepaid visits include patient-paid (31.4 percent), private/commercial insurance (46.7 percent), Medicaid (12.1 percent), and Medicare (3.7 percent).

To understand the usefulness and limitations of these data, two characteristics of the NAMCS should be noted. First, expected sources of payment are not mutually exclusive. Because of co-payments, participation in governmental medical care programs, and affiliations with other health insurance organizations, more than one



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Assurance of Confidentiality—All information which would permit identification of an individual, a practice, or an establishment will be held confidential, will be used only by persons engaged in and for the purpose of the survey and will not be disclosed or released to other persons or used for any other purpose.		Department of Health and Human Services Centers for Disease Control Public Health Service National Center for Health Statistics		D		
1. DATE OF VISIT <hr style="border: none; border-top: 1px solid black; margin: 0;"/> Month Day Year		PATIENT RECORD NATIONAL AMBULATORY MEDICAL CARE SURVEY				OMB No. 0920-0234 Expires 4-30-93 CDC 64.21D
2. DATE OF BIRTH <hr style="border: none; border-top: 1px solid black; margin: 0;"/> Month Day Year	4. COLOR OR RACE 1 <input type="checkbox"/> White 2 <input type="checkbox"/> Black 3 <input type="checkbox"/> Asian / Pacific Islander 4 <input type="checkbox"/> American Indian / Eskimo / Aleut	5. ETHNICITY 1 <input type="checkbox"/> Hispanic origin 2 <input type="checkbox"/> Not Hispanic	6. EXPECTED SOURCE(S) OF PAYMENT <i>(Check all that apply)</i> 1 <input type="checkbox"/> HMO/other prepaid 5 <input type="checkbox"/> Private / commercial 2 <input type="checkbox"/> Medicare 6 <input type="checkbox"/> Patient paid 3 <input type="checkbox"/> Medicaid 7 <input type="checkbox"/> No charge 4 <input type="checkbox"/> Other government 8 <input type="checkbox"/> Other		7. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	8. IS THIS VISIT INJURY RELATED? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
3. SEX 1 <input type="checkbox"/> Female 2 <input type="checkbox"/> Male		9. DOES PATIENT SMOKE CIGARETTES? 1 <input type="checkbox"/> Yes 3 <input type="checkbox"/> Unknown 2 <input type="checkbox"/> No		10. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT <i>[In patient's own words]</i> a. Most important: _____ b. Other: _____ c. Other: _____		11. PHYSICIAN'S DIAGNOSES a. Principal diagnosis / problem associated with item 10.a: _____ b. Other: _____ c. Other: _____
12. HAVE YOU OR ANYONE IN YOUR PRACTICE SEEN PATIENT BEFORE? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No If yes, for the condition in item 11a? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No		13. DOES PATIENT NOW HAVE: <i>[Check all that apply regardless of any entry in item 11]</i> 1 <input type="checkbox"/> None of below 2 <input type="checkbox"/> Depression 3 <input type="checkbox"/> Hypertension 4 <input type="checkbox"/> Hypercholesterolemia 5 <input type="checkbox"/> Obesity				
14. AMBULATORY SURGICAL PROCEDURE(S) <i>[Record any outpatient diagnostic or therapeutic procedure. For the first, check appropriate boxes.]</i> a. _____ 1 <input type="checkbox"/> Scheduled 3 <input type="checkbox"/> Local anesthesia 2 <input type="checkbox"/> Performed 4 <input type="checkbox"/> Regional anesthesia 5 <input type="checkbox"/> General anesthesia b. _____		15. DIAGNOSTIC / SCREENING SERVICES <i>[Check all ordered or provided]</i> 1 <input type="checkbox"/> None 11 <input type="checkbox"/> Pap test 2 <input type="checkbox"/> Blood pressure 12 <input type="checkbox"/> Strep throat test 3 <input type="checkbox"/> Urinalysis 13 <input type="checkbox"/> HIV serology 4 <input type="checkbox"/> EKG - resting 14 <input type="checkbox"/> Cholesterol measure 5 <input type="checkbox"/> EKG - exercise 15 <input type="checkbox"/> Other lab test 6 <input type="checkbox"/> Mammogram 16 <input type="checkbox"/> Hearing test 7 <input type="checkbox"/> Chest x-ray 17 <input type="checkbox"/> Visual acuity 8 <input type="checkbox"/> Other radiology 18 <input type="checkbox"/> Mental status exam 9 <input type="checkbox"/> Allergy testing 19 <input type="checkbox"/> Other <i>[Specify]</i> 10 <input type="checkbox"/> Spirometry		16. THERAPEUTIC SERVICES <i>[Check all ordered or provided. Exclude medication]</i> 1 <input type="checkbox"/> None 6 <input type="checkbox"/> Drug abuse COUNSELING / EDUCATION: 2 <input type="checkbox"/> Diet 7 <input type="checkbox"/> Alcohol abuse 3 <input type="checkbox"/> Exercise 8 <input type="checkbox"/> Smoking cessation 4 <input type="checkbox"/> Cholesterol reduction 9 <input type="checkbox"/> Family / social 5 <input type="checkbox"/> Weight reduction 10 <input type="checkbox"/> Growth / development 11 <input type="checkbox"/> Family planning 12 <input type="checkbox"/> Other counseling OTHER THERAPY: 13 <input type="checkbox"/> Psychotherapy 14 <input type="checkbox"/> Corrective lenses 15 <input type="checkbox"/> Hearing aid 16 <input type="checkbox"/> Physiotherapy 17 <input type="checkbox"/> Other therapy <i>[Specify]</i>		
17. MEDICATION <i>[Record all new or continued medications ordered or provided at this visit. Use the same brand name or generic name entered on any Rx or office medical record. Include immunizing and desensitizing agents.]</i> If none, check here <input type="checkbox"/> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____		a. New medication? Yes No 1 <input type="checkbox"/> 2 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/>		18. DISPOSITION THIS VISIT <i>[Check all that apply]</i> 1 <input type="checkbox"/> No follow-up planned 2 <input type="checkbox"/> Return at specified time 3 <input type="checkbox"/> Return if needed, P.R.N. 4 <input type="checkbox"/> Telephone follow-up planned 5 <input type="checkbox"/> Referred to other physician 6 <input type="checkbox"/> Returned to referring physician 7 <input type="checkbox"/> Admit to hospital 8 <input type="checkbox"/> Other <i>[Specify]</i> _____		19. DURATION OF THIS VISIT <i>[Time actually spent with physician]</i> _____ Minutes

Figure 1. Patient record form

expected source of payment is possible. In addition, a patient who has insurance may have a visit with "patient paid" designated as the expected source of payment because of copayments or deductibles. For these reasons all nonprepaid visits have been combined into one category. Second, the prepaid plan visits that are the subject of this report cannot be analyzed according to the type of prepaid plan because all prepaid plans were grouped together into a single category on the survey instrument.

Highlights

- Between 1985 and 1991 the proportion of physician office visits

by persons under 65 years of age that had an expected source of payment of "prepaid plan" almost doubled (10 and 18 percent, respectively) with a higher proportion of 1991 visits to nonprimary care specialties.

- A higher proportion of prepaid than nonprepaid visits were to office-based physicians in the primary care specialties of general and family practice, internal medicine, pediatrics, and obstetrics and gynecology (70 and 62 percent, respectively).
- A higher proportion of prepaid visits than nonprepaid visits to nonprimary care specialties were referrals from another physician (19 and 12 percent, respectively).

- A higher proportion of prepaid than nonprepaid visits by new patients were referrals (39 and 27 percent, respectively).
- The West represented 33 percent of all prepaid plan visits and 21 percent of nonprepaid visits. Less than 18 percent of prepaid visits were made in the South compared with 31 percent of nonprepaid visits.
- Prepaid and nonprepaid visits were similar with respect to the principal reason for visit, physicians' principal diagnosis, and medications prescribed.
- Excluding visits in which there was no face-to-face contact between patient and physician, the average

duration of prepaid plan visits was similar to that of nonprepaid visits (16 minutes vs. 17 minutes, respectively).

- After the exclusion of patients 65 years of age and older, the average age of patients making prepaid plan visits was 29.2 years compared with 31.4 years for patients making nonprepaid visits.
- A significantly higher proportion of prepaid plan visits had at least one diagnostic or screening test ordered or performed (76 percent) compared with nonprepaid visits (70 percent) for patients 45–64 years of age.

Physician characteristics

In 1991, there were an estimated 91.8 million visits to nonfederally employed office-based physicians at which a prepaid plan was an expected source of payment, not including visits made by patients 65 years of age and older. This is a significant increase from 1985 in which there were an estimated 51.4 million visits with an expected source of payment of a prepaid plan. In 1991, about 18 percent of the visits by persons under 65 years of age had a prepaid plan as an expected source of payment compared with 10 percent in 1985.

Of the 91.8 million prepaid plan office visits in 1991, about 70 percent were to primary care physicians—including general and family practitioners, internists, pediatricians, and obstetricians and gynecologists (table 2). The percent of prepaid visits to primary care physicians was down from 77 percent in 1985; the first year data were collected on an expected source of payment. The decrease in the proportion of prepaid visits to primary care physicians was due to a decline in the percent of visits to general and family practitioners from 35 percent in 1985 to 26 percent in 1991. The proportion of prepaid visits to obstetricians and gynecologists increased from 7.6 percent in 1985 to 11.0 percent in 1991. Among nonprepaid visits, general and family practitioners also dropped as a percent of visits, from 30 percent in 1985 to 25 percent in 1991. Internists increased as a percent of

Table 1. Number and percent of visits by expected sources of payment: United States, 1991

<i>Expected sources of payment¹</i>	<i>Number of visits in thousands</i>	<i>Percent</i>
All visits ²	513,819	100.0
Prepaid plans	91,824	17.9
Nonprepaid plans	421,995	82.1
All nonprepaid plan visits	421,995	100.0
Medicare	15,736	3.7
Medicaid	51,055	12.1
Other government	12,078	2.7
Private/commercial insurance	197,046	46.7
Patient paid	132,453	31.4
No charge	8,635	2.0
Other	22,742	5.4

¹Numbers do not add to totals because more than one source of payment may be reported per visit.

²An additional 155,870,000 visits were for patients 65 years of age and over and 10,964,000 visits had no expected source of payment indicated. These visits have been excluded from this report.

Table 2. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by physician specialty: United States, 1991

<i>Physician specialty</i>	<i>Prepaid plan visits</i>		<i>Nonprepaid visits</i>
	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent distribution</i>
All visits	91,824	100.0	100.0
Primary care:			
General and family practice	24,204	26.4	25.1
Internal medicine	14,395	15.7	11.9
Pediatrics	15,247	16.6	14.4
Obstetrics and gynecology	10,095	11.0	10.6
Other than primary care:			
Orthopedic surgery	5,931	6.5	5.6
Dermatology	3,061	3.3	4.2
Otolaryngology	2,774	3.0	3.1
General surgery	1,875	2.0	3.0
Urological surgery	1,533	1.7	1.2
Cardiovascular diseases	1,282	1.4	0.9
Ophthalmology	1,067	1.2	4.1
Psychiatry	1,340	1.5	3.2
Neurology	481	*0.5	1.2
All other specialties	8,540	9.3	11.6

nonprepaid visits from 8 percent in 1985 to 12 percent in 1991. Sixty-two percent of the nonprepaid visits were to primary care physicians.

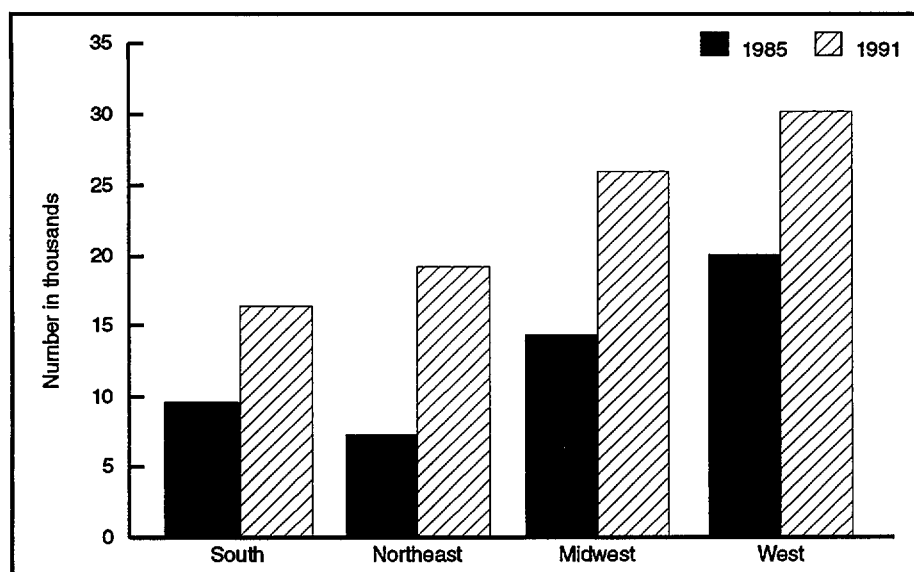
One possible explanation for the increasing percent of prepaid plan visits to nonprimary care specialties is the increased use of network models and point-of-service/open-ended plans in 1991 as compared with traditional HMO's, which dominated the prepaid plan market in 1985 (11,12). Traditional HMO's limit visits to specialists by

requiring the patient to obtain a referral by their primary care specialist whereas the requirements for a patient enrolled in an open-ended plan are not as stringent.

Table 3 shows that the geographical distribution of prepaid plan visits and nonprepaid visits differ. The West accounted for the largest proportion of prepaid plan visits (33.0 percent) while the South accounted for the smallest proportion (17.9 percent). The distribution of nonprepaid visits was the

Table 3. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by geographical region: United States, 1991

Region	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Northeast	19,199	20.9	24.2
Midwest	25,930	28.2	24.0
South	16,420	17.9	31.1
West	30,276	33.0	20.8

**Figure 2. Number of prepaid plan visits, by geographical region: United States, 1985 and 1991****Table 4. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by patient's age and sex: United States, 1991**

Age and sex	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Under 15 years	24,058	26.2	24.4
15-24 years	11,009	12.0	12.1
25-44 years	36,659	39.9	35.4
45-64 years	20,099	21.9	28.1
Male	37,226	40.5	40.2
Under 15 years	12,964	14.1	12.5
15-24 years	3,588	3.9	4.2
25-44 years	12,235	13.3	12.0
45-64 years	8,439	9.2	11.5
Female	54,599	59.5	59.8
Under 15 years	11,094	12.1	11.9
15-24 years	7,421	8.1	8.0
25-44 years	24,424	26.6	23.3
45-64 years	11,660	12.7	16.6

reverse, with 31.1 percent occurring in the South and 20.8 percent in the West. Comparing the geographical distribution of prepaid plan visits over time, NAMCS data show that in 1985 the West had the largest number of prepaid plan visits (20.1 million visits) and the Northeast had the smallest number of prepaid plan visits (7.4 million visits) (figure 2).

Patient characteristics

Approximately two-fifths (39.9 percent) of prepaid plan visits were made by patients 25-44 years of age, and about one-quarter (26.2 percent) were made by patients under 15 years of age. This pattern holds true for visits for nonprepaid sources of payment as well (table 4). However, patients 25-44 years of age made up a relatively larger portion of prepaid plan visits compared with nonprepaid visits (39.9 vs. 35.4 percent). Correspondingly, patients 45-64 years of age made up a relatively smaller portion of prepaid plan visits compared with nonprepaid visits (21.9 vs. 28.1 percent). The majority of visits by persons with both prepaid and nonprepaid sources of payment were made by females, who accounted for a higher percent of visits than males in all age categories except under 15 years.

As shown in table 5, the majority of prepaid plan visits were made by white persons (80.2 percent). Black persons made 15.7 percent of these visits, with all other races accounting for the remaining 4.0 percent. In all race categories, females made a higher percent of visits than did males. A greater proportion of office-based prepaid plan visits were made by black persons (15.7 percent) compared with office-based nonprepaid visits (8.5 percent). However, data from 1992 show that the percent of office-based visits by black persons were similar for prepaid and nonprepaid visits based on that year (see Discussion section).

Visit characteristics

Item 7 on the Patient Record form asks if the patient was referred by another physician for this visit. In

Table 5. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by patient's race and sex: United States, 1991

Race and sex	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
Total visits	91,824	100.0	100.0
Black	14,462	15.7	8.5
Male	5,176	5.6	3.1
Female	9,286	10.1	5.4
White	73,687	80.2	87.7
Male	30,596	33.3	35.5
Female	43,091	46.9	52.2
Other ¹	3,675	4.0	3.8
Male	1,454	1.6	1.6
Female	2,222	2.4	2.2

¹Includes Asian/Pacific Islander and American Indian/Eskimo/Aleut.

8.2 percent of prepaid plan visits the patient had been referred compared with 6.0 percent of the nonprepaid visits (table 6). There was a significant difference in the referral rate for primary care physicians compared with other specialists. Patients were referred in 3.4 percent of the prepaid plan visits for primary care physicians but were referred in 19.2 percent of visits for other specialists. Note that only 11.5 percent of the nonprepaid visits to other specialists were referrals.

The majority of prepaid plan visits were made by patients who had seen the physician previously for the same problem (54.9 percent). In addition, over one-quarter of the prepaid plan visits were made by "old patients" with a new problem (28.6 percent). New patients made up less than one-fifth of the visits (16.5 percent). These patterns

were also observed for nonprepaid visits. However, a higher proportion of prepaid than nonprepaid visits by new persons were referrals (38.8 and 26.5 percent, respectively).

Patients that had an expected source of payment of a prepaid plan were less likely to smoke cigarettes compared with those patients that had another expected source of payment. As shown in table 7, about two-thirds of the visits with a prepaid plan source were made by patients who did not smoke cigarettes (68.5 percent), 8.4 percent were by patients who did smoke. In comparison, one-tenth of nonprepaid visits were made by patients who smoke (11.7 percent) and three-fifths were made by patients who did not smoke (62.1 percent). Smoking status of the patient was not specified for about one-quarter of the visits.

Prepaid plan visits were less likely to be associated with injuries compared with nonprepaid visits (table 7). Over all age groups, about 9 out of every 100 prepaid plan visits were injury related (9.4 percent) compared with 12 out of every 100 for nonprepaid visits (12.2 percent). The only age group to show a statistically significant difference, however, was for persons 25–44-years-old. For persons in this age group, nonprepaid visits were 50 percent more likely to be injury related compared with prepaid plan visits.

Item 10 of the Patient Record form asks for the patient's (or patient's surrogate) "complaint(s), symptom(s), or other reason(s) for this visit (In patient's own words)." Up to three reasons for visit are coded and classified according to *A Reason for Visit Classification for Ambulatory Care (RVC)* (13). The principal reason is the problem, complaint, or reason listed on item 10a of the Patient Record form.

Approximately 61.0 percent of prepaid plan visits were classified in the symptom module of the RVC, one of the eight modules that makes up the classification (table 8). Of these symptoms, 14.0 percent were classifiable to the respiratory system and 11.2 percent were classifiable to the musculoskeletal system. Nonprepaid visits followed the same pattern.

Table 9 shows the 20 most frequently mentioned principal reasons for visit, accounting for almost 47 percent of the prepaid plan visits. Note that estimates that differ in ranked order may not be significantly different

Table 6. Number, percent distribution, and percent of visits referred by another physician by physician specialty and visit status for prepaid plan and nonprepaid visits, United States, 1991

Visit characteristics	Prepaid plan visits			Nonprepaid visits		
	Number of visits	Percent distribution	Number of visits referred	Percent referred	Percent distribution	Percent referred
All visits	91,824	100.0	7,505	8.2	100.0	6.0
Primary care ¹	63,941	69.6	2,151	3.4	61.7	2.5
Other specialties	27,884	30.4	5,354	19.2	38.3	11.5
New patient	15,111	16.5	5,860	38.8	18.8	26.5
Old patient-new problem	26,277	28.6	1,644	6.3	22.5	4.5
Old patient-old problem ²	50,436	54.9	0.0	0.0	58.7	0.0

¹Primary care specialties include general and family practice, internal medicine, pediatrics, and obstetrics/gynecology.

²Survey edit specifications did not allow referrals for old patient-old problem cases.

Table 7. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by patient's cigarette-smoking status and whether visit is injury related: United States, 1991

Visit characteristics	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Does patient smoke cigarettes?			
Yes	7,709	8.4	11.7
No	62,878	68.5	62.1
Unknown	21,238	23.1	26.2
Is visit injury related?			
Yes	8,613	9.4	12.2
No	83,212	90.6	87.8

from each other. A general medical exam, accounting for about 5.2 million visits, or 5.7 percent, was most frequently mentioned at prepaid plan visits. Cough (4.5 percent), symptoms referable to throat (3.7 percent), and prenatal examination (3.3 percent) followed, all similar to the top principal reasons for visits from other expected payment sources.

Data on the principal diagnoses rendered by physicians are shown in tables 10 and 11. The principal diagnosis is the first-recorded diagnosis in item 11 of the Patient Record form

and is associated with the principal reason for visit as recorded in item 10a. The principal diagnosis was coded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (14)*.

The ICD-9-CM is organized into broad categories, most relating to the major systems of the body as shown in table 10. Diseases of the respiratory system and the supplementary classification (for diagnoses that are not illness or injury related), each accounted for about 18.5 percent of prepaid plan visits, followed by injury and poisoning

and diseases of the nervous system and sense organs each representing about 8.0 percent of the visits. Nonprepaid visits followed the same pattern.

Table 11 lists the 20 most frequently mentioned principal diagnoses rendered by the physician at the three-digit coding level of the ICD-9-CM. Approximately 40 percent of the visits are accounted for by the top 20 principal diagnoses. Health supervision of infant or child was the most frequent principal diagnosis, accounting for 4.9 percent of the prepaid plan visits. Health supervision of infant or child was followed by normal pregnancy and acute upper respiratory infections of multiple or unspecified sites, accounting for 4.5 and 3.4 percent, respectively. Comparing the principal diagnoses of the two types of visits, there is a difference in the percent of visits for health supervision of infant or child (4.9 vs. 3.0 percent). This diagnosis represented 18.8 percent of the prepaid plan visits for children under age 15, which was significantly higher than the corresponding 12.5 percent of nonprepaid visits. However, this difference was not found in the 1992 NAMCS data (see Discussion section).

On item 13 of the Patient Record form, the physician was asked to

Table 8. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by patient's principal reason for visit: United States, 1991

Principal reason for visit module and RVC code ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Symptom module S100-S999	55,980	61.0	59.4
General symptoms S001-S099	6,356	6.9	6.9
Symptoms referable to psychological and mental disorders S100-S199	1,798	2.0	3.3
Symptoms referable to the nervous system (excluding sense organs) S200-S259	2,923	3.2	3.1
Symptoms referable to the cardiovascular and lymphatic system S260-S299	*487	*0.5	0.4
Symptoms referable to the eyes and ears S300-S399	6,046	6.6	6.5
Symptoms referable to the respiratory system S400-S499	12,866	14.0	12.4
Symptoms referable to the digestive system S500-S639	3,500	3.8	4.0
Symptoms referable to the genitourinary system S640-S829	5,340	5.8	4.6
Systems referable to the skin, nails, and hair S830-S899	6,337	6.9	6.6
Symptoms referable to the musculoskeletal system S900-S999	10,328	11.2	11.7
Disease module D001-D999	7,314	8.0	7.5
Diagnostic, screening, and preventive module X100-X599	15,593	17.0	16.0
Treatment module T100-T899	7,102	7.7	8.6
Injury and adverse effects module J001-J999	3,041	3.3	3.6
All other modules ²	2,795	3.0	4.9

¹Based on A Reason for Visit Classification for Ambulatory Care (RVC) (13).

²Includes test results module, administrative module, uncodable and blank entries.

Table 9. Number, and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by the 20 principal reasons for visit most frequently mentioned by patients: United States, 1991

Principal reason for visit and RVC code ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
General medical examination X100	5,247	5.7	4.3
Cough S440	4,158	4.5	3.9
Symptoms referable to throat S455	3,377	3.7	3.2
Prenatal examination, routine X205	3,064	3.3	3.9
Well-baby examination X105	2,966	3.2	2.4
Progress visit T800	2,528	2.8	2.8
Earache or ear infection S355	2,511	2.7	2.4
Skin rash S860	2,175	2.4	1.9
Knee symptoms S925	1,839	2.0	1.2
Postoperative visit T205	1,777	1.9	2.0
Stomach pain, cramps, and spasms S545	1,776	1.9	1.6
Fever S010	1,726	1.9	2.0
Headache, pain in head S210	1,703	1.9	1.7
Nasal congestion S400	1,514	1.6	1.5
Head cold, upper respiratory infection S445	1,283	1.4	1.3
Allergy S090	1,277	1.4	0.8
Back symptoms S905	1,223	1.3	2.0
Asthma D625	1,000	1.1	0.4
Shoulder symptoms S940	992	1.1	1.0
Sinus problems S410	933	1.0	0.7
All other reasons	48,755	53.2	59.0

¹Based on *A Reason for Visit Classification for Ambulatory Care* (RVC) (13).

indicate if the patient, at the time of visit, was afflicted with any of the chronic conditions listed, despite what

was reported as the patient diagnosis in item 11. Obesity and hypertension were checked most frequently, at 7.8 and

6.5 percent of prepaid plan visits, respectively. In contrast, nonprepaid visits recorded a significantly higher percent of visits by patients suffering from depression, 6.3 percent, as compared with 4.7 percent for prepaid plans (table 12). However, when examining the differences at various age groups, only the patients between the ages of 15 and 24 years were more likely to have depression in the nonprepaid visits (3.5 percent) compared with prepaid plan visits (1.0 percent). Past analysis of this question has shown that physicians seem to underreport chronic conditions as diagnoses on item 11 of the Patient Record form (15). The same would hold true for visits to prepaid and nonprepaid sources of payment.

Diagnostic services performed or ordered at the time of visit are shown in table 13. The most common service recorded at prepaid plan visits was a blood pressure test, 43.0 percent. A urinalysis was performed or ordered in 13.9 percent while "all other diagnostic services" accounted for 34.7 percent. Diagnostic services utilization rates in nonprepaid visits followed the same pattern (table 14). Looking at age

Table 10. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by principal diagnosis: United States, 1991

Principal diagnosis and ICD-9-CM code ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Infectious and parasitic diseases 001-139	4,476	4.9	4.2
Neoplasms 140-239	2,438	2.7	2.5
Endocrine, nutritional, and metabolic diseases and immunity disorders 240-279	2,664	2.9	3.3
Mental disorders 290-319	2,880	3.1	4.8
Diseases of the nervous system and sense organs 320-389	7,445	8.1	10.7
Diseases of the circulatory system 390-459	3,577	3.9	4.3
Diseases of the respiratory system 460-519	16,977	18.5	14.9
Diseases of the digestive system 520-579	2,673	2.9	3.3
Diseases of the genitourinary system 580-629	5,486	6.0	6.0
Diseases of the skin and subcutaneous tissue 680-709	5,320	5.8	6.0
Diseases of the musculoskeletal system and connective tissue 710-739	6,608	7.2	6.5
Symptoms, signs, and ill-defined conditions 780-799	3,235	3.5	3.7
Injury and poisoning 800-999	7,870	8.6	9.3
Supplementary classification V01-V82	16,839	18.3	17.5
All other diagnoses ²	1,700	1.9	1.4
Unknown diagnoses ³	1,639	1.8	1.7

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) (14).

²Includes diseases of the blood-forming organs (280-289); complications of pregnancy, childbirth, and the puerperium (630-676); congenital anomalies (740-759); and certain conditions originating in the perinatal period (760-779).

³Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

Table 11. Number and percent of prepaid plan visits by 20 principal diagnoses most frequently rendered by physicians: United States, 1991

Principal diagnosis and ICD-9-CM code ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Health supervision of infant or child V20	4,531	4.9	3.0
Normal pregnancy V22	4,091	4.5	3.9
Acute upper respiratory infections of multiple or unspecified sites 465	3,160	3.4	3.0
Suppurative and unspecified otitis media 382	2,917	3.2	3.0
Allergic rhinitis 477	2,670	2.9	1.5
Chronic sinusitis 473	2,659	2.9	1.9
General medical examination V70	2,404	2.6	3.5
Essential hypertension 401	2,150	2.3	2.3
Asthma 493	1,983	2.2	1.3
Acute pharyngitis 462	1,802	2.0	2.1
Diseases of sebaceous glands 706	1,496	1.6	1.7
Bronchitis, not specified as acute or chronic 490	1,392	1.5	1.6
Contact dermatitis and other eczema 692	1,221	1.3	1.1
Diabetes mellitus 250	1,098	1.2	1.2
Other disorders of synovium, tendon, and bursa 727	989	1.1	0.6
Acute tonsillitis 463	940	1.0	0.7
Certain adverse effects not elsewhere classified 995	930	1.0	0.5
Peripheral enthesopathies and allied syndromes 726	907	1.0	0.8
Sprains and strains of other and unspecified parts of back 847	846	0.9	1.1
Personal history of certain other diseases V12	782	0.9	0.6
All other diagnoses	52,856	57.6	64.6

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (14)*.

differences, children under 15 years of age were less likely to receive diagnostic tests compared with older age groups in both types of visits (40 vs. 72 percent for prepaid plan visits and 37 vs. 65 percent in nonprepaid visits). Persons 45-64 years of age were more likely to receive diagnostic tests in prepaid plan visits compared with nonprepaid visits (76 vs. 70 percent, respectively).

Visits at which at least one nonmedication therapeutic service was ordered or provided represented one-third of the total prepaid plan visits, as shown in table 15. The most frequently checked therapeutic service was diet counseling/education, reported at 10.7 percent of the visits. Exercise and growth development counseling/education followed with percents of 8.6 and 3.8, respectively. "All other therapeutic services" ordered or provided accounted for 14.8 percent of the visits. No significant differences were found between prepaid and nonprepaid visits.

The majority of both types of visits were drug visits in which the patient was given, prescribed, and/or continued on at least one medication (table 16).

Table 12. Number and percent of prepaid plan visits and percent of nonprepaid visits by selected medical conditions: United States, 1991

Medical condition ^{1,2}	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent	Percent
All visits	91,824	...	...
Depression	4,298	4.7	6.3
Hypertension	5,987	6.5	7.0
Hypercholesterolemia	3,791	4.1	3.4
Obesity	7,194	7.8	7.5

¹Refers to question 13 on the Patient Record form.

²Numbers do not add to totals because more than one medical condition may be reported per visit and not all categories are shown.

Physicians were asked to record all new or continued medications provided at the visit, including prescription and nonprescription preparations and immunizing and desensitizing agents. About one-third of both prepaid and nonprepaid visits included only one drug mention (35.4 and 34.6 percent, respectively). The drugs entered on item 17 of the Patient Record form are classified based on the therapeutic categories used in the *National Drug Code Directory, 1985* edition (16). The reader should understand that some drugs have more

than one therapeutic application and in these cases, each drug was assigned to the category that occurred with the greatest frequency.

As shown in table 17, antimicrobial agents represented the largest share of the 95.1 million drug mentions in prepaid plan visits, 21.2 percent. Of these, penicillins were the largest group (7.9 percent). Of the drug mentions, 14.7 percent were respiratory tract drugs, and drugs used for relief of pain accounted for 12 percent. Two significant differences were found between the prepaid and nonprepaid

visits in the distribution of drug mentions by therapeutic class.

Psychopharmacologic drugs represented a larger percent of drug mentions at nonprepaid visits compared with prepaid plan visits (7.0 percent and 4.5 percent, respectively). This strengthened the earlier finding that physicians involved in nonprepaid visits recorded a higher percent of visits with a diagnosis of depression than did those involved with prepaid plan visits (item 13). The only age group to show a significant difference, however, was the 25–44 years group. On the other hand, respiratory tract drugs represented a larger portion of drug mentions at prepaid plan visits compared with nonprepaid visits for persons in this same age group (15.2 vs. 9.9 percent).

Table 18 shows the most frequently occurring generic ingredients of the drug mentions at prepaid plan visits during 1991. Note that drug products containing more than one ingredient are included in the data for each ingredient. For example, acetaminophen with codeine is included in both the count for acetaminophen and the count for codeine. Amoxicillin was the most frequently occurring generic ingredient, with 7.1 million mentions; it represented 7.4 percent of the total. The second and third listed generic ingredients were acetaminophen and erythromycin representing 4.3 and 2.7 percent, respectively. A report describing the method and instructions used to collect and process drug information for the NAMCS is available (17).

More than one-half (57.7 percent) of prepaid plan visits resulted in instructions for the patient to return at a specific time (table 19), and about one-quarter of the visits resulted in instructions to return if needed (27.0 percent). These percents are not significantly different from the 1985 estimates for prepaid plan visits (55.3 percent and 26.6 percent, respectively) and follow the same pattern as the nonprepaid visits.

Table 19 also shows the duration of visit. Of the prepaid plan visits, 61.7 percent lasted between 6 and 15 minutes, 21.6 percent lasted 16 to 30

Table 13. Number and percent of prepaid plan visits and percent of nonprepaid visits by diagnostic and screening services ordered or provided: United States, 1991

<i>Diagnostic and screening services ordered or provided</i>	<i>Prepaid plan visits</i>		<i>Nonprepaid visits</i>
	<i>Number of visits in thousands</i>	<i>Percent</i>	<i>Percent</i>
Total visits ¹	91,824	...	...
Blood pressure	39,485	43.0	39.9
Urinalysis	12,771	13.9	13.3
EKG resting	1,807	2.0	1.9
EKG exercise	*197	*0.2	0.4
Mammogram	1,636	1.8	1.7
Chest x ray	1,740	1.9	1.8
Pap test	4,737	5.2	5.0
Strep throat test	2,710	3.0	2.5
Cholesterol measure.	3,389	3.7	3.2
Hearing test	1,723	1.9	1.6
Visual acuity.	2,030	2.2	4.8
Mental status exam	1,254	1.4	1.6
All other diagnostic services ²	31,832	34.7	30.1
None	33,350	36.3	39.6

¹Numbers do not add to totals because more than one service may be reported per visit.

²Includes other radiology, allergy testing, spirometry, HIV serology, other lab tests, and other.

Table 14. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by number of diagnostic services ordered or provided: United States, 1991

<i>Number of diagnostic services ordered or provided</i>	<i>Prepaid plan visits</i>		<i>Nonprepaid visits</i>
	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Percent distribution</i>
All visits	91,824	100.0	100.0
None	33,350	36.3	39.6
1	31,754	34.6	32.1
2	14,739	16.1	16.4
3	7,142	7.8	7.5
4 or more	4,839	5.3	4.5

Table 15. Number and percent of prepaid plan visits and percent of nonprepaid visits by nonmedication therapy ordered or provided: United States, 1991

<i>Nonmedication therapy</i>	<i>Prepaid plan visits</i>		<i>Nonprepaid visits</i>
	<i>Number of visits in thousands</i>	<i>Percent</i>	<i>Percent</i>
All visits ¹	91,824	...	...
Diet	9,855	10.7	11.2
Exercise	7,888	8.6	8.1
Cholesterol reduction	2,620	2.9	2.5
Weight reduction	3,090	3.4	3.9
Alcohol abuse.	*424	*0.5	0.6
Smoking cessation.	1,406	1.5	2.3
Family/social	1,944	2.1	2.3
Growth development.	3,450	3.8	4.2
Family planning.	877	1.0	1.1
Psychotherapy	1,644	1.8	3.4
Physiotherapy.	1,913	2.1	3.0
All other therapeutic services ²	13,574	14.8	13.0
None	61,495	67.0	65.2

¹Numbers do not add to totals because more than one type of nonmedication therapy may be reported per visit.

²Includes drug abuse, other counseling, corrective lenses, hearing aid, and other therapy.

Table 16. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits by number of medications provided or prescribed: United States, 1991

Medication therapy ¹	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent distribution	Percent distribution
All visits	91,824	100.0	100.0
Type of visit:			
Nondrug visit (0 medications)	35,176	38.3	38.3
Drug visit ²	56,648	61.7	61.7
Number of medications:			
1	32,514	35.4	34.6
2	14,890	16.2	16.3
3 or more	9,244	10.1	10.9

¹Includes prescription drugs, over-the-counter preparations, immunizing agents, and desensitizing agents.

²Visits at which one or more drugs were provided or prescribed by the physician.

Table 17. Number and percent distribution of prepaid plan visits and percent distribution of nonprepaid visits for drug mentions by therapeutic classification: United States, 1991

Therapeutic classification ¹	Prepaid plan visits		Nonprepaid visits
	Number of drug mentions in thousands	Percent distribution	Percent distribution
All drug mentions	95,104	100.0	100.0
Antimicrobial agents	20,191	21.2	18.8
Penicillins	7,546	7.9	6.1
Cephalosporins	3,645	3.8	3.8
Erythromycins and lincosamides	3,126	3.3	3.2
Cardiovascular-renal drugs	7,181	7.6	8.9
Psychopharmacologic drugs	4,242	4.5	7.0
Radiopharmaceuticals/contrast media	2,371	2.5	1.4
Gastrointestinal agents	2,912	3.1	3.9
Metabolic and nutrient agents	3,798	4.0	4.3
Hormones and agents affecting hormonal mechanisms	7,942	8.4	9.5
Immunologic agents	5,390	5.7	4.5
Skin/mucous membrane	6,024	6.3	6.7
Neurologic drugs	1,716	1.8	2.5
Ophthalmics	1,750	1.8	2.6
Drugs used for relief of pain	11,187	11.8	10.9
General analgesics	5,384	5.7	5.5
Antiarthritics	5,448	5.7	5.1
Respiratory tract drugs	13,956	14.7	11.3
Nasal decongestants	3,823	4.0	3.1
Antihistamines	3,600	3.8	2.4
Unclassified and miscellaneous	3,797	4.0	4.5
All others ²	2,479	2.6	2.7

¹Based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition (16).

²Includes anesthetic drugs, antidotes, hematologic agents, oncologics, otologic drugs, and antiparasitic agents.

minutes. Visits with a duration of "zero" minutes are those in which there was no face-to-face contact between the patient and physician. In 1991, 1.7 percent of the visits had a duration of zero minutes. No significant difference was found between the average durations of prepaid and

nonprepaid visits (16 minutes vs. 17 minutes, respectively).

Discussion

In describing the patient and visit characteristics of HMO/other prepaid plan visits found in the 1991 NAMCS,

it appears that such visits are generally similar to nonprepaid visits for patients under 65 years of age with respect to the principal reason for visit, physicians' diagnosis, medications prescribed, and duration of visit. This report focused only on visits made by patients under the age of 65 to reduce the confounding effects of age and health conditions on the characteristics examined. Prepaid visits were found to differ from nonprepaid visits as follows:

- relative to nonprepaid visits, a higher proportion of prepaid visits were to physicians in the primary care specialties
- HMO/other prepaid plans tend to have a higher proportion of visits with diagnostic tests performed or ordered but especially for persons between the ages of 45 and 64 years
- a higher proportion of prepaid plan visits to nonprimary care specialties were referrals
- a lower proportion of prepaid plan visits were for patients over 65 years of age
- a higher proportion of prepaid plan visits were in the West

The comparisons of visit and patient characteristics between prepaid plan and nonprepaid visits based on the 1991 NAMCS must be interpreted with caution. This report focused on describing characteristics of prepaid plan visits. For comparison purposes, the corresponding statistics for visits from other expected sources of payment were presented. However, nonprepaid visits are for a very diverse set of people with respect to expected sources of payment. For example, 12 percent of the nonprepaid visits had an expected source of payment identified as "Medicaid." Thirty-one percent were identified as "patient paid." Only 47 percent were identified as "private/commercial." In comparing the statistics presented in this report, one must consider how the diversity of coverage in the nonprepaid group may influence prepaid and nonprepaid visit comparisons. The results should not be interpreted as a straight comparison between HMO/other prepaid plans and fee-for-service plans. The reader must also consider that this report focuses on

describing patient and visit characteristics of prepaid plan visits to office-based physicians and does not represent characteristics of all visits by persons who are insured with a prepaid health plan. The variable that differentiates the two comparison groups in this report is an expected source of payment for the visit. Persons insured in an HMO may pay out-of-pocket expenses to seek health care from a provider other than the HMO to obtain either noncovered health care or care from a provider that is not associated with the prepaid plan.

This report does not include all possible providers of physician services. Physicians in hospital-based practices are not in-scope for the NAMCS, therefore, hospital-based managed care offices may not be included if the physician indicated that he/she was employed by a hospital. Similarly, visits to hospital outpatient clinics are not included in this report. For example, women seeking mammograms may use mobile units associated with radiology clinics of hospitals. Such sources would not be included in the NAMCS. Data from population-based surveys may obtain different estimates of health care resource use compared with event-based surveys. The reader is encouraged to examine data from the National Health Interview Survey for population-based estimates of use of cancer screening by women insured by an HMO or other prepaid health insurance plans (18).

Examining data from the 1992 NAMCS for cross-validation purposes we found that some differences between the 1991 prepaid plan and nonprepaid plan visits were not significant. These differences were noted where applicable. All of the findings presented in the Highlights section were replicated using results from the 1992 NAMCS.

Examining 1992 data also allows us to look at visits to hospital outpatients and emergency departments, which make up approximately 17 percent of the ambulatory care visits for persons under the age of 65. The National Hospital Ambulatory Medical Care Survey (NHAMCS) first collected data in 1992 from hospital providers to help round out the description of ambulatory care visits (19). Considering all three

Table 18. Number and percent of drug mentions for prepaid plan visits and percent of drug mentions for nonprepaid visits for the 20 most frequently used generic substances: United States, 1991

Generic substance	Prepaid plan visits		Nonprepaid visits
	Number of drug mentions in thousands ¹	Percent of all drug mentions	Percent of all drug mentions
All drug mentions	95,104	...	...
Amoxicillin	7,085	7.4	5.4
Acetaminophen	4,099	4.3	4.2
Erythromycin	2,566	2.7	2.7
Phenylephrine	2,489	2.6	1.9
Ibuprofen	2,325	2.4	1.9
Phenylpropanolamine	2,110	2.2	1.9
Pseudoephedrine	2,056	2.2	1.0
Guafenesin	1,934	2.0	1.5
Albuterol	1,840	1.9	1.5
Alcohol	1,827	1.9	1.2
Codine	1,722	1.8	2.0
Diph pertussis tetanus vaccine	1,716	1.8	1.2
Vitamin A	1,685	1.8	1.7
Trimethoprim	1,668	1.8	1.4
Sulfamethoxazole	1,665	1.7	1.4
Ergocalciferol	1,614	1.7	1.5
Naproxen	1,597	1.7	1.5
Terfenadine	1,442	1.5	0.8
Riboflavin	1,390	1.5	1.5
Cefaclor	1,388	1.5	1.5

¹Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.

Table 19. Number and percent of prepaid plan visits and percent of nonprepaid visits by disposition and duration: United States, 1991

Visit characteristic	Prepaid plan visits		Nonprepaid visits
	Number of visits in thousands	Percent	Percent
All visits	91,824	...	...
Disposition: ¹			
No followup planned	7,797	8.5	11.4
Return at specific time	53,001	57.7	59.5
Return if needed	24,791	27.0	23.8
Telephone followup planned	3,357	3.7	3.6
Referred to other physician	4,308	4.7	2.6
Referred to referring physician	693	0.8	0.7
Admit to hospital	635	0.7	0.8
Other	906	1.0	1.2
Duration:			
0 minutes ²	1,595	1.7	1.1
1-5 minutes	8,943	9.7	9.4
6-10 minutes	27,786	30.3	27.4
11-15 minutes	28,815	31.4	30.9
16-30 minutes	19,859	21.6	23.7
31-60 minutes	4,665	5.1	7.0
60 minutes and over	*161	*0.2	0.5

¹Numbers may not add to totals because more than one disposition may be reported per visit.

²Visits in which there was no face-to-face contact between patient and physician.

types of ambulatory care providers (physician offices, hospital outpatients, and emergency departments), black persons comprised the same proportion

of prepaid and nonprepaid visits (11.6 vs. 13.5 percent, respectively) (20,21). Figure 3 shows the 1992 distributions of both prepaid plan and nonprepaid visits

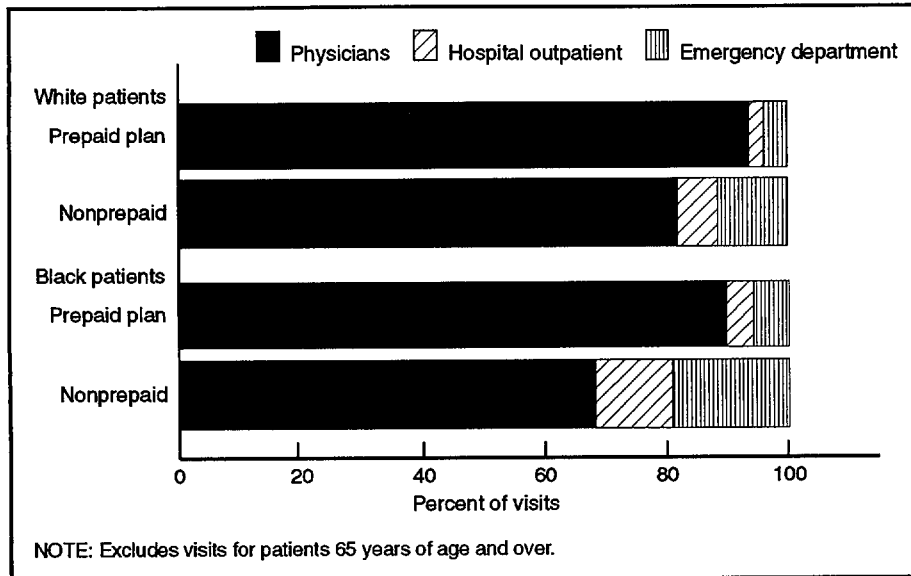


Figure 3. Percent distribution of visits to various providers for prepaid plan and nonprepaid visits by patient's race: United States, 1992

to various providers. More of the prepaid plan visits were to office-based physicians rather than hospital settings. Approximately 9 out of 10 prepaid plan visits made by black patients were to office-based physicians whereas the corresponding number for nonprepaid visits is 7 out of 10. For both races, the proportion of total prepaid plan visits to emergency departments are lower than for nonprepaid visits. The proportion of visits to emergency departments are approximately three times higher for nonprepaid visits compared with prepaid plan visits. The reader should note that the nonprepaid visits include visits made by people who have no health insurance and it has been shown that such populations receive more primary care from emergency settings (22-24).

In summary, results from this study indicate that after controlling for age differences between prepaid plan and nonprepaid visits, prepaid plan visits differ from nonprepaid visits on referral status, physician specialty, and regional distribution. The visits are similar with respect to reason for visit, diagnosis, treatments ordered or provided, and duration. The proportion of office-based physicians' visits that has an expected source of payment as "prepaid plan" has increased since 1985.

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Technical notes

Source of data and sample design

The information presented in this report is based on data collected by means of the National Ambulatory Medical Care Survey (NAMCS) from January 1991 through December 1991. The target universe of NAMCS includes office visits made in the United States by ambulatory patients to nonfederally employed physicians who are principally engaged in office practice, but not in the specialties of anesthesiology, pathology, or radiology. Telephone contacts and nonoffice visits are excluded.

A multistage probability sample design is used in NAMCS, involving samples of primary sampling units (PSU's), physician practices within PSU's, and patient visits within physician practices. The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for PSU's in New England). For 1991, a sample of 2,540 nonfederal, office-based physicians was selected from the master files maintained by the American Medical Association and American Osteopathic Association. Physicians were screened at the time of the survey to ensure that they were eligible for survey participation. Of those screened, 653 physicians were ruled ineligible (out-of-scope). The remaining 1,887 physicians were in-scope or eligible to participate in the survey. The physician response rate for the 1991 NAMCS was 72 percent. Sample physicians were asked to complete Patient Records (see figure 1) for a systematic random sample of office visits occurring during a randomly assigned 1-week reporting period. Responding physicians completed 33,795 patient records.

Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained from the physicians during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Processing operations and medical coding were performed by the

National Center for Health Statistics, Health Care Survey Section, Research Triangle Park, North Carolina.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The standard error also reflects part of the measurement error but does not measure any systematic biases in the data. The chances are 95 out of 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error.

The standard errors that were used in tests of significance for this report were calculated using generalized linear models for predicting the relative standard error for estimates based on the linear relationship between the actual standard error, as approximated using SUDAAN software, and the size of the estimate. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (25). The relative standard error (RSE) of an estimate is obtained by dividing the standard error by the estimate itself. The result is then expressed as a percent of the estimate.

Relative standard errors for emergency department estimates are shown in tables I and II. Standard errors for estimates in percents of visits and drug mentions are shown in tables III and IV. Multiplying the estimate by the RSE will provide an estimate of the standard error for the estimate.

Alternatively, relative standard errors for aggregate estimates may be calculated using the following general formula, where x is the aggregate of interest in thousands, and A and B are the appropriate coefficients from table V.

$$RSE(x) = \sqrt{A + \frac{B}{x}} \cdot 100$$

Similarly, relative standard errors for an estimate of a percent may be calculated using the following general formula, where p is the percent of

Table I. Approximate relative standard errors for estimated numbers of office visits: National Ambulatory Medical Care Survey, 1991

Estimated number of office visits in thousands	Relative standard error in percent
100	72.1
200	51.1
500	32.5
588	30.0
1,000	23.1
2,000	16.6
5,000	11.0
10,000	8.3
20,000	6.6
50,000	5.3
100,000	4.8
200,000	4.5
500,000	4.3
700,000	4.3

NOTES: The smallest reliable estimate for visits to aggregated specialties is 588,000 visits. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: An aggregate estimate of 50 million visits has a relative standard error of 5.3 percent or a standard error of 2,650,000 visits (5.3 percent of 50 million).

Table II. Approximate relative standard errors for estimated numbers of drug mentions: National Ambulatory Medical Care Survey, 1991

Estimated number of drug mentions in thousands	Relative standard error in percent
100	78.1
200	68.8
500	49.7
1,000	31.2
1,083	30.0
2,000	22.4
5,000	14.8
10,000	11.2
20,000	8.9
50,000	7.1
100,000	6.5
200,000	6.1
600,000	5.8
800,000	5.8

NOTES: The smallest reliable estimate for drug mentions is 1,083,000 mentions. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.

Example of use of table: An aggregate estimate of 50 million drug mentions has a relative standard error of 7.1 percent or a standard error of 3,550,000 mentions (7.1 percent of 50 million).

interest, expressed as a proportion, and x is the denominator of the percent in thousands, using the appropriate coefficients from table V.

$$RSE(x) = \sqrt{\frac{B \cdot (1-p)}{p \cdot x}} \cdot 100$$

Table III. Approximate standard errors for percents of estimated number of office visits: National Ambulatory Medical Care Survey: United States, 1991

Base of percent (visits in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100	7.2	15.7	21.6	28.8	33.0	35.3	36.0
200	5.1	11.1	15.3	20.4	23.3	24.9	25.5
500	3.2	7.0	9.7	12.9	14.8	15.8	16.1
1,000	2.3	5.0	6.8	9.1	10.4	11.2	11.4
2,000	1.6	3.5	4.8	6.4	7.4	7.9	8.1
5,000	1.0	2.2	3.1	4.1	4.7	5.0	5.1
10,000	0.7	1.6	2.2	2.9	3.3	3.5	3.6
20,000	0.5	1.1	1.5	2.0	2.3	2.5	2.6
50,000	0.3	0.7	1.0	1.3	1.5	1.6	1.6
100,000	0.2	0.5	0.7	0.9	1.0	1.1	1.1
200,000	0.2	0.4	0.5	0.6	0.7	0.8	0.8
500,000	0.1	0.2	0.3	0.4	0.5	0.5	0.5
1,000,000	0.1	0.2	0.2	0.3	0.3	0.4	0.4

Example of use of table: An estimate of 30 percent based on an aggregate estimate of 10 million visits has a standard error of 3.3 percent or a relative standard error of 11.0 percent (3.3 percent divided by 30).

Table IV. Approximate standard errors of percents of estimated numbers of drug mentions: National Ambulatory Medical Care Survey: United States, 1991

Base of percent (drug mentions in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
100	9.6	21.1	29.1	38.8	44.4	47.5	48.5
200	6.8	14.9	20.6	27.4	31.4	33.6	34.3
500	4.3	9.5	13.0	17.3	19.9	21.2	21.7
1,000	3.1	6.7	9.2	12.3	14.0	15.0	15.3
2,000	2.1	4.7	6.5	8.7	9.9	10.6	10.8
5,000	1.4	3.0	4.1	5.5	6.3	6.7	6.9
10,000	1.0	2.1	2.9	3.9	4.4	4.8	4.9
20,000	0.7	1.5	2.1	2.7	3.1	3.4	3.4
50,000	0.4	0.9	1.3	1.7	2.0	2.1	2.2
100,000	0.3	0.7	0.9	1.2	1.4	1.5	1.5
200,000	0.2	0.5	0.7	0.9	1.0	1.1	1.1
500,000	0.1	0.3	0.4	0.6	0.6	0.7	0.7
1,000,000	0.1	0.2	0.3	0.4	0.4	0.5	0.5

Example of use of table: An estimate of 20 percent based on an aggregate estimate of 10 million visits has a standard error of 3.9 percent or a relative standard error of 19.5 percent (3.9 percent divided by 20 percent).

Adjustments for nonresponse

Estimates from NAMCS data were adjusted to account for sample physicians who were in-scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding physicians data from visits to similar physicians. For this purpose, physicians were judged similar if they had the same specialty designation and practiced in the same PSU.

Test of significance and rounding

In this report, the determination of statistical inference is based on the

t-test. The Bonferroni inequality was used to establish the critical value for statistical significant differences (0.05 level of confidence). Terms relating to differences such as "greater than" or "less than" indicate that the difference is statistically significant.

In the tables, estimates of office visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. A lack of comment regarding any two estimates does not mean that the difference was tested and found not to be significant. Rates and percents were calculated from original unrounded figures and do not necessarily agree with percents calculated from rounded data.

Definition of terms

Ambulatory patient—An ambulatory patient is an individual seeking personal health services who is not currently admitted to any health care institution on the premises.

Physician—A physician is a duly licensed doctor of medicine (MD) or doctor of osteopathy (DO) who is currently in office-based practice and who spends some time caring for ambulatory patients. Excluded from the NAMCS are physicians who are hospital based; who specialize in anesthesiology, pathology, or radiology; who are federally employed; who treat only institutionalized patients; or who are

Table V. Coefficients appropriate for determining relative standard errors by type of estimate and physician specialty: National Ambulatory Medical Care Survey, 1991

Type of estimate and physician specialty	Coefficient for use with estimates in thousands	
	A	B
Visits:		
Overall total	0.001744284	51.82697927
General and family practice	0.006617364	33.29640705
Osteopathy	0.0163602	10.90230286
Internal medicine	0.01573396	45.10067385
Pediatrics	0.0163602	10.90230286
General surgery	0.0163602	10.90230286
Obstetrics and gynecology	0.0163602	10.90230286
Orthopedic surgery	0.0163602	10.90230286
Cardiovascular diseases	0.0163602	10.90230286
Dermatology	0.0163602	10.90230286
Urological surgery	0.0163602	10.90230286
Psychiatry	0.0163602	10.90230286
Neurology	0.0163602	10.90230286
Ophthalmology	0.0163602	10.90230286
Otolaryngology	0.0163602	10.90230286
All other specialties	0.03340709	29.631108
Drug mentions:		
Overall total	0.003224617	93.92631687
General and family practice	0.0122584	57.64543271
Osteopathy	0.02784109	11.55212504
Internal medicine	0.0122584	57.64543271
Pediatrics	0.0122584	57.64543271
General surgery	0.0122584	57.64543271
Obstetrics and gynecology	0.0122584	57.64543271
Orthopedic surgery	0.0122584	57.64543271
Cardiovascular diseases	0.0122584	57.64543271
Dermatology	0.0122584	57.64543271
Urological surgery	0.0122584	57.64543271
Psychiatry	0.0122584	57.64543271
Neurology	0.0122584	57.64543271
Ophthalmology	0.0122584	57.64543271
Otolaryngology	0.0122584	57.64543271
All other specialties	0.0483582	46.53697419

(HMO's), independent practice organizations (IPA's), and all other prepaid health care plans.

Nonprepaid visit—A nonprepaid visit is a visit for which any expected source of payment with the exception of "HMO/other prepaid" was checked on item 6 of the Patient Record form.

employed full time by an institution and spend no time seeing ambulatory patients.

Office—Offices are the premises physicians identify as locations for their ambulatory practice; these customarily include consultation, examination, or treatment spaces that patients associate with the particular physician.

Visit—A visit is a direct personal exchange between an ambulatory patient and a physician (or a staff member working under the physician's supervision), for the purpose of seeking care and rendering personal health services.

Drug mention—A drug mention is the physician's entry of a pharmaceutical agent—by any route of administration—for prevention,

diagnosis, or treatment. Generic as well as brand-name drugs are included, as are nonprescription and prescription drugs.

Along with all new drugs, the physician also records continued medications if the patient was specifically instructed during the visit to continue the medication.

Drug visit—A drug visit is a visit in which medication was prescribed or provided by the physician.

Prepaid plan visit—A prepaid plan visit is one for which "HMO/other prepaid plan" was checked as an expected source of payment in item 6 of the Patient Record form. Instructions for completing this item on the 1991 Patient Record form defines "HMO/other prepaid" as including visits covered under health maintenance associations

Symbols

- Data not available
 - ... Category not applicable
 - Quantity zero
 - 0.0 Quantity more than zero but less than 0.05
 - Z Quantity more than zero but less than 500 where numbers are rounded to thousands
 - * Figure does not meet standard of reliability or precision
-

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Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

National Ambulatory Medical Care Survey: 1993 Summary

by David A. Woodwell and Susan M. Schappert, M.A., Division of Health Care Statistics

Introduction

During the 12-month period from January 1993 through December 1993, an estimated 717.2 million visits were made to nonfederally employed, office-based physicians in the United States, or 2.8 visits per person. This rate is not significantly different from office visit rates observed since 1975 (1-5).

This report presents data highlights from the 1993 National Ambulatory Medical Care Survey (NAMCS), a national probability sample survey conducted by the Division of Health Care Statistics of the National Center for Health Statistics, Centers for Disease Control and Prevention. Statistics are presented on physician, patient, and visit characteristics.

Only visits to the offices of nonfederally employed physicians (excluding those in the specialties of anesthesiology, radiology, and pathology) who were classified by the American Medical Association or the American Osteopathic Association as "office-based, patient care" were included in the NAMCS. Visits to private, nonhospital-based clinics and health maintenance organizations were within the scope of the survey, but those occurring in government-operated facilities and hospital-based outpatient departments were not. Telephone

contacts and visits made outside the physician's office were also excluded.

Because the estimates presented in this report are based on a sample rather than on the entire universe of office visits, they are subject to sampling variability. The Technical notes at the end of this report include an overview of the sample design used in the 1993 NAMCS, an explanation of sampling errors, and guidelines for judging the precision of the estimates.

The Patient Record form is used by physicians participating in the NAMCS to record information about their patients' office visits. This form is reproduced in figure 1 and is intended to serve as a reference for readers as they review the survey findings presented in this document.

The physician sample for the NAMCS was selected with the cooperation of the American Medical Association and the American Osteopathic Association. Their contribution to this effort is gratefully acknowledged.

Physician characteristics

The distribution of office visits according to physician specialty is presented in table 1. The largest share of visits was made to physicians in general and family practice (27.6 percent). Visit rates to each of the physician specialty

groups did not differ significantly from 1992 visit rates with the exception of otolaryngologists. The rate of visits to this specialty decreased from 9.1 visits per 100 persons in 1992 to 6.0 visits per 100 persons in 1993. However, the 1993 figure is not significantly different from the corresponding rate of 7.7 visits per 100 in 1991. In fact, the visit rate to otolaryngologists has ranged between 6.5 and 7.0 visits per 100 persons between 1975 and 1990, so the 1992 figure appears to be an anomaly.

Doctors of osteopathy received 44.9 million visits during 1993, or 6.3 percent of all office visits. Visits to this specialty occurred at a rate of 17.7 per 100 persons, which was not significantly different from the 1992 visit rate.

Visits according to geographic characteristics of the physician's practice are also displayed in table 1. Visit rates by region—Northeast, Midwest, South, and West—did not differ from each other in 1993, except that the Northeast rate was higher than the South and Midwest. Regional rates were not significantly different than the corresponding 1992 rates.

Patient characteristics

Office visits by patient's age, sex, and race are shown in table 2. Females made 60.0 percent of all office visits



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Centers for Disease Control and Prevention

National Center for Health Statistics



Assurance of Confidentiality: All information which would permit identification of an individual, a practice, or an establishment will be held confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to other persons or used for any other purpose.		Department of Health and Human Services Public Health Service Centers for Disease Control National Center for Health Statistics		B	
1. DATE OF VISIT		NATIONAL AMBULATORY MEDICAL CARE SURVEY 1993-94 PATIENT RECORD			OMB NO. 0920-0234 Expires 4-30-95 CDC 64.21B
Month / Day / Year					
2. DATE OF BIRTH	4. COLOR OR RACE	5. ETHNICITY	6. EXPECTED SOURCE(S) OF PAYMENT (Check all that apply)	7. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN?	8. IS THIS VISIT INJURY RELATED?
Month / Day / Year	1 <input type="checkbox"/> White 2 <input type="checkbox"/> Black 3 <input type="checkbox"/> Asian / Pacific Islander 4 <input type="checkbox"/> American Indian / Eskimo / Aleut	1 <input type="checkbox"/> Hispanic origin 2 <input type="checkbox"/> Not Hispanic	1 <input type="checkbox"/> Private / commercial 5 <input type="checkbox"/> HMO/other prepaid 2 <input type="checkbox"/> Medicare 6 <input type="checkbox"/> Patient paid 3 <input type="checkbox"/> Medicaid 7 <input type="checkbox"/> No charge 4 <input type="checkbox"/> Other government 8 <input type="checkbox"/> Other	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
3. SEX					9. DOES PATIENT SMOKE CIGARETTES?
1 <input type="checkbox"/> Female 2 <input type="checkbox"/> Male					1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Unknown
10. PATIENT'S COMPLAINT(S), SYMPTOM(S), OR OTHER REASON(S) FOR THIS VISIT (In patient's own words)		11. PHYSICIAN'S DIAGNOSES (As specific as possible)		12. HAVE YOU OR ANYONE IN YOUR PRACTICE SEEN PATIENT BEFORE?	
a. Most important: _____ b. Other: _____ c. Other: _____		a. Principal diagnosis / problem associated with item 10.a. _____ b. Other: _____ c. Other: _____		1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No ↓ If yes, for the condition in item 11a? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No	
13. DOES PATIENT HAVE: (Check all that apply regardless of any entry in item 11)					
1 <input type="checkbox"/> Asthma 2 <input type="checkbox"/> Diabetes 3 <input type="checkbox"/> HIV 4 <input type="checkbox"/> Obesity 5 <input type="checkbox"/> Osteoporosis 6 <input type="checkbox"/> None of the above					
14. TESTS, SURGICAL AND NONSURGICAL PROCEDURES, AND THERAPIES None <input type="checkbox"/>					
a. SELECTED SERVICES (Check all ordered or provided)		b. ALL OTHER SERVICES (Record one on each line and check performed or ordered for each.)			
1 <input type="checkbox"/> Blood pressure 2 <input type="checkbox"/> Urinalysis 3 <input type="checkbox"/> Spirometry 4 <input type="checkbox"/> Allergy testing 5 <input type="checkbox"/> HIV serology 6 <input type="checkbox"/> Other blood test		Include: • Tests • Imaging • Surgeries and other procedures • Other therapies such as contact lens Rx, individual psychotherapy, or physiotherapy Exclude: • Services in item 14a • Counseling / education • Medications			
		Performed Ordered		Performed Ordered	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____	
		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____		1 <input type="checkbox"/> 2 <input type="checkbox"/> _____	
15. COUNSELING / EDUCATION (Check all ordered or provided)		16. MEDICATIONS / INJECTIONS None <input type="checkbox"/>		17. DISPOSITION THIS VISIT (Check all that apply)	
1 <input type="checkbox"/> None 6 <input type="checkbox"/> Growth / development 2 <input type="checkbox"/> Exercise 7 <input type="checkbox"/> Injury prevention 3 <input type="checkbox"/> Cholesterol reduction 8 <input type="checkbox"/> HIV transmission 4 <input type="checkbox"/> Weight reduction 9 <input type="checkbox"/> Other STD transmission 5 <input type="checkbox"/> Smoking cessation 10 <input type="checkbox"/> Other		[Include: • Rx and OTC • Immunizations • Allergy shots • Anesthetics • Meds ordered, supplied, or administered • New meds • Continuing meds (with or without new orders)] 1 _____ 2 _____ 3 _____ 4 _____ 5 _____		1 <input type="checkbox"/> No follow-up planned 2 <input type="checkbox"/> Return at specified time 3 <input type="checkbox"/> Return if needed, P.R.N. 4 <input type="checkbox"/> Telephone follow-up planned 5 <input type="checkbox"/> Referred to other physician 6 <input type="checkbox"/> Returned to referring physician 7 <input type="checkbox"/> Admit to hospital 8 <input type="checkbox"/> Other (Specify) _____	
				18. DURATION OF THIS VISIT (Time actually spent with physician) _____ Minutes	

Figure 1. Patient Record form

during 1993 and accounted for a higher percent of visits than males in all age categories except the youngest (under 15 years). Females also had significantly higher visit rates than males in each age category with the exception of the youngest group (under 15 years) and the two oldest groups (65-74 years and 75 years and over). These patterns were also observed in the 1990-92 National Ambulatory Medical Care Surveys.

Visit rates were found to increase with age after the age of 24. Persons aged 75 years and over had the highest visit rate of the six age categories

analyzed, at 6.1 visits per person. The pattern, however, was found to be slightly different for males and females. Among males, the visit rate for the age group 15-24 years was significantly lower than for those under 15 years. But males in the age group 25-44 years had a higher rate than those 15-24 years. The rate increased with each successive age group, with males aged 75 years and over having the highest rate of 6.2 visits per person.

There was no significant difference in the visit rates for females under 15 years and those 15-24 years. However,

the rate was higher for females 25-44 years than for those 15-24, and increased again for those 45-64 years and 65-74 years of age. There was no significant difference in visit rates between females in the two oldest age groups, 65-74 years and 75 years and over.

The visit rate for the white population was significantly higher (3.0 visits per person) than the rate for the black population (1.8 visits per person) in 1993. Visit rates were higher for white persons in each age group compared with black persons, with the

exception of those 75 years and over. White persons made 88.2 percent of all office visits, with black persons and Asians/Pacific Islanders accounting for 8.1 percent and 3.3 percent, respectively.

The visit rate for the black population in 1993 was significantly lower than the 1992 rate (2.6 visits per person), but was not significantly different from the 1991 rate (1.9 visits per person). The higher rates in 1992 may be the result of sampling variability rather than a true increase, as discussed in a previous report (5).

Visit characteristics

Referral status and prior-visit status

Table 3 shows data on office visits categorized by patient's referral status and prior-visit status. The distribution of visits by referral status and prior-visit status according to physician specialty is shown in table 4. It is important to note that, in previous years, several data items were used to determine referral status. Return visits made for treatment of an "old" problem were not considered referral visits even if the referral item on the Patient Record form had been checked "yes" by the physician. This edit procedure was instituted on the assumption that if the physician had seen the patient previously for treatment of the same problem (defined as the current episode of care), that patient could not have been referred for the current visit.

However, in recent years, increasing numbers of physicians in the NAMCS sample have characterized visits as referrals and, at the same time, as being made by "old" patients for "old" problems. This apparent inconsistency may have a number of possible explanations: some physicians may be reporting referred patients as referred visits; changes in referral patterns may have occurred related to changes in insurance coverage; or physicians may be including patients seen before for past episodes of care, rather than current episodes of care.

Beginning with the 1993 survey year, only data from the referral status

Table 1. Annual number, percent distribution, and rate of office visits by selected physician practice characteristics: United States, 1993

<i>Physician practice characteristic</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Number of visits per 100 persons per year¹</i>
All visits	717,191	100.0	282.0
Physician specialty			
General and family practice	197,605	27.6	77.7
Internal medicine	102,436	14.3	40.3
Pediatrics	76,982	10.7	30.3
Obstetrics and gynecology	64,030	8.9	27.2
Ophthalmology	39,373	5.5	15.5
Orthopedic surgery	33,638	4.7	13.2
Dermatology	31,469	4.4	12.4
General surgery	21,703	3.0	8.5
Psychiatry	20,469	2.9	8.0
Urology	15,690	2.2	6.2
Otolaryngology	15,380	2.1	6.0
Cardiovascular diseases	12,178	1.7	4.8
Allergy and immunology ³	10,605	1.5	4.2
Neurology	8,393	1.2	3.3
Pulmonary diseases ³	4,251	0.6	1.7
All other specialties	62,991	8.8	24.8
Professional identity			
Doctor of medicine	672,306	93.7	264.4
Doctor of osteopathy	44,885	6.3	17.7
Geographic region			
Northeast	168,438	23.5	336.6
Midwest	169,035	23.6	272.5
South	213,356	29.7	250.0
West	166,363	23.2	292.7

¹Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1993.

²The visit rate is 48.5 per 100 females.

³These specialties were sampled separately in 1993 only as part of a supplemental data collection project.

item on the Patient Record form will be used to determine referral status. The definition of a referred visit consistent with past usage can be recreated using information available on the public use data file. Recent changes in the health care system may have altered the way referral status is conceptualized and interpreted. Research is under way to improve the collection of this information in the NAMCS.

When referred visits are restricted to those made by new patients and those made by old patients for new problems, their share of total visits is 6.6 percent, not significantly different than the 1992 NAMCS figure of 6.2 percent. Using the number of referred visits reported by physicians (which includes visits made by old patients for old problems), the percent of referred visits is 13.7 (table 3).

Also shown in table 3 are office visits by prior-visit status. Eight out of ten office visits (84.4 percent) were made by patients who had seen the physician on a previous occasion, and more than half of all visits (63.1 percent) were made by persons returning to the physician for care of a previously treated problem.

As expected, the percent of referred visits reported by primary care specialties was relatively low, 10 percent or less of the total visits to general and family practitioners, internists, pediatricians, and obstetricians-gynecologists. In contrast, about half of all visits to neurologists (50.7 percent) were reported to be referrals (table 4).

Expected sources of payment

Data on expected sources of payment are shown in table 5.

Table 2. Annual number, percent distribution, and rate of office visits by patient's age, sex, and race: United States, 1993

<i>Patient's age, sex, and race</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Number of visits per persons per year¹</i>
All visits	717,191	100.0	2.8
Age			
Under 15 years	129,279	18.0	2.3
15–24 years	62,346	8.7	1.8
25–44 years	193,914	27.0	2.4
45–64 years	160,146	22.3	3.2
65–74 years	93,873	13.1	5.0
75 years and over	77,633	10.8	6.1
Sex and age			
Female	430,170	60.0	3.3
Under 15 years	60,664	8.5	2.2
15–24 years	41,408	5.8	2.4
25–44 years	128,854	18.0	3.1
45–64 years	96,011	13.4	3.7
65–74 years	55,215	7.7	5.4
75 years and over	48,017	6.7	6.1
Male	287,021	40.0	2.3
Under 15 years	68,615	9.6	2.3
15–24 years	20,938	2.9	1.2
25–44 years	65,060	9.1	1.6
45–64 years	64,135	8.9	2.7
65–74 years	38,658	5.4	4.6
75 years and over	29,616	4.1	6.2
Race and age			
White	632,500	88.2	3.0
Under 15 years	113,506	15.8	2.5
15–24 years	53,650	7.5	2.0
25–44 years	167,026	23.3	2.5
45–64 years	140,231	19.6	3.3
65–74 years	86,204	12.0	5.2
75 years and over	71,884	10.0	6.3
Black	58,154	8.1	1.8
Under 15 years	10,328	1.4	1.1
15–24 years	6,308	0.9	1.2
25–44 years	16,946	2.4	1.7
45–64 years	14,399	2.0	2.8
65–74 years	5,381	0.8	3.2
75 years and over	4,793	0.7	4.8
All other races			
Asian/Pacific Islander	23,377	3.3	---
American Indian/Eskimo/Aleut	3,160	0.4	---

¹Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1993.

Physicians were asked to check all of the applicable payment categories for this survey item, with the result that multiple payment sources could be coded for each visit. The patient-paid category includes the patient's contribution toward "co-payments" and "deductibles."

Expected sources of payment were most often private/commercial insurance (38.7 percent of visits), Medicare (22.1 percent of visits), HMO/other

prepaid (19.3 percent), and patient-paid (15.0 percent). Medicaid was listed as an expected source of payment at 10.4 percent of visits.

Injury-related visits

Injury-related office visits are presented in terms of patient's age, sex, and race in table 6. Based on data collected in item 8 of the Patient Record form, there were an estimated 84.0

million injury-related office visits in 1993, representing 11.7 percent of all office visits. Corresponding figures for 1992 were 65.6 million and 8.6 percent of visits, respectively. About half of the injury visits (51.0 percent) were made by males, and 38.8 percent were made by persons 25–44 years old.

The injury visit rate for males was not significantly higher than the rate for females in 1993 (34.6 visits per 100 males compared with 31.5 visits per 100 females), nor were there any differences noted between males and females by age.

Among females, injury visit rates were not significantly different for women in the age groups 25–44, 45–64, 65–74, and 75 years and over. However, the rates for these groups were significantly higher than for females under 15 years and 15–24 years of age. Males in the age group 25–44 years had an injury visit rate higher than those aged under 15 years and 15–24 years. However, the rate was not statistically different for males in the 25–44, 45–64, 65–74, and 75 years and over groups.

The injury visit rate for black persons was 19.1 visits per 100 persons in 1993, significantly lower than the rate of 35.6 injury visits per 100 white persons. Rates were not significantly different between white males (36.8 per 100) and white females (34.3 per 100), or between black males (20.9 per 100) and black females (17.5 per 100) (data not shown).

Patient's cigarette-smoking status

Results from the 1993 survey showed that 67.7 million office visits, or 9.4 percent of the total, were made by patients who smoke cigarettes. However, patient's smoking status was not reported for 27.0 percent of office visits. Data on visits according to patient's cigarette-smoking status are presented in tables 7 and 8.

Patient's principal reason for visit

Item 10 of the Patient Record form asks the physician to record the patient's (or patient surrogate's) "complaint(s),

Table 3. Number and percent distribution of office visits by patient's referral status, according to prior-visit status: United States, 1993

Referral status	Prior-visit status			
	All visits	New patient	Old patient, new problem	Old patient, old problem
Number of visits in thousands				
All visits	717,191	111,922	152,898	452,372
Referred for this visit	98,159	37,068	10,063	51,028
Not referred for this visit	619,032	74,854	142,835	401,344
Percent distribution				
All visits	100.0	100.0	100.0	100.0
Referred for this visit	13.7	33.1	6.6	11.3
Not referred for this visit	86.3	66.9	93.4	88.7

NOTE: Numbers may not add to totals because of rounding.

Table 4. Number and percent distribution of office visits by physician specialty, according to referral status and prior-visit status: United States, 1993

Physician specialty	Number of visits in thousands	Total	Referred for this visit			Not referred for this visit		
			New patient	Old patient, new problem	Old patient, old problem	New patient	Old patient, new problem	Old patient, old problem
Percent distribution								
All visits	717,191	100.0	5.2	1.4	7.1	10.4	19.9	56.0
General and family practice	197,605	100.0	0.9	1.1	1.9	11.3	30.3	54.6
Internal medicine	102,436	100.0	2.2	2.0	3.4	7.1	24.9	60.4
Pediatrics	76,982	100.0	0.9	1.0	1.5	5.1	35.8	55.7
Obstetrics and gynecology	64,030	100.0	3.0	1.5	5.9	13.1	15.0	61.5
Ophthalmology	39,373	100.0	5.3	1.5	5.7	12.1	7.6	67.8
Orthopedic surgery	33,638	100.0	15.3	2.6	16.6	12.1	7.3	46.2
Dermatology	31,469	100.0	6.1	1.4	8.5	17.3	12.1	54.5
General surgery	21,703	100.0	16.3	3.0	18.7	9.9	9.1	42.9
Psychiatry	20,469	100.0	5.0	*0.2	15.4	10.7	*0.2	68.6
Urology	15,690	100.0	14.6	1.8	17.4	6.5	3.4	56.2
Otolaryngology	15,380	100.0	16.0	2.1	14.2	17.6	5.3	44.7
Cardiovascular diseases	12,178	100.0	10.2	*1.4	16.9	6.4	4.7	60.4
Allergy and immunology ¹	10,605	100.0	6.7	*0.3	13.6	8.3	2.8	68.3
Neurology	8,393	100.0	28.9	2.1	19.7	7.6	3.5	38.2
Pulmonary diseases ¹	4,251	100.0	9.9	1.1	9.1	11.2	6.3	62.4
All other specialties	62,991	100.0	11.5	*0.8	16.9	12.6	9.7	48.4

¹These specialties were sampled separately in 1993 only as part of a supplemental data collection project.

symptom(s), or other reason(s) for this visit in the patient's own words." Up to three reasons for visit are classified and coded from the survey according to the *Reason for Visit Classification for Ambulatory Care (RVC)* (6). The principal reason for visit is the problem, complaint, or reason listed in item 10a.

The RVC is divided into the eight modules or groups of reasons displayed in table 9. More than half of all visits were made for reasons classified as symptoms (57.7 percent). Respiratory symptoms accounted for 11.6 percent of all visits, and musculoskeletal symptoms accounted for 10.7 percent.

The 20 most frequently mentioned principal reasons for visit, representing 42.2 percent of all visits, are shown in table 10. General medical examination was the most frequently mentioned reason for visit (5.3 percent of the total), while cough was the most frequently mentioned reason related to illness or injury (3.4 percent). Nineteen of the top 20 reasons for office visits in 1993 were also listed among the 20 most frequently mentioned reasons in 1992, albeit in slightly different order. It should be noted that estimates that differ in ranked order may not be significantly different from each other.

Tests, procedures, and therapies

Statistics on tests, procedures, and therapies scheduled or performed by the physician during the office visit are displayed in tables 11–13. The 1993 NAMCS Patient Record form combined tests, surgical and nonsurgical procedures, and therapies (except counseling/education and medication therapy) into a single item, with six checkboxes for commonly performed services and space to record up to eight additional services. Results of the open-ended part of the item were coded according to the *International*

Table 5. Number and percent of office visits by patient's expected source(s) of payment: United States, 1993

Expected source(s) of payment ¹	Number of visits in thousands	Percent of all visits
All visits	717,191	...
Private/commercial insurance	277,596	38.7
Medicare	158,804	22.1
HMO/other prepaid ²	138,387	19.3
Patient paid	107,629	15.0
Medicaid	74,712	10.4
Other government	11,946	1.7
No charge	9,623	1.3
Other	25,618	3.6
Unknown	14,054	2.0

¹Numbers may not add to totals because more than one expected source of payment may be reported per visit.

²HMO is health maintenance organization.

Table 6. Number, percent distribution, and annual rate of injury-related office visits by patient's age, sex, and race: United States, 1993

Patient's age, sex, and race	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year ¹
All injury-related visits	83,980	100.0	33.0
Age			
Under 15 years	11,018	13.1	19.2
15-24 years	8,489	10.1	24.7
25-44 years	32,552	38.8	39.9
45-64 years	18,148	21.6	36.5
65-74 years	7,297	8.7	39.2
75 years and over	6,476	7.7	51.2
Sex and age			
Female	41,156	49.0	31.5
Under 15 years	4,798	5.7	17.2
15-24 years	3,667	4.4	21.3
25-44 years	14,979	17.8	36.2
45-64 years	8,982	10.7	34.8
65-74 years	4,078	4.9	39.8
75 years and over	4,653	5.5	59.0
Male	42,824	51.0	34.6
Under 15 years	6,220	7.4	21.2
15-24 years	4,822	5.7	28.2
25-44 years	17,573	20.9	43.7
45-64 years	9,166	10.9	38.3
65-74 years	3,219	3.8	38.5
75 years and over	1,823	2.2	38.2
Race			
White	75,140	89.5	35.6
Black	6,102	7.3	19.1
Asian/Pacific Islander	2,299	2.7	---
American Indian/Eskimo/Aleut	*439	*0.5	---

¹Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1993.

Classification of Diseases, 9th revision, Clinical Modification, Volume 3, Procedures Classification (ICD-9-CM) (7). It was hoped that allowing physicians to record services in this way

would result in greater specificity of responses, thereby clarifying the large number of services generally recorded in the "other" checkbox category in previous versions of the survey. Data are

shown separately for the checkbox items (part a of item 14) and the open-ended response categories (part b) in keeping with the format used on the Patient Record form.

Slightly less than three-quarters (73.0 percent) of all office visits included one or more tests, procedures or therapies (excluding counseling/education and medication therapy that are collected in separate data items) (table 11). Blood pressure check was the most frequently mentioned checkbox category, recorded at half (49.8 percent) of the visits. Blood pressure checks were ordered or provided at a significantly higher proportion of visits by females (54.3 percent) than at visits by males (43.1 percent).

Other frequently mentioned services were "other" blood test (16.0 percent of visits) and urinalysis (13.5 percent). HIV serology was ordered or provided at 0.3 percent of office visits.

The top 25 diagnostic and therapeutic services (other than those reported in the checkbox categories on the Patient Record form) are shown in table 12. Pap smear, electrocardiogram, eye examinations, and routine chest x rays were among the most frequently mentioned procedures. Table 13 presents data on additional procedures that, while not among the top 25, were also of interest.

Physician's principal diagnosis

Item 11 of the Patient Record form asks the physician to record the principal diagnosis or problem associated with the patient's most important reason for the current visit as well as any other significant current diagnoses. Up to three diagnoses are coded and classified according to the ICD-9-CM (7). Displayed in table 14 are office visits by principal diagnosis using the major disease categories specified by the ICD-9-CM. The supplementary classification, used for diagnoses that are not classifiable to injury or illness (for example, general medical examination, routine prenatal examination, and health supervision of an infant or child), accounted for 15.6 percent of all office visits. Diseases of the respiratory system (13.8 percent) and diseases of the nervous system and

Table 7. Number and percent distribution of office visits made by patients who smoke cigarettes by patient's age, sex, and race: United States, 1993

Patient's age, sex, and race	Number of visits in thousands	Percent distribution	
All visits by patients who smoke cigarettes	67,720	100.0	
Age			
Under 15 years	*117	*0.2	
15-24 years	6,121	9.0	
25-44 years	27,692	40.9	
45-64 years	22,541	33.3	
65-74 years	8,357	12.3	
75 years and over	2,891	4.3	
Sex			
Female	39,928	59.0	
Male	27,792	41.0	
Race			
White	59,282	87.5	
Black	6,389	9.4	
Asian/Pacific Islander	1,498	2.2	
American Indian/Eskimo/Aleut	*551	*0.8	

infant or child, and general medical examination, among others.) Of the 20 diagnoses shown in table 15, 18 also appeared on the list of the 20 most frequent diagnoses for 1992.

Physician's checklist of medical conditions

In addition to the diagnostic data reported in item 11 of the Patient Record form, selected information on the patient's current health status was collected in item 13. Physicians were given a list of common conditions and asked to record whether the patient now has any of them, regardless of what was recorded as the current diagnosis in item 11. The list of conditions was modified for the 1993 NAMCS and will be expanded in the 1995 NAMCS. Results from item 13 are shown in table 16.

Slightly less than one-fifth (18.9 percent) of the visits were made by patients who were reported to have one or more of the five conditions listed on the survey form. Obesity was checked at 8.7 percent of the total, or 62.7 million office visits. Diabetes (5.6 percent), asthma (4.9 percent), and osteoporosis (2.5 percent) were all recorded at a greater proportion of visits in this item than as a diagnosis in item

sense organs (10.8 percent) were also prominent on the list.

The 20 most frequently reported principal diagnoses for 1993 are shown in table 15. These are categorized at the three-digit coding level of the ICD-9-CM, and accounted for 35.5 percent of all office visits made during the year. The most frequent diagnosis rendered by physicians at office visits in 1993 was

essential hypertension, occurring at 3.9 percent of all visits. Essential hypertension has been the most frequently reported morbidity-related diagnosis in every survey year since the NAMCS began in 1973. (Morbidity-related diagnoses are those classifiable to illness or injury. Nonmorbidity related diagnoses include routine prenatal examination, health supervision of an

Table 8. Number and percent distribution of office visits by physician specialty, according to patient's cigarette-smoking status: United States, 1993

Physician specialty	Number of visits in thousands	Does patient smoke cigarettes?			
		Total	Yes	No	Unknown ¹
Percent distribution					
All visits	717,191	100.0	9.4	63.5	27.0
General and family practice	197,605	100.0	10.4	61.2	28.5
Internal medicine	102,436	100.0	13.8	70.9	15.3
Pediatrics	76,982	100.0	*0.6	94.1	5.3
Obstetrics and gynecology	64,030	100.0	10.1	65.3	24.7
Ophthalmology	39,373	100.0	3.4	40.5	56.1
Orthopedic surgery	33,638	100.0	11.7	40.0	48.4
Dermatology	31,469	100.0	4.7	41.2	54.1
General surgery	21,703	100.0	11.7	51.3	36.9
Psychiatry	20,469	100.0	19.3	60.1	20.5
Urology	15,690	100.0	9.4	48.3	42.4
Otolaryngology	15,380	100.0	8.3	71.9	19.8
Cardiovascular diseases	12,178	100.0	9.1	66.3	24.6
Allergy and immunology ²	10,605	100.0	4.5	73.5	22.0
Neurology	8,393	100.0	10.8	59.6	29.6
Pulmonary diseases ²	4,251	100.0	12.7	69.1	18.3
All other specialties	62,991	100.0	11.3	62.7	26.0

¹Includes entries of "unknown" and blank entries.

²These specialties were sampled separately in 1993 only as part of a supplemental data collection project.

Table 9. Number and percent distribution of office visits by patient's principal reason for visit: United States, 1993

Principal reason for visit and RVC code ¹	Number of visits in thousands	Percent distribution	
All visits	717,191	100.0	
Symptom module S001-S999	414,163	57.7	
General symptoms S001-S999	46,990	6.6	
Symptoms referable to psychological/mental disorders S100-S199	22,256	3.1	
Symptoms referable to the nervous system (excluding sense organs) S200-S259	22,556	3.1	
Symptoms referable to the cardiovascular/lymphatic system S260-S299	3,748	0.5	
Symptoms referable to the eyes and ears S300-S399	51,514	7.2	
Symptoms referable to the respiratory system S400-S499	83,482	11.6	
Symptoms referable to the digestive system S500-S639	32,454	4.5	
Symptoms referable to the genitourinary system S640-S829	31,370	4.4	
Symptoms referable to the skin, hair, and nails S830-S899	43,130	6.0	
Symptoms referable to the musculoskeletal system S900-S999	76,664	10.7	
Disease module D001-D999	63,981	8.9	
Diagnostic/screening and preventive module X100-X599	115,728	16.1	
Treatment module T100-T899	67,537	9.4	
Injuries and adverse effects module J001-J999	23,248	3.2	
Test results module R100-R700	9,141	1.3	
Administrative module A100-A140	7,939	1.1	
Other ² U990-U999	15,455	2.2	

¹Based on A Reason for Visit Classification for Ambulatory Care (RVC) (6).

²Includes problems and complaints not elsewhere classified, entries of "none," blanks, and illegible entries.

Table 10. Number and percent distribution of office visits by the 20 principal reasons for visit most frequently mentioned by patients, according to patient's sex: United States, 1993

Principal reason for visit and RVC code ¹	Number of visits in thousands	Patient's sex		
		Total	Female	Male
		Percent distribution		
All visits	717,191	100.0	100.0	100.0
General medical examination X100	38,185	5.3	5.7	4.7
Routine prenatal examination X205	25,893	3.6	6.0	...
Cough S440	24,642	3.4	2.9	4.3
Progress visit, not otherwise specified T800	20,836	2.9	2.5	3.6
Postoperative visit T205	18,129	2.5	2.4	2.7
Symptoms referable to throat S455	17,263	2.4	2.5	2.3
Earache or ear infection S355	16,130	2.2	2.0	2.6
Well baby examination X105	14,023	2.0	1.7	2.3
Stomach pain, cramps, and spasms S545	13,027	1.8	2.0	1.6
Back symptoms S905	12,768	1.8	1.5	2.2
Vision dysfunctions S305	12,416	1.7	1.9	1.4
Skin rash S860	12,138	1.7	1.5	1.9
Headache, pain in head S210	10,736	1.5	1.8	1.0
Head cold, upper respiratory infection (coryza) S445	10,160	1.4	1.3	1.5
Fever S010	10,006	1.4	1.2	1.7
Nasal congestion S400	9,872	1.4	1.3	1.5
Chest pain and related symptoms S050	9,535	1.3	1.2	1.5
Hypertension D510	9,503	1.3	1.2	1.5
Knee symptoms S925	8,824	1.2	1.1	1.5
Depression S110	8,758	1.2	1.3	1.0
All other reasons	414,347	57.8	57.0	59.2

¹Based on A Reason for Visit Classification for Ambulatory Care (RVC) (6).

11. It should be noted that in item 11, physicians are instructed to record up to two additional diagnoses, if any (in addition to the principal diagnosis), whether or not they are of direct concern to the current visit. The fact that higher estimates were produced by

item 13 than by item 11 may indicate that chronic conditions are underreported in item 11.

Medication therapy

In item 16, physicians were instructed to record all new or continued

medications ordered, supplied, or administered at the visit, including prescription and nonprescription preparations, immunization and desensitizing agents, and anesthetics. As used in the NAMCS, the term "drug" is interchangeable with the term

Table 11. Number and percent distribution of office visits by tests, surgical and nonsurgical procedures, and therapies ordered or provided, according to patient's sex: United States, 1993

Visit characteristic	Number of visits in thousands	Patient's sex		
		Total	Female	Male
All visits	717,191	100.0	100.0	100.0
Number of services ordered or provided ¹				
None	191,891	26.8	24.0	30.9
1	265,483	37.0	36.4	37.9
2	154,344	21.5	22.7	19.8
3	64,331	9.0	10.1	7.2
4	25,400	3.5	4.2	2.6
5	10,956	1.5	1.8	1.1
6 or more	4,787	0.7	0.8	0.4
Percent distribution				
Selected services ²				
Blood pressure	357,085	49.8	54.3	43.1
Urinalysis	96,674	13.5	15.8	10.0
Spirometry	4,577	0.6	0.6	0.7
Allergy testing	2,140	0.3	0.3	0.3
HIV serology ³	1,825	0.3	0.3	*0.2
Other blood test	114,904	16.0	16.5	15.3

¹Includes the six checkbox categories for selected services and up to eight other services recorded by the physician in the spaces provided on the Patient Record form. These include tests, imaging, surgeries and other procedures, and therapies with the exception of education/counseling and medication.

²Numbers may not add to totals because more than one service may be reported per visit.

³HIV is human immunodeficiency virus.

Table 12. Number and percent of office visits by the 25 write-in diagnostic and therapeutic procedures most often ordered or performed: United States, 1993

Diagnostic and therapeutic procedures ordered or performed and ICD-9-CM code ¹	Number of visits in thousands	Percent of all visits
All visits	717,191	...
Pap smear 91.46	19,613	2.7
Electrocardiogram 89.52	18,539	2.6
Other nonoperative measurements and examinations . . . 89.39	18,268	2.5
Eye examination, not otherwise specified 95.09	17,179	2.4
Routine chest x ray 87.44	14,015	2.0
Other local excision or destruction of lesion or tissue of skin and subcutaneous tissue 86.3	13,881	1.9
Microscopic examination of specimen from ear, nose, throat, and larynx—culture 90.32	12,392	1.7
Other individual psychotherapy 94.39	11,570	1.6
Tonometry 89.11	10,267	1.4
Limited eye examination 95.01	9,659	1.3
Other mammography 87.37	9,363	1.3
Other physical therapy 93.39	7,313	1.0
General physical examination 89.7	6,562	1.0
Gynecological examination 89.26	5,650	0.8
Other diagnostic ultrasound 88.79	4,506	0.6
Audiometry 95.41	4,218	0.6
Diagnostic ultrasound of gravid uterus 88.78	4,198	0.6
Skeletal x ray of wrist and hand 88.23	4,149	0.6
Skeletal x ray of thigh, knee, and lower leg 88.27	3,978	0.6
Skeletal x ray of ankle and foot 88.28	3,881	0.5
Removal of other therapeutic device 97.89	3,355	0.5
Fundus photography 95.11	3,331	0.5
Manual examination of breast 89.36	2,964	0.4
Fetal monitoring, not otherwise specified 75.34	2,943	0.4
X ray, other and unspecified 88.39	2,873	0.4

¹Based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (7).

“medication,” and the term “prescribing” is used broadly to mean ordering or providing any medication, whether prescription or over-the-counter. Visits with one or more drug mentions are termed “drug visits” in the NAMCS. Up to five medications, or drug mentions, were coded per drug visit.

The NAMCS drug data base permits classification by a wide range of variables, including specific product name, generic class, entry form chosen by the physician (that is, brand name, generic name, or the desired therapeutic effect), prescription status (that is, whether the product is prescription or nonprescription), federally controlled substance status, composition status (that is, single or multiple ingredient product), and therapeutic category. A report describing the method and instruments used to collect and process drug information for the NAMCS is available (8).

Data on medication therapy are shown in tables 17–21 and figure 2. Medication therapy was the most commonly mentioned therapeutic service

Table 13. Number and percent of office visits by selected diagnostic and therapeutic procedures: United States, 1993

<i>Selected procedures and ICD-9-CM code¹</i>	<i>Number of visits in thousands</i>	<i>Percent of all visits</i>
All visits	717,191	...
Ophthalmoscopy 16.21	1,690	0.2
Other endoscopy of small intestine 45.13	1,709	0.2
Colonoscopy 45.23	955	0.1
Flexible sigmoidoscopy 45.24	1,446	0.2
Other cystoscopy 57.32	1,730	0.2
Closed biopsy of uterus 68.16	1,259	0.2
Vaginoscopy 70.21	1,057	0.1
Injection of therapeutic substance into joint or ligament 81.92	1,368	0.2
Other incision with drainage of skin and subcutaneous tissue 86.04	1,340	0.2
Biopsy of skin and subcutaneous tissue 86.11	2,687	0.4
Application of other cast 93.53	1,323	0.2
Application of splint 93.54	1,514	0.2
Irrigation of ear 96.52	2,745	0.4

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (7)*.

Table 14. Number and percent distribution of office visits by physician's principal diagnosis: United States, 1993

<i>Principal diagnosis and ICD-9-CM code¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>
All visits	717,191	100.0
Infectious and parasitic diseases 001-139	21,828	3.0
Neoplasms 140-239	21,876	3.1
Endocrine, nutritional and metabolic diseases and immunity disorders 240-279	25,428	3.5
Mental disorders 290-319	33,613	4.7
Diseases of the nervous system and sense organs 320-389	77,737	10.8
Diseases of the circulatory system 390-459	57,564	8.0
Diseases of the respiratory system 460-519	99,114	13.8
Diseases of the digestive system 520-579	27,651	3.9
Diseases of the genitourinary system 580-629	41,281	5.8
Diseases of the skin and subcutaneous tissue 680-709	42,771	6.0
Diseases of the musculoskeletal system and connective tissue 710-739	51,910	7.2
Symptoms, signs, and ill-defined conditions 780-799	32,503	4.5
Injury and poisoning 800-999	46,161	6.4
Supplementary classification V01-V82	112,087	15.6
All other diagnoses ²	8,554	1.2
Unknown ³	17,112	2.4

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (7)*.

²Includes diseases of the blood and blood-forming organs (280-289); complications of pregnancy, childbirth, and the puerperium (630-676); congenital anomalies (740-759); and certain conditions originating in the perinatal period (760-779).

³Includes blank diagnoses, uncodable diagnoses, and illegible diagnoses.

in 1993, reported at 467.3 million office visits or 65.2 percent of the total (table 17).

There were 913.5 million drug mentions at visits to office-based physicians during 1993. This yields an average of 1.3 drug mentions per office visit, or 2.0 drug mentions per drug visit.

Data on number of drug visits and drug mentions by physician specialty are

shown in table 18. Nine of every 10 visits to allergists and immunologists included at least one drug mention, as did 8 of every 10 visits to internists.

Drug mentions are displayed by therapeutic class in figure 2 and table 19. This classification is based on the therapeutic categories used in the *National Drug Code Directory*, 1985 edition (NDC) (9). It should be noted

that some drugs have more than one therapeutic application. In these cases, the drug was listed under the NDC classification that occurred with the greatest frequency.

Cardiovascular-renal drugs (14.0 percent), antimicrobial agents (13.9 percent), and drugs used for pain relief (11.0 percent) were listed most frequently. About one-third (31.6 percent) of all mentions of antimicrobial agents were at visits made by persons under 15 years, and about two-thirds (69.4 percent) of the mentions of immunologic agents were at visits by this age group. Four of every 10 neurologic drug mentions (41.1 percent) occurred at visits by persons 25-44 years.

The 20 most frequently used generic substances for 1993 are shown in table 20. Drug products containing more than one ingredient (combination products) are included in the data for each ingredient. For example, acetaminophen with codeine is included in both the count for acetaminophen and the count for codeine. Amoxicillin was the generic ingredient most frequently used in drugs ordered or provided by the physician at office visits in 1993 (as well as in 1990-92), occurring in 3.9 percent of drug mentions.

Table 21 presents the 20 medications most frequently mentioned by physicians in the NAMCS, according to the entry name of drug. Entry name refers to the actual designation used by the physician on the Patient Record form and may be a trade name, generic name, or simply a desired therapeutic effect. Amoxicillin was the medication most frequently reported by physicians, with 19.2 million mentions (2.1 percent of the total). It was followed by Tylenol, Premarin, Lasix, Amoxil, and Prednisone, each accounting for 1.2 percent of the total. All of these were among the top 10 drug entry names mentioned in 1992.

Counseling and education

Data on counseling and education services ordered or provided at physicians' office visits were collected

Table 15. Number and percent distribution of office visits by the 20 principal diagnoses most frequently rendered by physicians, according to patient's sex: United States, 1993

Principal diagnosis and ICD-9-CM code ¹	Number of visits in thousands	Patient's sex		
		Total	Female	Male
		Percent distribution		
All visits	717,191	100.0	100.0	100.0
Essential hypertension 401	28,124	3.9	3.9	3.9
Normal pregnancy V22	26,489	3.7	6.2	...
Suppurative and unspecified otitis media 382	19,309	2.7	2.0	3.7
General medical examination V70	19,065	2.7	2.4	3.0
Health supervision of infant or child V20	18,508	2.6	2.2	3.2
Acute upper respiratory infections of multiple or unspecified sites 465	17,557	2.4	2.2	2.8
Diabetes mellitus 250	12,997	1.8	1.7	2.0
Chronic sinusitis 473	11,594	1.6	1.8	1.3
Asthma 493	11,340	1.6	1.6	1.5
Bronchitis, not specified as acute or chronic 490	10,093	1.4	1.3	1.5
Allergic rhinitis 477	9,637	1.3	1.4	1.3
Acute pharyngitis 462	9,576	1.3	1.3	1.3
Diseases of sebaceous glands 706	9,193	1.3	1.3	1.3
Neurotic disorders 300	8,532	1.2	1.1	1.3
Other postsurgical states V45	7,880	1.1	1.2	1.0
Affective psychoses 296	7,351	1.0	1.1	0.9
Special investigations and examinations V72	7,111	1.0	1.5	0.3
Contact dermatitis and other eczema 692	6,919	1.0	0.8	1.2
Osteoarthritis and allied disorders 715	6,890	1.0	1.0	0.9
Cataract 366	6,739	0.9	1.0	0.8
All other diagnoses	462,287	64.5	63.0	66.8

¹Based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (7)*.

Table 16. Number and percent of office visits by selected medical conditions, according to patient's age and sex: United States, 1993

Medical condition ¹	Patient's age							Patient's sex	
	All ages, both sexes	Under 15 years	15-24 years	25-44 years	45-64 years	65-74 years	75 years and over	Female	Male
Number of visits in thousands									
All visits	717,191	129,279	62,346	193,914	160,146	93,873	77,633	430,170	287,021
Obesity	62,707	2,286	3,580	16,896	23,508	11,145	5,291	43,171	19,536
Diabetes	40,358	*229	*765	4,692	14,366	12,496	7,810	22,992	17,366
Asthma	35,154	9,098	2,771	8,946	7,214	4,258	2,865	20,634	14,520
Osteoporosis	17,752	*262	*6	*399	2,388	5,931	8,766	15,049	2,703
HIV ²	1,343	...	*120	939	*212	*73	...	*503	840
None of the above	581,632	117,672	55,416	164,986	120,028	67,012	56,518	343,225	238,407
Percent of visits									
All visits . . . . .	...	...	...	...	...	...	...	...	...
Obesity	8.7	1.8	5.7	8.7	14.7	11.9	6.8	10.0	6.8
Diabetes	5.6	*0.2	*1.2	2.4	9.0	13.3	10.1	5.3	6.1
Asthma	4.9	7.0	4.4	4.6	4.5	4.5	3.7	4.8	5.1
Osteoporosis	2.5	*0.2	*0.0	*0.2	1.5	6.3	11.3	3.5	0.9
HIV ²	0.2	...	*0.2	0.5	*0.1	*0.1	...	*0.1	0.3
None of the above	81.1	91.0	88.9	85.1	74.9	71.4	72.8	79.8	83.1

¹Numbers may not add to totals because more than one condition may be reported per visit.

²HIV is human immunodeficiency virus.

in item 15 of the Patient Record form. As shown in table 22, counseling and education services were recorded at about half (48.5 percent) of all office visits during 1993. Exercise

(9.0 percent), weight reduction (5.7 percent), and growth/development (4.2 percent) were mentioned most frequently. One-third of visits (34.2 percent) included "other" counseling

not included in one of the nine checkbox categories.

The counseling and education categories of injury prevention, HIV transmission, and other STD

Table 17. Number and percent distribution of office visits by medication therapy and number of medications provided or prescribed, according to patient's sex: United States, 1993

Visit characteristic	Number of visits in thousands	Patient's sex		
		Total	Female	Male
Percent distribution				
Medication therapy¹				
All visits	717,191	100.0	100.0	100.0
Drug visits ²	467,301	65.2	65.0	65.5
Visits without mention of medication	249,890	34.8	35.0	34.5
Number of medications provided or prescribed by physician				
All visits	717,191	100.0	100.0	100.0
None	249,890	34.8	35.0	34.5
1	226,541	31.6	30.8	32.8
2	124,634	17.4	17.4	17.4
3	56,803	7.9	7.9	7.9
4	29,329	4.1	4.5	3.5
5 or more	29,994	4.2	4.4	3.9

¹Includes prescription drugs, over-the-counter preparations, immunizing agents, and desensitizing agents.²Visits at which one or more drugs were provided or prescribed by the physician.**Table 18. Number and percent distribution of drug visits and drug mentions by physician specialty: United States, 1993**

Physician specialty	Number of drug visits in thousands ¹	Percent distribution	Number of drug mentions in thousands	Percent distribution	Percent of drug visits ²
All specialties	467,301	100.0	913,503	100.0	65.2
General and family practice	147,257	31.5	296,201	32.4	74.5
Internal medicine	81,874	17.5	187,379	20.5	79.9
Pediatrics	54,773	11.7	89,594	9.8	71.2
Obstetrics and gynecology	29,736	6.4	44,818	4.9	46.4
Dermatology	21,255	4.5	38,635	4.2	67.5
Ophthalmology	19,230	4.1	33,686	3.7	48.8
Psychiatry	15,161	3.2	30,379	3.3	74.1
Orthopedic surgery	11,783	2.5	17,656	1.9	35.0
Allergy and immunology ³	9,861	2.1	20,738	2.3	93.0
Cardiovascular diseases	8,614	1.8	24,800	2.7	70.7
Otolaryngology	7,949	1.7	12,945	1.4	51.7
General surgery	7,189	1.5	12,908	1.4	33.1
Urology	6,350	1.4	8,611	0.9	40.5
Neurology	4,953	1.1	9,356	1.0	59.0
Pulmonary diseases ³	3,312	0.7	9,743	1.1	77.9
All other specialties	38,006	8.1	76,054	8.3	60.3

¹Visits at which one or more drugs were provided or prescribed by the physician.²Number of drug visits divided by number of office visits multiplied by 100.³These specialties were sampled separately in 1993 only as part of a supplemental data collection project.

transmission were added to the 1993 Patient Record form. Such services were ordered or provided at 2.6 percent, 1.3 percent, and 1.4 percent of visits, respectively.

Disposition of visit

Two-thirds of office visits (66.7 percent) included a scheduled followup visit or telephone call in 1993.

One-quarter (23.3 percent) of office visits included instructions to return if needed. Less than 1 percent of visits resulted in a hospital admission. Table 23 displays data on disposition of office visits.

Duration of visit

Data on the duration of office visits is presented in table 24. Duration of

visit refers to the amount of time spent in face-to-face contact between the physician and the patient. This time is estimated and recorded by the physician and does not include time spent waiting to see the physician, time spent receiving care from someone other than the physician without the presence of the physician, or time spent by the physician in reviewing patient records

Table 19. Number and percent distribution of drug mentions by patient's age, according to therapeutic classification: United States, 1993

Therapeutic classification ¹	Number of drug mentions in thousands	Total	Patient's age					
			Under 15 years	15-24 years	25-44 years	45-64 years	65-74 years	75 years and over
			Percent distribution					
All drug mentions	913,503	100.0	15.1	6.7	22.8	24.7	15.9	14.9
Cardiovascular-renal drugs	127,549	100.0	*0.7	*0.7	7.7	29.3	28.2	33.4
Antimicrobial agents	127,190	100.0	31.6	10.6	25.7	18.6	8.0	5.6
Drugs used for relief of pain	100,898	100.0	9.0	5.2	29.9	26.6	15.7	13.6
Respiratory tract drugs	87,751	100.0	26.3	8.7	26.6	21.2	10.1	7.2
Hormones and agents affecting hormonal mechanisms	85,421	100.0	4.2	5.2	21.3	36.6	20.1	12.7
Psychopharmacologic drugs	62,592	100.0	5.6	4.9	33.1	31.0	14.5	10.9
Skin/mucous membrane	54,551	100.0	14.5	16.5	29.7	20.9	10.1	8.2
Metabolic and nutrient agents	43,427	100.0	8.3	11.2	25.8	19.5	17.1	18.2
Immunologic agents	39,732	100.0	69.4	2.3	6.2	6.8	7.6	7.7
Gastrointestinal agents	38,658	100.0	4.3	4.3	23.5	28.4	21.4	18.1
Ophthalmic drugs	31,320	100.0	8.9	*3.6	13.9	19.0	23.9	30.6
Neurologic drugs	20,418	100.0	*3.5	*5.0	41.1	27.5	10.9	12.0
Hematologic agents	16,219	100.0	*3.2	12.2	18.6	18.6	20.6	26.7
Other and unclassified ²	77,777	100.0	16.6	7.6	23.8	26.2	13.7	12.0

¹Based on the standard drug classification used in the *National Drug Code Directory*, 1985 edition (NDC) (9).

²Includes anesthetics, antidotes, radiopharmaceuticals/contrast media, oncolytics, otologics, antiparasitics, and unclassified/miscellaneous drugs.

and/or test results. In cases where the patient received care from a member of the physician's staff but did not actually see the physician during the visit, duration was recorded as "0" minutes.

Nearly two-thirds (63.5 percent) of physicians' office visits had a duration of 15 minutes or less in 1993. The mean duration time for all visits was 18.4 minutes. Corresponding numbers for 1992 were 66.6 percent and 17.6 minutes, respectively.

Additional reports utilizing 1993 NAMCS data are forthcoming in the Advance data from Vital and Health Statistics series. Data from the 1993 NAMCS will be available on computer tape and CD-ROM from the National Technical Information Service in early 1996. Questions regarding this report, future reports, or the NAMCS may be directed to the Ambulatory Care Statistics Branch by calling (301) 436-7132.

Table 20. The 20 most frequently occurring generic substances in drug mentions at office visits by number of occurrences and percent of all drug mentions: United States, 1993

Generic substance	Number of occurrences in thousands ¹	Percent of all drug mentions ²
All generic substances	1,080,968	...
Amoxicillin	35,234	3.9
Acetaminophen	34,277	3.8
Hydrochlorothiazide	15,217	1.7
Albuterol	14,943	1.6
Ibuprofen	14,405	1.6
Multivitamins—general	14,064	1.5
Erythromycin	13,459	1.5
Aspirin	13,293	1.5
Phenylephrine	12,568	1.4
Guafenesin	11,727	1.3
Estrogens	11,660	1.3
Furosemide	11,212	1.2
Prednisone	10,833	1.2
Codeine	10,153	1.1
Digoxin	9,964	1.1
Trimethoprim	9,886	1.1
Diltiazem	9,541	1.0
Hydrocortisone	9,516	1.0
Phenylpropanolamine	9,485	1.0
Ranitidine	9,325	1.0

¹Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.

²Based on an estimated 913,503,000 drug mentions in 1993.

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Table 21. Number, percent distribution, and therapeutic classification for the 20 drugs most frequently prescribed at office visits, by entry name of drug: United States, 1993

Entry name of drug ¹	Number of drug mentions in thousands	Percent distribution	Therapeutic classification ²
All drug mentions	913,503	100.0	...
Amoxicillin	19,212	2.1	Penicillins
Tylenol	11,225	1.2	General analgesics
Premarin	10,675	1.2	Estrogens and progestins
Lasix	10,578	1.2	Diuretics
Amoxil	10,569	1.2	Penicillins
Prednisone	10,562	1.2	Adrenal corticosteroids
Zantac	9,303	1.0	Agents used in disorders of upper GI tract
Cardizem	8,977	1.0	Antianginal agents
Allergy relief or shots	8,029	0.9	Diagnostics, nonradioactive and radiopaque
Influenza virus vaccine	7,685	0.8	Vaccines and antisera
Procardia	7,575	0.8	Antianginal agents
Lanoxin	7,177	0.8	Cardiac glycosides
Synthroid	7,169	0.8	Agents used to treat thyroid disease
Vasotec	7,032	0.8	Antihypertensive agents
Diphtheria/Tetanus Toxoids/Pertussis	6,994	0.8	Vaccines and antisera
Ventolin	6,940	0.8	Bronchodilators, antiasthmatics
Prenatal formula (vitamins)	6,902	0.8	Vitamins, minerals
Naprosyn	6,769	0.7	Antiarthritics
Proventil	6,626	0.7	Bronchodilators, antiasthmatics
Prozac	6,462	0.7	Antidepressants
All other	737,042	80.7	...

¹The entry made by the physician on the prescription or other medical records. This may be a trade name, generic name, or desired therapeutic effect.
²Based on the *National Drug Code Directory*, 1985 Edition (NDC) (9). In cases where a drug had more than one therapeutic use, it was listed under the NDC category that occurred with the highest frequency.

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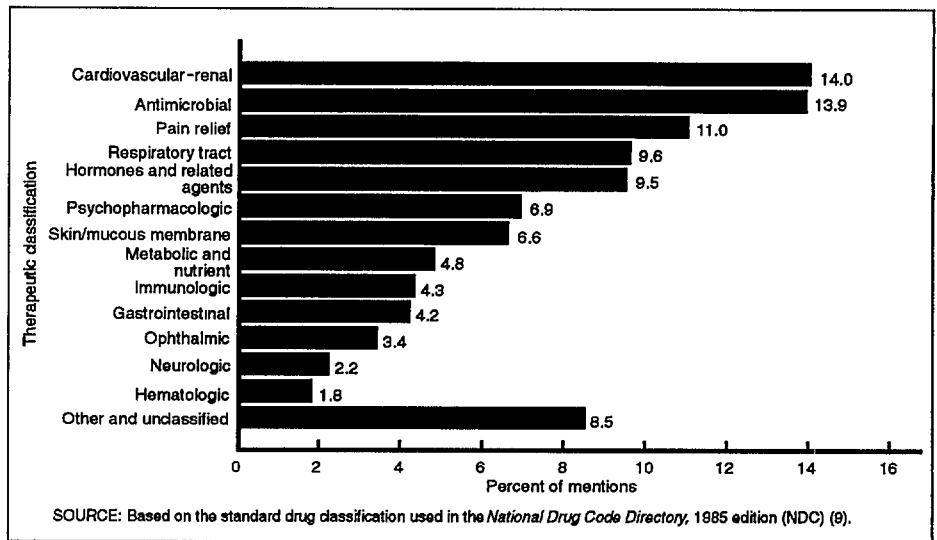


Figure 2. Percent distribution of drug mentions at office visits by therapeutic classification: United States, 1993

Table 22. Number and percent of office visits by counseling/education ordered or provided: United States, 1993

Counseling/education ordered or provided ¹	Number of visits in thousands	Patient's sex		
		Total	Female	Male
		Percent of visits		
All visits	717,191	...	...	...
None	369,494	51.5	50.4	53.2
Exercise	64,257	9.0	8.9	9.0
Weight reduction	40,715	5.7	5.9	5.3
Growth/development	30,255	4.2	4.2	4.3
Cholesterol reduction	27,063	3.8	3.7	3.9
Smoking cessation	22,674	3.2	3.1	3.3
Injury prevention	21,786	3.0	2.6	3.8
STD transmission (except HIV) ^{2,3}	10,216	1.4	1.8	0.9
HIV transmission ³	9,114	1.3	1.5	1.0
Other	245,261	34.2	35.4	32.5

¹Numbers may not add to totals because more than one type of counseling/education may be reported per visit.²STD is sexually transmitted diseases.³HIV is human immunodeficiency virus.**Table 23. Number and percent of office visits by disposition of visit: United States, 1993**

Disposition ¹	Number of visits in thousands	Percent of all visits
All visits	717,191	...
Return at specified time	447,169	62.4
Return if needed	166,947	23.3
No followup planned	61,687	8.6
Telephone followup planned	30,937	4.3
Referred to other physician	26,411	3.7
Admit to hospital	6,022	0.8
Returned to referring physician	8,960	1.2
Other	13,954	1.9

¹Numbers may not add to totals because more than one disposition may be reported per visit.**Table 24. Number and percent distribution of office visits by duration of visit: United States, 1993**

Duration	Number of visits in thousands	Percent distribution
All visits	717,191	100.0
0 minutes ¹	17,484	2.4
1-5 minutes	40,611	5.7
6-10 minutes	177,841	24.8
11-15 minutes	219,418	30.6
16-30 minutes	204,296	28.5
31 minutes and over	57,540	8.0

¹Visits in which there was no face-to-face contact between patient and physician.

Technical notes

Source of data and sample design

The information presented in this report is based on data collected by means of the National Ambulatory Medical Care Survey (NAMCS) from January 4, 1993, through January 2, 1994. The target universe of NAMCS includes office visits made in the United States by ambulatory patients to nonfederally employed physicians who are principally engaged in office practice, but not in the specialties of anesthesiology, pathology, or radiology. Telephone contacts and nonoffice visits are excluded.

A multistage probability sample design is used in NAMCS, involving samples of primary sampling units (PSU's), physician practices within PSU's, and patient visits within physician practices. The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU's in New England). For 1993, a sample of 3,400 nonfederal, office-based physicians was selected from master files maintained by the American Medical Association and American Osteopathic Association. Physicians were screened at the time of the survey to ensure that they were eligible for survey participation. Of those screened, 936 physicians were ruled ineligible (out-of-scope) due to reasons of being retired, employed primarily in teaching, research, or administration, or other reasons. The remaining 2,464 physicians were in-scope, or eligible to participate in the survey. The physician response rate for the 1993 NAMCS was 73.0 percent.

Sample physicians were asked to complete Patient Record forms (figure 1) for a systematic random sample of office visits occurring during a randomly assigned 1-week reporting period. Responding physicians completed 35,978 Patient Record forms.

Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained from the physicians during an induction

interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Survey Section, Research Triangle Park, North Carolina.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The standard error also reflects part of the measurement error, but does not measure any systematic biases in the data. The chances are 95 out of 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error.

The standard errors used in tests of significance for this report were calculated using generalized linear models for predicting the relative standard error for estimates based on the linear relationship between the actual standard error, as approximated using SUDAAN software, and the size of the estimate. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (10). The relative standard error (RSE) of an estimate is obtained by dividing the standard error by the estimate itself. The result is then expressed as a percent of the estimate.

Relative standard errors (RSE's) for estimated numbers of office visits in 1993 are shown in table I; relative standard errors for estimated numbers of drug mentions are presented in table II. Standard errors for estimated percents of visits and drug mentions are displayed in tables III and IV. Multiplying the estimate by the RSE will provide an approximation of the standard error for the estimate.

Alternatively, relative standard errors for aggregate estimates may be calculated using the following general formula, where x is the aggregate of

Table I. Approximate relative standard errors for estimated numbers of office visits: National Ambulatory Medical Care Survey, 1993

<i>Estimated number of office visits in thousands</i>	<i>Relative standard error in percent</i>
100	83.2
200	58.9
500	37.4
781	30.0
1,000	26.6
2,000	19.0
5,000	12.3
10,000	9.1
20,000	7.0
50,000	5.3
100,000	4.6
200,000	4.2
500,000	3.9
1,000,000	3.8

NOTE: The smallest reliable estimate for visits to aggregated specialties is 781,000 visits. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards. Example of use of table: An aggregate estimate of 10 million visits has a relative standard error of 9.1 percent or a standard error of 910,000 visits (9.1 percent of 10 million).

Table II. Approximate relative standard errors for estimated numbers of drug mentions: National Ambulatory Medical Care Survey, 1993

<i>Estimated number of drug mentions in thousands</i>	<i>Relative standard error in percent</i>
100	114.4
200	81.0
500	51.4
1,000	36.5
1,496	30.0
2,000	26.1
5,000	17.0
10,000	12.5
20,000	9.6
50,000	7.3
100,000	6.3
200,000	5.8
500,000	5.4
1,000,000	5.3

NOTE: The smallest reliable estimate of drug mentions for aggregated specialties is 1,496,000 mentions. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards. Example of use of table: An aggregate estimate of 100 million drug mentions has a relative standard error of 6.3 percent or a standard error of 6,300,000 mentions (6.3 percent of 100 million).

interest in thousands, and A and B are the appropriate coefficients from table V.

$$RSE(x) = \sqrt{A + \frac{B}{x}} \cdot 100$$

Similarly, relative standard errors for percents may be calculated using the

Table III. Approximate standard errors of percents of estimated numbers of office visits: National Ambulatory Medical Care Survey, 1993

Base of percent (visits in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
Standard error in percentage points							
100	8.3	18.1	25.0	33.3	38.1	40.7	41.6
200	5.9	12.8	17.6	23.5	27.0	28.8	29.4
500	3.7	8.1	11.2	14.9	17.0	18.2	18.6
1,000	2.6	5.7	7.9	10.5	12.1	12.9	13.2
2,000	1.9	4.1	5.6	7.4	8.5	9.1	9.3
5,000	1.2	2.6	3.5	4.7	5.4	5.8	5.9
10,000	0.8	1.8	2.5	3.3	3.8	4.1	4.2
20,000	0.6	1.3	1.8	2.4	2.7	2.9	2.9
50,000	0.4	0.8	1.1	1.5	1.7	1.8	1.9
100,000	0.3	0.6	0.8	1.1	1.2	1.3	1.3
200,000	0.2	0.4	0.6	0.7	0.9	0.9	0.9
500,000	0.1	0.3	0.4	0.5	0.5	0.6	0.6
1,000,000	0.1	0.2	0.3	0.3	0.4	0.4	0.4

NOTE: Example of use of table: An estimate of 30 percent based on an aggregate estimate of 10 million visits has a standard error of 3.5 percent or a relative standard error of 11.7 percent (3.5 percent divided by 30 percent).

Table IV. Approximate standard errors of percents of estimated numbers of drug mentions: National Ambulatory Medical Care Survey, 1993

Base of percent (visits in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
Standard error in percentage points							
100	11.4	24.9	34.3	45.7	52.4	56.0	57.1
200	8.0	17.6	24.2	32.3	37.0	39.6	40.4
500	5.1	11.1	15.3	20.4	23.4	25.0	25.6
1,000	3.6	7.9	10.8	14.5	16.6	17.7	18.1
2,000	2.5	5.6	7.7	10.2	11.7	12.5	12.8
5,000	1.6	3.5	4.9	6.5	7.4	7.9	8.1
10,000	1.1	2.5	3.4	4.6	5.2	5.6	5.7
20,000	0.8	1.8	2.4	3.2	3.7	4.0	4.0
50,000	0.5	1.1	1.5	2.0	2.3	2.5	2.6
100,000	0.4	0.8	1.1	1.5	1.7	1.8	1.8
200,000	0.3	0.6	0.8	1.0	1.2	1.3	1.3
500,000	0.2	0.4	0.5	0.7	0.7	0.8	0.8
1,000,000	0.1	0.3	0.3	0.5	0.5	0.6	0.6

NOTE: Example of use of table: An estimate of 30 percent based on an aggregate estimate of 100 million drug mentions has a standard error of 1.7 percent or a relative standard error of 5.7 percent (1.7 percent divided by 30 percent).

following general formula, where *p* is the percent of interest expressed as a proportion, and *x* is the denominator of the percent in thousands, using the appropriate coefficient from table V.

$$RSE(x) = \sqrt{\frac{B \cdot (1-p)}{p \cdot x}} \cdot 100$$

Adjustments for nonresponse

Estimates from NAMCS data were adjusted to account for sample physicians who were in-scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates

by imputing to nonresponding physicians data from visits to similar physicians. For this purpose, physicians were judged similar if they had the same specialty designation and practiced in the same PSU.

Test of significance and rounding

In this report, the determination of statistical inference is based on the two-tailed *t*-test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of significance) based on the number of possible comparisons within a particular variable

(or combination of variables) of interest. Terms relating to differences such as “greater than” or “less than” indicate that the difference is statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of office visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not necessarily agree with percents calculated from rounded data.

Table V. Coefficients appropriate for determining relative standard errors by type of estimate and physician specialty: National Ambulatory Medical Care Survey, 1993

Type of estimate and physician specialty	Coefficient for use with estimates in thousands	
	A	B
Visits		
Overall total	0.001402906	69.14991889
General and family practice	0.00967743	82.86427569
Osteopathy	0.009694146	21.982539
Internal medicine	0.009613634	66.93051288
Pediatrics	0.01497736	43.04423624
General surgery	0.004562476	6.18923111
Obstetrics and gynecology	0.01215906	45.17522836
Orthopedic surgery	0.01847372	30.1373659
Cardiovascular diseases	0.01842725	13.33081384
Dermatology	0.01300847	14.22174725
Urology	0.01482425	10.21006093
Psychiatry	0.01111663	8.36850241
Neurology	0.01082749	4.46207203
Ophthalmology	0.01380671	23.79909861
Otolaryngology	0.01594593	7.10113491
Allergy and immunology ¹	0.02015721	3.35915068
Pulmonary diseases ¹	0.01604307	2.76807823
All other specialties	0.01185348	45.14667587
Drug mentions		
Overall total	0.002655818	130.60816
General and family practice	0.01454036	153.42208
Osteopathy	0.01482355	34.91826215
Internal medicine	0.01501777	127.67927
Pediatrics	0.02139038	29.86328192
General surgery	0.02674708	6.25993055
Obstetrics and gynecology	0.02833093	47.78172168
Orthopedic surgery	0.03190595	31.27018391
Cardiovascular diseases	0.02412645	28.653378
Dermatology	0.02064188	14.49471796
Urology	0.03026505	10.1235506
Psychiatry	0.02554631	11.76240189
Neurology	0.01978151	5.29800076
Ophthalmology	0.02642952	39.03224396
Otolaryngology	0.03147744	6.68505135
Allergy and immunology ¹	0.02579988	6.30451913
Pulmonary diseases ¹	0.02283295	5.93833904
All other specialties	0.02135922	59.19073373

¹Physician strata added as a supplement to the 1993 NAMCS only.

Definition of terms

Ambulatory patient—An ambulatory patient is an individual seeking personal health services who is not currently admitted to any health care institution on the premises.

Drug mention—A drug mention is the physician's entry on the Patient Record form of a pharmaceutical agent—by any route of administration—for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included, as are nonprescription and prescription drugs. Along with all new drugs, the physician also records continued medications if the patient was

specifically instructed during the visit to continue the medication. Physicians may report up to five medications per visit.

Drug visit—A drug visit is a visit at which medication was prescribed or provided by the physician.

Office—An office is the space identified by a physician as a location for his or her ambulatory practice. Offices customarily include consultation, examination, or treatment spaces that patients associate with the particular physician.

Physician—A physician is a duly licensed doctor of medicine (M.D.) or doctor of osteopathy (D.O.) who is currently in office-based practice and

who spends some time caring for ambulatory patients. Excluded from the NAMCS are physicians who are hospital based; who specialize in anesthesiology, pathology, or radiology; who are federally employed; who treat only institutionalized patients; or who are employed full time by an institution and spend no time seeing ambulatory patients.

Visit—A visit is a direct personal exchange between an ambulatory patient and a physician or a staff member working under the physician's supervision, for the purpose of seeking care and rendering personal health services. Excluded from the NAMCS are visits where medical care was not provided, such as visits made to drop off specimens, pay bills, make appointments, and walk-outs.

Symbols

- Data not available
 - ... Category not applicable
 - Quantity zero
 - 0.0 Quantity more than zero but less than 0.05
 - Z Quantity more than zero but less than 500 where numbers are rounded to thousands
 - * Figure does not meet standard of reliability or precision
-

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