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Data in this report from health and demographic surveys present statistics by age and other variables on Americans needing help to function at home, hospital use and other health care by adolescents, discharge status of inpatients discharged from hospitals, use of analgesic drugs, and management of new pain. Estimates are based on the civilian noninstitutionalized population of the United States. These reports were originally published in 1983 and 1984.

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An Overview of the 1980 National Master Facility Inventory Survey of Nursing and Related Care Homes

by Al Sirrocco, Division of Health Care Statistics

Introduction

In this report the 1980 National Master Facility Inventory Survey of nursing and related care homes is described. Statistics are presented on the numbers of homes, beds, residents, and employees, along with occupancy and turnover rates. These variables are categorized by such characteristics as ownership groups, bed size groups, and geographic regions. Additional topics covered in this report include survey procedures, problems encountered, editing procedures, and qualifications of the data.

The National Center for Health Statistics (NCHS) first conducted the National Master Facility Inventory (NMFI) Survey in 1963 and continued in 1967, 1969, 1971, 1973, 1976, and 1978. Prior to 1978, the inventory included hospitals, nursing and related care homes, and other types of inpatient health facilities including, for example, homes for the blind, deaf, mentally retarded, and emotionally disturbed.¹ The 1978 and 1980 NMFI surveys have data on only nursing and related care homes. Data for hospitals are now obtained directly from the American Hospital Association (AHA). For convenience, this report will use the terms "nursing and related care homes" and "nursing homes" interchangeably.

The NCHS definition of "nursing homes" has remained the same over the years of the NMFI surveys. The definition states basically that a home must maintain three or more inpatient beds, and, at a minimum, it must provide one or more personal care services (such as help with eating, walking, correspondence, shopping, dressing, bathing, or massage).

While this definition has remained constant, the coverage of the NMFI has not. Due to changes in collection coverage

starting in 1976 (see Technical notes), certain types of facilities have been added and others deleted. The most notable change in coverage for 1980 involved the addition of more than 2,500 adult foster care homes in Michigan and 1,000 newly added residential community care facilities in California. These homes may or may not have been in existence in prior years, but were only recently identified as meeting the minimum definitional requirements of NCHS for inclusion in the NMFI.

One other notable change occurred in the 1980 coverage. All identifiable hospital-based nursing homes and extended care facilities were excluded from the survey. Previous NMFI surveys included many of these; however, the inability to obtain data on all such facilities from all States resulted in the decision to drop them from the survey and use the AHA figures for these facilities.

Therefore, any comparisons made between the 1980 NMFI and prior NMFI's must be done with extreme caution. It is recommended that if comparisons are attempted they should be performed using only the larger homes (25 beds or more) because most of the additions, deletions, and definitional changes that occurred between NMFI surveys were in the smaller homes. In addition, the hospital-based nursing homes should be removed from the earlier counts when comparing those surveys with the 1980 Survey.

Discussion

Facility characteristics

In 1980 the NMFI identified 23,065 nursing homes in the United States. At the time of the survey there were 1,537,338 beds and 1,396,132 residents in these facilities. Included in these figures were 2,524 adult foster care homes (AFCH's) in Michigan that had never been included as part of the NMFI. These facilities had 18,824 beds and 15,709 residents. Excluded from the 1980 NMFI were hospital-based

¹National Center for Health Statistics, G. Strahan: Inpatient health facilities statistics, United States, 1978. *Vital and Health Statistics*. Series 14-No. 24. DHHS Pub. No. (PHS) 81-1819. Office of Health Research, Statistics, and Technology. Washington. U.S. Government Printing Office, Mar. 1981.

Table A. Number and percent distribution of nursing and related care homes and beds by bed size, type of ownership, and geographic region: United States, 1980

Characteristic	Homes		Beds	
	Number	Percent distribution	Number	Percent distribution
All homes	23,065	100.0	1,537,338	100.0
Bed size				
3-9 beds	5,492	23.8	29,238	1.9
10-24 beds	3,006	13.0	47,965	3.1
25-49 beds	3,030	13.1	112,093	7.3
50-74 beds	3,332	14.4	199,673	13.0
75-99 beds	2,375	10.3	208,995	13.6
100-199 beds	4,737	20.5	617,165	40.1
200-299 beds	766	3.3	177,581	11.6
300-499 beds	250	1.1	90,584	5.9
500 beds or more	77	0.3	54,044	3.5
Type of ownership				
Government	936	4.1	126,907	8.3
Proprietary	18,669	80.9	1,072,243	69.7
Nonprofit	3,460	15.0	338,188	22.0
Geographic region				
Northeast	3,762	16.3	322,530	21.0
North Central	8,252	35.8	521,661	33.9
South	5,306	23.0	420,762	27.4
West	5,745	24.9	272,385	17.7

nursing homes and extended care facilities, which, according to AHA, numbered 1,056 facilities and 76,024 beds in 1980.²

Half of all nursing homes had less than 50 beds (table A). Although the largest group (5,492) had less than 10 beds, the next largest group (4,737) had between 100 and 199 beds. By contrast, only 1,093 nursing homes had more than 199 beds. Over 40 percent of all nursing home beds are in homes having 100 to 199 beds.

As expected, the vast majority of nursing homes were operated for profit. Approximately 81 percent of the homes and 70 percent of the beds were proprietary. The average government-operated home, however, was nearly 2½ times bigger than the average for-profit home (table B). Even when Michigan AFCH's were excluded, the government-operated homes were still more than twice the size of the propriety homes. The nonprofit homes, with about a 98-bed average, were half-way between the two other ownership groups.

The North Central Region had by far more nursing homes and beds than any other region. Excluding the Michigan AFCH's the North Central Region would have had the highest average bed size, but when these were included it was a distant third behind the Northeast and South Regions (table B).

The number of nursing home beds per 1,000 population 65 years of age and over are shown by region in figure 1. The North Central Region had the highest such rate at 78.0 with the West a distant second at 63.4. The exclusion of Michigan

Table B. Average bed size of nursing and related care homes by type of ownership and geographic region, including and excluding Michigan's adult foster care homes (AFCH's): United States, 1980

Characteristic	Average bed size of all homes	Average bed size excluding Michigan's AFCH's
	All homes	66.7	73.9
Type of ownership		
Government	135.6	135.6
Proprietary	57.4	65.2
Nonprofit	97.7	97.7
Geographic region		
Northeast	85.7	85.7
North Central	63.2	87.8
South	79.3	79.3
West	47.4	47.4

AFCH's would have little impact on this figure, reducing the rate of the North Central Region to 75.1.

There was moderate fluctuation in nursing home occupancy rates among bed size groups, ownership categories, and geographic regions (table C). A much wider fluctuation in the

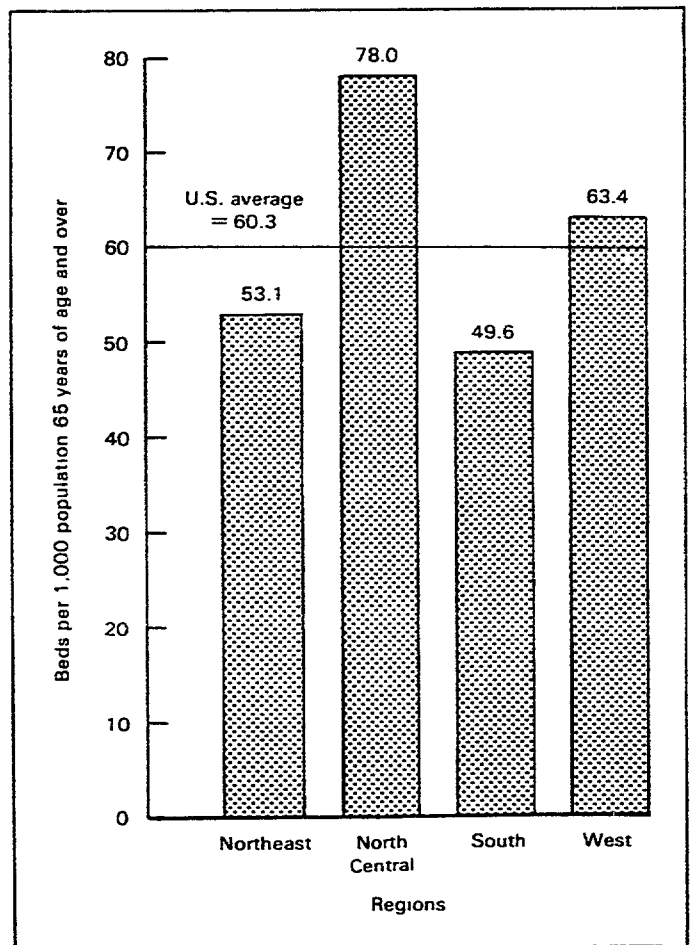


Figure 1. Beds in nursing and related care homes per 1,000 population 65 years of age and over by region: United States, 1980

²American Hospital Association: *Hospital Statistics*. 1981 edition. Data from the AHA 1980 Annual Survey.

Table C. Occupancy rate and number of admissions per 10 beds (turnover rate) for nursing and related care homes, by bed size, type of ownership, and geographic region: United States, 1980

<i>Characteristic</i>	<i>Occupancy rate¹</i>	<i>Number of admissions per 10 beds²</i>
All homes.....	90.8	7.6
Bed size		
3-9 beds.....	84.6	6.0
10-24 beds.....	89.1	5.8
25-49 beds.....	91.8	6.2
50-74 beds.....	92.3	7.1
75-99 beds.....	92.4	8.4
100-199 beds.....	91.1	8.5
200-299 beds.....	89.8	7.9
300-499 beds.....	87.9	5.3
500 beds or more.....	87.1	3.5
Type of ownership		
Government.....	91.3	4.4
Proprietary.....	91.4	8.6
Nonprofit.....	88.8	6.0
Geographic region		
Northeast.....	93.1	6.8
North Central.....	89.7	6.6
South.....	90.2	8.1
West.....	91.1	10.0

¹Number of residents divided by number of beds set up and staffed (expressed as a percent).

²Homes that did not report admissions were excluded—there were 6,648 such homes.

turnover rate (admissions per bed) was found among these three categories. The highest turnover rates among the bed size groups were 8.5 and 8.4 admissions per 10 beds in homes with 100 to 199 beds and 75 to 99 beds, respectively (table C). These rates were quite a bit higher than those for the two smallest bed size groups, and considerably higher than those for the two largest bed size groups.

The turnover rate for proprietary homes was nearly twice the rate for government-operated homes. The West Region had the highest turnover rate with every bed being turned over once during the year (10 admissions per 10 beds).

Employee data

In 1980, an estimated 952,600 full-time equivalent (FTE) employees worked in nursing homes. Of these, approximately 62,200 were registered nurses (RN's) and about 76,700 were licensed practical nurses (LPN's) (table D). Data on the numbers of these employees and their numbers per home and per 100 beds are provided and categorized by bed size, ownership type, and geographic region (table D). The NMFI surveys included in their counts only those nursing home employees who are on the staff payroll; they excluded those employed under contract. Because RN's and LPN's are sometimes employed under contract, they are somewhat undercounted.

As the bed-size groups get larger, the number of FTE employees per home also increases. This is not surprising, because the more beds there are in a home, the more employees are needed to staff them.

Table D. Number of full-time equivalent (FTE) employees in nursing and related care homes that reported full-time employees, number of FTE employees per home, and number of FTE employees per 100 residents, by bed size, type of ownership, and geographic region: United States, 1980

<i>Characteristic</i>	<i>Estimated number of all FTE employees^{1,2}</i>			<i>FTE RN's^{1,3}</i>			<i>FTE LPN's^{1,3}</i>		
	<i>Total</i>	<i>Per home</i>	<i>Per 100 beds</i>	<i>Total</i>	<i>Per home</i>	<i>Per 100 beds</i>	<i>Total</i>	<i>Per home</i>	<i>Per 100 beds</i>
All homes.....	952,600	41.4	62.1	62,200	2.7	4.0	76,700	3.3	5.0
Bed size									
3-9 beds.....	9,900	1.8	33.9	48	0.0	0.2	35	0.0	0.1
10-24 beds.....	24,500	8.2	51.1	900	0.3	1.8	1,300	0.4	2.7
25-49 beds.....	65,000	21.5	58.0	3,800	1.2	3.4	5,200	1.7	4.6
50-74 beds.....	123,200	37.0	61.7	7,100	2.1	3.5	9,900	3.0	5.0
75-99 beds.....	133,900	56.4	64.1	8,500	3.6	4.1	11,500	4.9	5.5
100-199 beds.....	384,300	81.2	62.3	26,800	5.7	4.4	32,500	6.9	5.3
200-299 beds.....	111,900	146.1	63.0	7,900	10.3	4.4	9,300	12.2	5.2
300-499 beds.....	55,900	223.6	61.7	4,100	16.5	4.5	3,800	15.1	4.2
500 beds or more.....	44,000	571.4	81.4	3,100	40.4	5.7	3,200	41.6	5.9
Type of ownership									
Government.....	104,200	111.3	82.1	6,500	7.0	5.1	8,600	9.2	6.8
Proprietary.....	623,200	33.4	58.1	39,400	2.1	3.7	52,400	2.8	4.9
Nonprofit.....	225,200	65.1	66.6	16,200	4.7	4.8	15,700	4.5	4.6
Geographic region									
Northeast.....	230,100	61.2	71.3	22,600	6.0	7.0	18,500	4.9	5.7
North Central.....	306,300	37.1	58.7	18,500	2.2	3.5	21,600	2.6	4.1
South.....	252,700	47.6	60.1	11,100	2.1	2.6	25,700	4.8	6.1
West.....	163,500	28.5	60.0	10,000	1.7	3.7	10,900	1.9	4.0

¹FTE = full-time equivalents = full-time employees + ½ part-time employees.

²See Technical notes for explanation of estimation procedures.

³FTE RN's and LPN's were actual counts but have been rounded to nearest hundred except when total was less than 100.

When the rates per 100 beds for all employees are compared by bed-size groups, a somewhat different picture appears. Whereas the largest group (500 beds or more) has a rate almost 2½ times as large as the smallest group (3 to 9 beds), the six bed-size groups starting with 25 beds and ending with 499 beds have relatively small variations in rates.

The rates per 100 beds for both RN's and LPN's had similar patterns. Their most substantial increases occurred from the first (smallest) bed-size group to the second, from the second to the third, and from the next-to-the-largest bed-size group to the largest.

In terms of ownership, the government-operated homes had the highest rates for both FTE employees per home and FTE employees per 100 beds. This was true for RN's and LPN's as well as for total employees.

These high rates can be understood by reviewing data presented earlier. Specifically, the government-operated homes averaged nearly 136 beds per home—far more than the other two ownership types. Because large nursing homes have more total employees, RN's, and LPN's than do small homes, the government-operated homes would be expected to have the highest employee-per-home rates. Conversely, because proprietary homes tend to be small and because smaller homes have fewer employees, the proprietary homes had very low rates of FTE employees per home. The government homes also had the highest rates of FTE employees per 100 beds for all three employee groups. Proprietary homes had the lowest rates for all employees and for RN's, but for LPN's the rate was slightly higher than the rate for nonprofit homes.

At the regional level, the Northeast had substantially higher FTE employee-per-bed rates than the other regions for all employees and for RN's. The Northeast was second to the South, however, in FTE LPN's per bed.

Although the Northeast had fewer nursing homes than any other region, it had the highest number of FTE RN's—more than the South and West Regions combined. This is dramatically shown where the number of FTE RN's per home is 6.0 in the Northeast but only 2.2 or less in the other three regions (table D).

A possible explanation for this could be in the types and sizes of the nursing homes within regions. The certification data collected in the survey were incomplete (see Technical notes), but according to the information that was available the Northeast had many more large skilled nursing facilities (SNF's) than the South and West Regions did. In SNF homes with 200 or more beds, the Northeast had 295, compared with the South's 113 and the West's 64. Of the SNF homes with 500 beds or more, the Northeast had 37, the South 4, and the West none.

Because SNF's are required to (1) provide skilled nursing care and (2) maintain 24-hour coverage by RN's, they would be expected to have more RN's than noncertified homes. Results from the 1977 National Nursing Home Survey tended to substantiate this with the finding that of the 66,900 estimated FTE RN's employed in nursing homes at that time, 53,000 (79 percent) were in homes classified as SNF's.³ The Northeast, with many more large SNF's, could therefore be expected to have many more RN's also.

³National Center for Health Statistics, A. Sirrocco: Employees in nursing homes in the United States, 1977 National Nursing Home Survey, *Vital and Health Statistics*, Series 14-No. 25, DHHS Pub. No. (PHS) 81-1820, Office of Health Research, Statistics, and Technology, Washington, U.S. Government Printing Office, Feb. 1981.

Technical notes

Although the 1980 National Master Facility Inventory (NMFI) Survey was a universe rather than a sample survey and, as such, is not subject to sampling error, it is subject to other types of errors. One type of error was questionnaire-item nonresponse.

All the NMFI Surveys (of nonhospitals) through 1973 were conducted directly by the National Center for Health Statistics (NCHS) with the assistance of the U.S. Bureau of the Census. From 1976 through 1980 the Cooperative Health Statistics System (CHSS) was active. This system decentralized the responsibility for collecting data from the Federal to the State level. In 1976, 16 States within CHSS collected some or all the NMFI data. In 1978 there were 26 States, and in 1980 there were 38 States collecting NMFI data. In each of these years NCHS surveyed in the non-CHSS States.

The agency within the CHSS States that collected the NMFI data for NCHS was usually the licensing agency. Because their surveys are tied into licensing laws, there were differences in definitions, scope, and timing of the surveys among the CHSS States. However, NCHS included personal care homes, homes for the aged, rest homes, and the like, some States did not license these types of homes and did not survey them.

Data on nursing and related care homes may have biases due to the following:

- Data from nursing homes surveyed in the 1978 NMFI were substituted in 1980 for Alaska and South Dakota.
- 1978 data were substituted for 48 nursing homes in Indiana and 96 homes in Connecticut.
- Because neither 1980 nor 1978 data were available for approximately 200 residential care homes in New York, these homes were excluded from the figures in this report.
- Number of beds and type of ownership were the only data reported by the 3,013 residential community care facilities in California. The number of residents was imputed by multiplying beds by 0.90—the average occupancy rate in nursing and related care homes. Admissions, discharges, inpatient days of care, and employees were not imputed; therefore, these homes were not included in tables showing these variables.
- The only information available for the 2,524 Michigan adult foster care homes (AFCH's) was number of beds. The number of residents was imputed by multiplying beds by 0.90. Based on existing knowledge of the AFCH's, these homes were assigned an ownership category of proprietary. No other data were imputed, so these homes were excluded from tables showing any variables other than beds, residents, and ownership.
- Estimates were obtained for full-time equivalent (FTE) total employees in the 5,888 homes for which data on full-time total employees were not provided by the home. To get these estimates, full-time employee averages were computed for each bed-size and ownership group in the 17,177 homes that did report full-time employees. These averages were then applied to the 5,888 homes with corresponding bed-size and ownership groups, and the resulting estimates were added to the known FTE data in the 17,177 homes.

Americans Needing Help To Function at Home

by Barbara A. Feller, M.A., Division of Health Interview Statistics

Introduction

Recently, the perspective in long-term care has broadened to include personal care needs of American adults who are able to live in the community despite chronic disability. Long-term care can now take place in different settings that provide varied services. Home health care, adult day care, and other ways of providing care for people with chronic disabilities are developing in some communities. The focus of this report is on the types of home care services adults with chronic health problems need to continue to live in the community.

This report presents selected data from the Home Care Supplement to the 1979 National Health Interview Survey. This survey is a cross-sectional nationwide survey by household interview of the civilian noninstitutionalized population of the United States. The population estimates for this report are based on the 1970 decennial census population projected to 1980, and therefore are slightly lower than if the population had been based on the 1980 Decennial Census. The Bureau of the Census documents¹ the percent error of closure between the 1980 Census and preliminary estimates of the population of the United States for April 1, 1980, by age, race, and sex.

Estimates of how many people in the community need help and what types of help they need are presented by age and sex for selected activities. The question of how many people need help because of a chronic health problem is crucial for estimating the size of the target population for home care, and the question of what types of help they need is essential for appropriate delivery of health care services. Examples of specific items presented include selected basic physical activities and home management activities. The number of adults who need and/or receive help in at least one of the selected activities

and the number of adults who need or receive help in each type of activity are discussed.

In addition, estimates of the number of people who usually stay in bed all or most of the time, the number who experience problems controlling bowel movements or urination, the number who need or receive the help of another person, and the number of people who need and/or receive selected nursing or medical treatment at home and the types of care received are also discussed. For each item, estimates of the number of adults and rate per 1,000 persons are presented in tables 1-11.

Data highlights

According to data on the civilian noninstitutionalized population from the National Health Interview Survey (NHIS), in 1979

- An estimated 3.4 million adults needed or received help from another person or by using special equipment in at least one of the following basic physical activities: walking, going outside, bathing, dressing, using the toilet, getting in or out of a bed or chair, or eating.
- An estimated 4.1 million adults needed or received the help of another person in at least one of the following selected home management activities: shopping, household chores, preparing meals, or handling money.
- Overall, about 4.9 million adults living in the community needed the help of another person in carrying out everyday activities.
- A substantial number (about 2 million) were under 65 years of age, with the majority (2.8 million) 65 years of age and over.
- The need for the help of another person increases sharply with age, especially among the elderly. Fewer than 1 in 10 who are 65-74 years of age needed help, compared with 4 in 10 who are 85 years of age or over (table 1).

¹U.S. Bureau of the Census: Preliminary estimates of the population of the United States, by age, sex, and race: 1970 to 1981. *Current Population Reports*. Series P-25, No. 917. Washington. U.S. Government Printing Office, 1982.

Table 1. Rate per 1,000 adults who need assistance, by type of need and age: United States, 1979

Type of need	65-74	75-84	85 years
	years	years	and over
	Rate per 1,000 persons		
Needs help in 1 or more basic physical activities	52.6	114.0	348.4
Needs help in 1 or more home management activities	57.3	141.8	399.0
Usually stays in bed	11.3	25.6	51.2
Has device to control bowel movements or urination	5.3	10.8	28.5
Needs help of another person in one or more of the above	69.9	160.3	436.5

or receive the help of another person because of a chronic health problem, and anyone who needed help even though it was unknown whether a person or equipment was needed. Also included was anyone for whom it was reported that he or she "doesn't do" any one of the seven activities because of a chronic health problem.

In 1979, 3.4 million adults living in the community needed or received help in at least one of these activities, representing a rate of 22.5 per 1,000 adults for all ages combined (tables 2 and 3). This estimate is an unduplicated person count because it shows how many adults needed or received help in at least one of the seven activities.

The rate of needing help in at least one basic physical activity was substantially higher among persons in the older age categories. About 5.1 per 1,000 people 18-44 years of age needed help, compared with the rate of 20.6 per 1,000 people 45-64 years of age, 52.6 per 1,000 people 65-74 years of age, and 157.0 per 1,000 people 75 years of age and over (table 3). The rate for people 85 years of age and over (348.4 per 1,000) was markedly higher than that for people 75-84 years of age (114.0 per 1,000).

Although the number of women 75 years of age and over needing help was twice that of men the same age, the differ-

Basic physical activities

In this report, basic physical activities include walking, going outside, bathing, dressing, using the toilet, getting in or out of a bed or a chair, or eating. The category "needing or receiving help" includes anyone who was reported, during the household interview, to use special equipment and/or to need

Table 2. Number of adults who need help in basic physical activities because of a chronic health problem by type of activity, sex, and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex and age	All adults	Needs help in 1 or more basic activities	Walking	Going outside	Bathing	Dressing	Using the toilet	Getting in or out of bed or chair	Eating
			Number in thousands						
Both sexes									
Total	153,178	3,444	2,470	2,095	1,390	1,090	835	749	303
18-44 years	86,378	443	313	221	151	155	117	114	51
45-64 years	43,457	895	597	444	319	314	189	210	79
45-54 years	22,744	302	203	151	90	131	64	85	*22
55-64 years	20,713	593	394	293	230	183	125	125	57
65-74 years	14,929	785	585	510	305	215	173	135	58
75 years and over	8,414	1,321	975	920	615	406	356	290	116
75-84 years	6,869	783	574	505	348	226	195	177	58
85 years and over	1,544	538	401	415	267	180	162	112	58
Male									
Total	72,224	1,409	1,044	730	573	455	327	283	143
18-44 years	41,834	238	180	97	81	74	61	48	*24
45-64 years	20,773	424	319	193	145	146	91	98	48
45-54 years	10,991	150	118	75	42	61	*32	37	*9
55-64 years	9,782	274	201	119	103	85	59	60	39
65-74 years	6,494	321	245	182	148	93	78	52	*34
75 years and over	3,122	425	300	257	198	141	96	86	37
75-84 years	2,586	263	190	136	118	81	57	52	*19
85 years and over	537	162	110	121	80	60	39	*34	*18
Female									
Total	80,954	2,035	1,426	1,365	818	635	508	465	160
18-44 years	44,544	205	134	124	70	80	56	66	*26
45-64 years	22,684	471	277	250	174	168	98	113	*31
45-54 years	11,752	152	85	76	47	70	*32	48	*13
55-64 years	10,931	320	192	174	127	98	66	65	*18
65-74 years	8,435	464	339	327	157	122	95	83	*24
75 years and over	5,291	895	676	663	417	265	260	204	79
75-84 years	4,283	520	384	369	230	146	137	125	39
85 years and over	1,008	375	292	295	187	119	123	79	40

Table 3. Rate per 1,000 adults who need help in basic physical activities because of a chronic health problem by type of activity, sex, and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex and age	Needs help in 1 or more basic activities	Rate per 1,000 persons						
		Walking	Going outside	Bathing	Dressing	Using the toilet	Getting in or out of bed or chair	Eating
Both sexes								
Total.....	22.5	16.1	13.7	9.1	7.1	5.5	4.9	2.0
18-44 years.....	5.1	3.6	2.6	1.7	1.8	1.4	1.3	0.6
45-64 years.....	20.6	13.7	10.2	7.3	7.2	4.3	4.8	1.8
45-54 years.....	13.3	8.9	6.6	4.0	5.8	2.8	3.7	*1.0
55-64 years.....	28.6	19.0	14.1	11.1	8.8	6.0	6.0	2.8
65-74 years.....	52.6	39.2	34.2	20.4	14.4	11.6	9.0	3.9
75 years and over.....	157.0	115.9	109.3	73.1	48.3	42.3	34.5	13.8
75-84 years.....	114.0	83.6	73.5	50.7	32.9	28.4	25.8	8.4
85 years and over.....	348.4	259.7	268.8	172.9	116.6	104.9	72.5	37.6
Male								
Total.....	19.5	14.5	10.1	7.9	6.3	4.5	3.9	2.0
18-44 years.....	5.7	4.3	2.3	1.9	1.8	1.5	1.1	*0.6
45-64 years.....	20.4	15.4	9.3	7.0	7.0	4.4	4.7	2.3
45-54 years.....	13.6	10.7	6.8	3.8	5.5	*2.9	3.4	*0.8
55-64 years.....	28.0	20.5	12.2	10.5	8.7	6.0	6.1	4.0
65-74 years.....	49.4	37.7	28.0	22.8	14.3	12.0	8.0	*5.2
75 years and over.....	136.1	96.1	82.3	63.4	45.2	30.7	27.5	11.9
75-84 years.....	101.7	73.5	52.6	45.6	31.3	22.0	20.1	*7.3
85 years and over.....	301.7	204.8	225.3	149.0	111.7	72.6	*63.3	*33.5
Female								
Total.....	25.1	17.6	16.9	10.1	7.8	6.3	5.7	2.0
18-44 years.....	4.6	3.0	2.8	1.6	1.8	1.3	1.5	*0.6
45-64 years.....	20.8	12.2	11.0	7.7	7.4	4.3	5.0	*1.4
45-54 years.....	12.9	7.2	6.5	4.0	6.0	*2.7	4.1	*1.1
55-64 years.....	29.3	17.6	15.9	11.6	9.0	6.0	5.9	*1.6
65-74 years.....	55.0	40.2	38.8	18.6	14.5	11.3	9.8	*2.8
75 years and over.....	169.2	127.8	125.3	78.8	50.1	49.1	38.6	14.9
75-84 years.....	121.4	89.7	86.2	53.7	34.1	32.0	29.2	9.1
85 years and over.....	372.0	289.7	292.7	185.5	118.1	122.0	78.4	39.7

ence in the rate per 1,000 was not statistically significant (169.2 and 136.1, respectively) (table 3).

Health planners and service providers also need estimates of how many people need help in each particular type of activity. Such counts are duplicative in that a person may need help in more than one activity. Each of the seven activities is shown in tables 2 and 3 in descending order of the size of the estimate. An estimated 2.5 million people needed help with walking; 2.1 million with going outside; 1.4 million with bathing; 1.1 million with dressing; 835,000 with using the toilet; 749,000 with getting in or out of a bed or a chair; and 303,000 with eating (table 2).

For each type of activity, the rates increased with increased age. For example, the rate per 1,000 people needing help to walk was 3.6 per 1,000 people 18-44 years of age compared with 13.7 for those 45-64 years of age, 39.2 for those 65-74 years of age, 83.6 for those 75-84 years of age, and 259.7 for those 85 years of age and over (table 3). The rates for people needing help to bathe ranged from 1.7 per 1,000 people 18-44 years of age to 172.9 per 1,000 for those 85 years of age and over. A large difference occurred in the rate for people 75 years of age and over who needed help to eat; 8.4 for people 75-84 years of age compared with 37.6 for those 85 years of age and over (table 3).

Although the number of women 75 years of age and over who needed help in each type of activity was larger than that of men, the differences between the rates per 1,000 people were generally not statistically significant by sex. In general, few statistically significant sex differences occurred in the rate per 1,000 adults who needed help in each type of activity.

Home management activities

Selected home management activities include shopping for personal items, doing routine household chores, preparing meals, or handling their own money. In tables 4 and 5, an unduplicated person count of all adults is shown; the summary by type of activity shows a duplicative count since a person is included in as many types of activities in which help is needed. The sum of the four types in the summary section is greater than the 4.1 million unduplicated count of adults who need help in one or more of the selected activities.

In 1979, 4.1 million noninstitutionalized adults needed or received help from another person in at least one of these selected home management activities (tables 4 and 5). The rate per 1,000 adults needing this help rose with age, 6.1 for people 18-

Table 4. Number of adults who need or receive help in home management activities because of a chronic health problem, by selected combinations of activities and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

Selected combination of activities	All adults	Age							
		18-44 years	45-64 years	45-54 years	55-64 years	65-74 years	75 years and over	75-84 years	85 years and over
Number in thousands									
Total adult population.....	153,178	86,378	43,457	22,744	20,713	14,929	8,414	6,869	1,544
All adults needing help ¹	4,052	525	1,080	419	661	856	1,591	974	616
Shopping only.....	615	42	122	38	84	166	286	176	110
Chores only.....	577	72	247	100	147	134	124	83	41
Handling money only.....	95	51	*23	*17	*6	*6	*16	*16	-
Meals only.....	73	*13	*24	*6	*18	*19	*17	*7	*9
Shopping and chores.....	525	41	141	57	84	114	229	162	67
Other combinations of 2 activities.....	297	67	78	37	40	47	106	72	*33
Meals, shopping, and chores.....	628	55	199	63	136	155	219	126	94
Other combinations of 3 activities.....	227	38	35	*15	*20	48	106	58	48
Meals and shopping and chores and handling money.....	908	117	182	71	111	154	455	247	208
Unknown type.....	106	*31	*29	*14	*15	*13	*33	*28	*6
No help reported needed.....	149,126	85,853	42,377	22,325	20,052	14,073	6,823	5,895	928
Summary by type of activity ²									
Any mention of shopping.....	3,054	333	709	261	448	651	1,361	814	548
Any mention of chores.....	2,888	312	832	318	514	615	1,128	675	453
Any mention of handling money.....	1,369	250	270	118	152	227	622	351	271
Any mention of meals.....	1,890	242	473	171	302	378	796	449	347

¹This is an unduplicated person count.²This is a duplicative count in that a person is included in as many types of activities in which help is needed.**Table 5. Rate per 1,000 persons who need or receive help in home management activities because of a chronic health problem, by selected combinations of activities and age: United States, 1979**

[Data are based on household interviews of the civilian noninstitutionalized population]

Selected combination of activities	All adults	Age							
		18-44 years	45-64 years	45-54 years	55-64 years	65-74 years	75 years and over	75-84 years	85 years and over
Rate per 1,000 persons									
All adults needing help ¹	26.5	6.1	24.9	18.4	31.9	57.3	189.1	141.8	399.0
Shopping only.....	4.0	0.5	2.8	1.7	4.1	11.1	34.0	25.6	71.2
Chores only.....	3.8	0.8	5.7	4.4	7.1	9.0	14.7	12.1	26.6
Handling money only.....	0.6	0.6	*0.5	*0.7	*0.3	*0.4	*1.9	*2.3	-
Meals only.....	0.5	*0.2	*0.6	*0.3	*0.9	*1.3	*2.0	*1.0	*5.8
Shopping and chores.....	3.4	0.5	3.2	2.5	4.1	7.6	27.2	23.6	43.4
Other combinations of 2 activities.....	1.9	0.8	1.8	1.6	1.9	3.1	12.6	10.5	*21.4
Meals and shopping and chores.....	4.1	0.6	4.6	2.8	6.6	10.4	26.0	18.3	60.9
Other combinations of 3 activities.....	1.5	0.4	0.8	*0.7	*1.0	3.2	12.6	8.4	31.1
Meals and shopping and chores and handling money.....	5.9	1.4	4.2	3.1	5.4	10.3	54.1	36.0	134.7
Unknown type.....	0.7	*0.4	*0.7	*0.6	*0.7	*0.9	*3.9	*4.1	*3.9
No help reported needed.....	973.5	993.9	975.1	981.6	968.1	942.7	810.9	858.2	601.0
Summary by type of activity ²									
Any mention of shopping.....	19.9	3.9	16.3	11.5	21.6	43.6	161.8	118.5	354.9
Any mention of chores.....	18.9	3.6	19.1	14.0	24.8	41.2	134.1	98.3	293.4
Any mention of handling money.....	8.9	2.9	6.2	5.2	7.3	15.2	73.9	51.1	175.5
Any mention of meals.....	12.3	2.8	10.9	7.5	14.6	25.3	94.6	65.4	224.7

¹These rates are based on an unduplicated person count.²These rates are based on a duplicative count in that a person is included in as many types of activities in which help is needed.

44 years of age, 24.9 for those 45–64 years of age, 57.3 for those 65–74 years of age, and 189.1 for those 75 years of age or over (table 5). The rates for people 75–84 years of age and for those 85 years of age and over also differ significantly (141.8 and 399.0 per 1,000, respectively).

Unduplicated counts of people needing help in selected, frequently occurring, combinations of home management activities were also identified. With increased age, there was a substantial increase in the rates for people needing the help of another person in the following selected combinations of activities: shopping only; chores only; meals, shopping, and chores; and meals, shopping, chores, and handling money.

In tables 4 and 5, the “summary by type of activity” category shows duplicative counts in each of the four activities. A person is included in as many activities as he or she needs help in.

For each type of activity, the likelihood of needing help increases with age. A marked increase occurs between the two oldest age categories.

Some patterns emerge for the elderly when the “summary by type of activity” is examined (tables 4 and 5). For example, people 65–74 years of age are more likely to need help with shopping or chores (43.6 and 41.2 per 1,000, respectively) than with meals (25.3 per 1,000) or money (15.2 per 1,000) (table 5). Furthermore, the likelihood of their needing help with meals (25.3 per 1,000) exceeds that of needing help with handling money (15.2 per 1,000).

People 75 years of age and over are somewhat more likely to need help shopping (161.8 per 1,000) than to need help with chores (134.1 per 1,000). Also, the need for help with shopping or chores exceeds that for either meals or money (94.6 and 73.9 per 1,000, respectively) (table 5). This pattern also generally holds for people 75–84 years of age and 85 years of age and over.

Adults usually staying in bed

An estimated 848,000 people living outside of an institution were reported as usually staying in bed all or most of the time because of a chronic health problem (table 6). The rate is generally higher among older age categories, ranging from 1.4 per 1,000 people 18–44 years of age to 51.2 for those 85 years of age and over (table 6). A sharp increase occurred between 65–74 years of age (11.3 per 1,000) and 75 years of age and over (30.4 per 1,000). In general, no statistically significant difference was found between males and females in the rates per 1,000 adults who usually stay in bed all or most of the time.

Adults with bowel or urinary trouble

An estimated 1.5 million noninstitutionalized adults had a device to control bowel movements or urination or had other trouble controlling bowel movement or urination (table 7). First, a question was asked to ascertain whether a person had a de-

Table 6. Number of adults and rate per 1,000 who usually stay in bed all or most of the time because of a chronic health problem, by sex and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex and age	Total adults	Adults who usually stay in bed	Adults who usually stay in bed
	Number in thousands		Rate per 1,000 persons
Both sexes			
Total	153,178	848	5.5
18–44 years	86,378	118	1.4
45–64 years	43,457	306	7.0
45–54 years	22,744	141	6.2
55–64 years	20,713	165	8.0
65–74 years	14,929	169	11.3
75 years and over	8,414	256	30.4
75–84 years	6,869	176	25.6
85 years and over	1,544	79	51.2
Male			
Total	72,224	399	5.5
18–44 years	41,834	66	1.6
45–64 years	20,773	165	7.9
45–54 years	10,991	76	6.9
55–64 years	9,782	88	9.0
65–74 years	6,494	77	11.9
75 years and over	3,122	91	29.1
75–84 years	2,586	58	22.4
85 years and over	537	*33	*61.5
Female			
Total	80,954	450	5.6
18–44 years	44,544	52	1.2
45–64 years	22,684	142	6.3
45–54 years	11,752	65	5.5
55–64 years	10,931	77	7.0
65–74 years	8,435	92	10.9
75 years and over	5,291	165	31.2
75–84 years	4,283	118	27.6
85 years and over	1,008	46	45.6

vice. People who did not have a device were asked whether they had any other trouble controlling bowel movements or urination. About 10.1 per 1,000 adults had such problems; 7.9 per 1,000 had other trouble and 2.2 per 1,000 had a device to control bowel movement or urination (table 8).

The rates per 1,000 people who had a device to control bowel movement or urination or other trouble controlling bowel movement or urination increased with age. For example, 1.9 per 1,000 people 45–64 years of age, 5.3 per 1,000 people 65–74 years of age, and 13.9 per 1,000 people 75 years of age and over had a device to control bowel movements or urination (table 8). In addition, the rates for those who had other trouble controlling bowel movement or urination were 7.5 per 1,000 people 45–64 years of age, 17.3 per 1,000 people 65–74 years of age, and 46.7 per 1,000 people 75 years of age and over.

Generally, for most age categories under 75 years of age, females reported higher rates of other trouble controlling bowel movements or urination than males did.

Table 7. Number of adults who have device to control bowel movement or urination, and number who have other trouble controlling bowel movement or urination, by sex and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>All adults</i>	<i>Has device or other trouble controlling bowel or bladder</i>	<i>Has device to control bowel or bladder</i>	<i>Has other trouble controlling bowel or bladder</i>
Both sexes				
		Number in thousands		
Total	153,178	1,543	335	1,208
18-44 years	86,378	284	55	229
45-64 years	43,457	412	84	328
45-54 years	22,744	149	*33	116
55-64 years	20,713	263	50	212
65-74 years	14,929	338	79	258
75 years and over.....	8,414	510	117	393
75-84 years	6,869	337	74	264
85 years and over.....	1,544	172	44	129
Male				
Total	72,224	534	176	357
18-44 years	41,834	89	*24	65
45-64 years	20,773	158	62	97
45-54 years	10,991	73	*30	44
55-64 years	9,782	85	*32	53
65-74 years	6,494	95	38	57
75 years and over.....	3,122	191	52	139
75-84 years	2,586	127	35	92
85 years and over.....	537	63	*17	47
Female				
Total	80,954	1,009	159	850
18-44 years	44,544	194	*31	164
45-64 years	22,684	253	*22	231
45-54 years	11,752	76	*4	72
55-64 years	10,931	178	*18	159
65-74 years	8,435	243	41	202
75 years and over.....	5,291	319	65	254
75-84 years	4,283	210	38	172
85 years and over.....	1,008	109	*27	82

Adults needing the help of another person

The following items were used in the Home Care Supplement to define people who needed the help of another person² in selected essential activities due to a chronic health problem:

- Need or receive the help of another person³ in one or more of the following seven activities: walking, going outside, bathing, dressing, using the toilet, getting in or out of a bed or a chair, or eating;
- "Doesn't do" one or more of the seven activities listed above (these people were assumed to need the help of another person);
- Need or receive the help of another person in one or more of the following four activities: shopping for personal items,

doing routine household chores, preparing their own meals, or handling their own money;

- Usually stays in bed all or most of the time (these people were assumed to need the help of another person);
- Need or receive the help of another person with a device to control bowel movement or urination.

An estimated 4.9 million adults 18 years of age and over living in the community needed the help of another person in these selected activities in 1979 (table 9). The rate per 1,000 people was substantially higher among older adults than among young ones. The rates of adults who needed the help of another person were 7.8 per 1,000 people 18-44 years of age, 31.2 for those 45-64 years of age, 69.9 for those 65-74 years of age, and 211.0 for those 75 years of age and over (table 9). The rates for people 75-84 years of age and those 85 years of age and over also differ significantly (160.3 per 1,000 and 436.5 per 1,000, respectively).

In general the rates for women 45 years of age and over were significantly higher than those for men. For example, 237.2 per 1,000 women 75 years of age and over needed help, compared with 166.6 per 1,000 men 75 years of age and over (table 9).

²These criteria also define the Individual Home Care population for whom additional information was obtained on who provided the help and how often the help was provided.

³People reported to have functional disability who use special equipment only or people for whom it is unknown whether they use special equipment or need the help of another person are not included. They are included in tables 2 and 3.

Table 8. Rate per 1,000 persons who have device to control bowel movement or urination and number who have other trouble controlling bowel movement or urination, by sex and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex and age	Has device or other trouble controlling bowel or bladder	Has device to control bowel or bladder	Has other trouble controlling bowel or bladder
Both sexes			
Rate per 1,000 persons			
Total.....	10.1	2.2	7.9
18-44 years.....	3.3	0.6	2.7
45-64 years.....	9.5	1.9	7.5
45-54 years.....	6.6	*1.5	5.1
55-64 years.....	12.7	2.4	10.2
65-74 years.....	22.6	5.3	17.3
75 years and over.....	60.6	13.9	46.7
75-84 years.....	49.1	10.8	38.4
85 years and over.....	111.4	28.5	83.5
Male			
Total.....	7.4	2.4	4.9
18-44 years.....	2.1	*0.6	1.6
45-64 years.....	7.6	3.0	4.7
45-54 years.....	6.6	*2.7	4.0
55-64 years.....	8.7	*3.3	5.4
65-74 years.....	14.6	5.9	8.8
75 years and over.....	61.2	16.7	44.5
75-84 years.....	49.1	13.5	35.6
85 years and over.....	117.3	*31.7	87.5
Female			
Total.....	12.5	2.0	10.5
18-44 years.....	4.4	*0.7	3.7
45-64 years.....	11.2	*1.0	10.2
45-54 years.....	6.5	*0.3	6.1
55-64 years.....	16.3	*1.6	14.5
65-74 years.....	28.8	4.9	23.9
75 years and over.....	60.3	12.3	48.0
75-84 years.....	49.0	8.9	40.2
85 years and over.....	108.1	*26.8	81.3

Table 9. Number of adults and rate per 1,000 who need the help of another person in one or more selected activities, by sex and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex and age	All adults	Needs help of another	
	Number in thousands	Rate per 1,000 persons	
Both sexes			
Total.....	153,178	4,851	31.7
18-44 years.....	86,378	676	7.8
45-64 years.....	43,457	1,357	31.2
45-54 years.....	22,744	526	23.1
55-64 years.....	20,713	832	40.2
65-74 years.....	14,929	1,043	69.9
75 years and over.....	8,414	1,775	211.0
75-84 years.....	6,869	1,101	160.3
85 years and over.....	1,544	674	436.5
Male			
Total.....	72,224	1,741	24.1
18-44 years.....	41,834	303	7.2
45-64 years.....	20,773	559	26.9
45-54 years.....	10,991	223	20.3
55-64 years.....	9,782	336	34.3
65-74 years.....	6,494	359	55.3
75 years and over.....	3,122	520	166.6
75-84 years.....	2,586	330	127.6
85 years and over.....	537	190	353.8
Female			
Total.....	80,954	3,110	38.4
18-44 years.....	44,544	373	8.4
45-64 years.....	22,684	798	35.2
45-54 years.....	11,752	303	25.8
55-64 years.....	10,931	495	45.3
65-74 years.....	8,435	684	81.1
75 years and over.....	5,291	1,255	237.2
75-84 years.....	4,283	771	180.0
85 years and over.....	1,008	483	479.2

¹A person is considered as needing the help of another person if at least one of the following items was reported as applicable because of a chronic health problem: (A) Needs or receives the help of another person in performing one or more of the following 7 activities—walking, going outside, bathing, dressing, eating, using the toilet, or getting in or out of bed or chair; (people who need special equipment only and people for whom it was *unknown* whether they needed special equipment or the help of another person were *not* included); (B) "Doesn't do" one or more of the 7 activities listed above; (C) Needs or receives the help of another person in one or more of these 4 activities—preparing own meals, shopping for personal items, doing routine chores, or handling own money; (D) Usually stays in bed all or most of the time; (E) Needs the help of another person in taking care of a device to control bowel movement or urination.

Adults receiving nursing or medical care

Each person was also asked about the following four types of nursing or medical treatment received at home: injections, physical therapy, changing bandages, and "other." Approximately 1.3 million people received at least one of these specified types of medical or nursing treatments at home (table 10). The rate per 1,000 people ranged from 3.3 for people 18-44 years of age to 88.7 for those 85 years of age and over (table 11). The difference in rates was not significant by sex, although for each sex the rates rose with age for most of the categories.

Injection was the type of treatment received by most of the

people. The rate for people receiving injections ranged from 2.1 per 1,000 people 18-44 years of age to 33.7 per 1,000 people 85 years of age and over (table 11). Marked increases occurred between 65-74 years of age, 75-84 years of age, and 85 years of age and over. In general, rates for males receiving injections at home were not significantly different from those for females.

Table 10. Number of adults who receive selected services, by type of services, sex, and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>All adults</i>	<i>Type of nursing or medical care received</i>				
		<i>1 or more treatments</i>	<i>Injections</i>	<i>Physical therapy</i>	<i>Changing bandages</i>	<i>Other</i>
Both sexes		Number in thousands				
Total	153,178	1,309	791	200	128	347
18-44 years.....	86,378	283	184	52	*26	38
45-64 years.....	43,457	407	286	51	38	59
45-54 years.....	22,744	198	155	*13	*23	*18
55-64 years.....	20,713	210	131	37	*15	41
65-74 years.....	14,929	221	130	*33	*14	79
75 years and over	8,414	398	192	64	50	171
75-84 years.....	6,869	261	140	42	35	100
85 years and over	1,544	137	52	*22	*15	72
Male						
Total	72,224	544	337	74	57	121
18-44 years.....	41,834	121	76	*28	*11	*13
45-64 years.....	20,773	201	137	*16	*26	*29
45-54 years.....	10,991	91	70	*2	*15	*8
55-64 years.....	9,782	110	68	*13	*11	*21
65-74 years.....	6,494	90	61	*8	*11	*27
75 years and over	3,122	132	63	*22	*8	52
75-84 years.....	2,586	80	38	*15	*3	*33
85 years and over	537	52	*25	*7	*6	*19
Female						
Total	80,954	765	454	127	71	226
18-44 years.....	44,544	162	107	*24	*14	*25
45-64 years.....	22,684	207	148	35	*11	*30
45-54 years.....	11,752	107	85	*11	*8	*10
55-64 years.....	10,931	100	63	*24	*3	*20
65-74 years.....	8,435	131	70	*25	*3	52
75 years and over	5,291	266	129	42	42	119
75-84 years.....	4,283	181	101	*27	*32	66
85 years and over	1,008	85	*27	*15	*10	53

Table 11. Rate per 1,000 persons who receive selected services, by type of services, sex, and age: United States, 1979

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Type of nursing or medical care received</i>				
	<i>1 or more treatments</i>	<i>Injections</i>	<i>Physical therapy</i>	<i>Changing bandages</i>	<i>Other</i>
Both sexes					
Rate per 1,000 persons					
Total	8.5	5.2	1.3	0.8	2.3
18-44 years	3.3	2.1	0.6	*0.3	0.4
45-64 years	9.4	6.6	1.2	0.9	1.4
45-54 years	8.7	6.8	*0.6	*1.0	*0.8
55-64 years	10.1	6.3	1.8	*0.7	2.0
65-74 years	14.8	8.7	*2.2	*0.9	5.3
75 years and over	47.3	22.8	7.6	5.9	20.3
75-84 years	38.0	20.4	6.1	5.1	14.6
85 years and over	88.7	33.7	*14.2	*9.7	46.6
Male					
Total	7.5	4.7	1.0	0.8	1.7
18-44 years	2.9	1.8	*0.7	*0.3	*0.3
45-64 years	9.7	6.6	*0.8	*1.3	*1.4
45-54 years	8.3	6.4	*0.2	*1.4	*0.7
55-64 years	11.2	7.0	*1.3	*1.1	*2.1
65-74 years	13.9	9.4	*1.2	*1.7	*4.2
75 years and over	42.3	20.2	*7.0	*2.6	16.7
75-84 years	30.9	14.7	*5.8	*1.2	*12.8
85 years and over	96.8	*46.6	*13.0	*11.2	*35.4
Female					
Total	9.4	5.6	1.6	0.9	2.8
18-44 years	3.6	2.4	*0.5	*0.3	*0.6
45-64 years	9.1	6.5	1.5	*0.5	*1.3
45-54 years	9.1	7.2	*0.9	*0.7	*0.9
55-64 years	9.1	5.8	*2.2	*0.3	*1.8
65-74 years	15.5	8.3	*3.0	*0.4	6.2
75 years and over	50.3	24.4	7.9	7.9	22.5
75-84 years	42.3	23.6	*6.3	*7.5	15.4
85 years and over	84.3	*26.8	*14.9	*9.9	52.6

Technical notes

Source and limitations of data

The National Health Interview Survey (NHIS) is a cross-sectional, nationwide survey conducted by household interview. A probability sample of households is interviewed each week by trained personnel of the U.S. Bureau of the Census to obtain information on the health and other characteristics of each member of the household in the civilian noninstitutionalized population.

During the 52 weeks in 1979, the sample consisted of approximately 42,000 households including about 111,000 people living at the time of the interview. The total noninterview rate was about 3.9 percent—2.2 percent of which was due to respondent refusal and the remainder primarily due to an inability to locate an eligible respondent at home after repeated calls. A description of the survey design, methods used in estimation, and general qualifications of the NHIS data is provided in *Current Estimates from the National Health Interview Survey: United States, 1979*.⁴

The estimates shown in this report are based on a sample of the civilian noninstitutionalized population rather than on the entire population. Therefore, they are subject to sampling error. Some tables in this report contain cells in which the estimate is small for a given characteristic. When an estimate or the numerator or denominator of a rate is small, the sampling error may be relatively high. Approximate relative sampling errors for estimates in this report are shown in tables I and II. Detailed information on reliability of estimates is available in the appendix of another publication.⁴

For comparative statements in this report, terms such as “similar” and “the same” mean that no statistically significant difference exists between the statistics being compared. Terms relating to differences, such as “greater,” and “less,” indicate that the differences are statistically significant. A critical value

Table II. Standard errors, expressed in percentage points of rates per 1,000 persons

Base of rates per 1,000 in thousands	Estimated rates per 1,000				
	20	50	100	200	500
	or 980	or 950	or 900	or 800	
100.....	25	39	54	72	90
300.....	15	23	31	42	52
500.....	11	18	24	32	40
1,000.....	8	12	17	23	29
5,000.....	4	6	8	10	13
10,000.....	3	4	5	7	9
20,000.....	2	3	4	5	6
30,000.....	1	2	3	4	5
150,000.....	1	1	1	2	2

of 1.96 (0.05 level of significance) was used to test all comparisons that are discussed. Lack of comment regarding the differences between any two statistics does not mean that the difference was tested and found to be not significant.

Definitions of terms

The Home Care Supplement to the 1979 NHIS obtained information on the need for assistance in selected functional activities, condition causing the need for assistance, and bowel and urinary trouble. In addition, for people needing the help of another person, information was obtained on who provided the help and how often the help was provided. A copy of the complete supplement is provided in Series 10-No. 136.⁴

Although specific definitions were not given to the respondents for the Home Care Supplement, interviewers were provided with the following guidelines⁵ regarding some terminology.

Doing household chores refers to routine chores such as washing dishes, doing laundry, dusting, or sweeping. Heavier or more difficult jobs, such as washing windows or walls or making repairs to the house, are not included.

Shopping does not include persons who need help getting to the store, but once there can shop without assistance.

Handling money includes paying bills, cashing checks, managing accounts, and related activities.

Receiving or needing help requires physical assistance to perform one or more of seven selected activities. This includes such help as support from another person, someone to wash the back or turn on the shower, or being fed. It also includes people who are able to perform the activity without help but must be supervised; for example, someone must be present in case the person falls while bathing.

⁴National Center for Health Statistics, S. Jack and P. Ries: Current Estimates from the National Health Interview Survey, United States, 1979. *Vital and Health Statistics*. Series 10-No. 136. DHHS Pub. No. (PHS) 81-1564. Public Health Service. Washington. U.S. Government Printing Office. Apr. 1981.

Table I. Standard errors of estimates of aggregates

Size of estimate in thousands	Standard error in thousands
35.....	11
100.....	18
300.....	31
500.....	40
1,000.....	57
5,000.....	125
10,000.....	174
20,000.....	237
30,000.....	278
150,000.....	393

⁵U.S. Department of Commerce, Bureau of the Census, Acting as a collecting agent for U.S. Public Health Service: Health Interview Survey Interviewer's Manual. HIS-100 (1979).

Using special equipment includes use of equipment or devices used specifically to aid in a particular activity such as a cane, a walker, or a special spoon or fork. Includes devices installed to aid in the activity, such as rails along the bathtub or toilet, ramps, or elevators.

Using the toilet in the bathroom includes adjusting clothes and cleaning oneself after using the toilet.

Bathing includes getting or turning on the water for a bath, shower, or sponge bath; getting to, in, and out of a tub or a shower, and if used, washing and drying oneself.

Dressing includes putting on braces, getting clothes from closets and drawers, putting them on, fastening buttons, zippers, snaps, or other closures. However, it does not include the occasional need to have someone help with a zipper or other closures that a normally healthy person would have difficulty doing.

Eating includes getting the food from the plate into the mouth, but does not include cutting or otherwise preparing the food.

Getting in and out of bed or chairs includes wheelchairs.

Accidents or trouble controlling bowel or urination includes accidentally wetting or soiling one's self, but does not include occasional slight "leaking." Also, people are considered as having "accidents or trouble controlling" if they must always have enemas because they are unable to empty their bowels.

Colostomy and urinary catheter are surgical openings and/or devices used to aid in urination or bowel movements when the person has lost natural control of these functions through illness, disability, surgery, or other causes.

Receives or needs help from another person in taking care of the device includes personal assistance or supervision in operating or cleaning the device, or in emptying the bags.

Chronic conditions, disability, or health problem includes a condition that is described by the respondent as having first been noticed more than 3 months before the week of the interview, or one of the conditions always classified in the NHIS as chronic regardless of onset. A list of these conditions is provided in another publication.⁴ Only people with a chronic condition, disability, or health problem were included. Those with acute conditions were excluded from the data base. However, for anyone found to have an unknown type of condition causing the need for help, the NHIS concept of major limitation of activity due to a chronic condition or impairment was used to indirectly determine chronic limitation. Major activity limitation is defined in another report.⁶

⁶National Center for Health Statistics, B. A. Feller: Health characteristics of persons with chronic activity limitation, United States, 1979. *Vital and Health Statistics*. Series 10-No. 137. DHHS Pub. No. 82-1565. Public Health Service. Dec. 1981.

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 standards of reliability or precision
 - # Figure suppressed to comply with confidentiality requirements
-

Utilization of Short-Stay Hospitals by Adolescents: United States, 1980

by Edmund J. Graves, Division of Health Care Statistics

Introduction

Estimates of the characteristics and diagnostic conditions of patients 12–19 years of age discharged from non-Federal short-stay hospitals during 1980 are presented in this report. The statistics in this report are based on data collected through the National Hospital Discharge Survey, a continuous voluntary survey conducted by the National Center for Health Statistics since 1965. Approximately 224,000 medical records from 420 participating hospitals were included in the 1980 survey.

A brief description of the sample design, source of data, and definition of terms used can be found in the technical notes. A description of the design of this survey was published in 1977.¹

Although previous reports have included data by the four major age groups (less than 15 years, 15–44 years, 45–64 years, and 65 years and over), this report includes data only for adolescents 12–19 years of age. It provides national estimates on the use of non-Federal short-stay hospitals by this group during 1980. Data are summarized by selected demographic characteristics of patients discharged and conditions diagnosed. Types of hospital utilization shown are frequencies, rates, percent distribution of discharges and average length of stay. The estimates are presented by age, sex, geographic region, and expected source of payment.

Conditions diagnosed are coded by the *International Classification of Diseases, 9th Revision, Clinical Modification*²

¹National Center for Health Statistics, W. R. Simmons: Development of the design of the NCHS Hospital Discharge Survey, *Vital and Health Statistics*. PHS No. 1000-Series 2-No. 39. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1970.

²National Center for Health Statistics: *International Classification of Diseases, 9th Revision, Clinical Modification*. DHHS Pub. No. (PHS) 80-1260. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1980.

(ICD-9-CM) and are presented by the chapters of the ICD-9-CM and for selected conditions based on this coding scheme.

Highlights

Highlights of hospital utilization among adolescents are shown below.

- Adolescents 12–19 years of age comprised approximately 14 percent of the United States civilian population but only about 7 percent of the discharges from non-Federal short-stay hospitals.
- Of the 2.8 million adolescents discharged, 36 percent were male and 64 percent were female.
- Private insurance was expected to be the principal payor for over 60 percent of all hospitalizations for adolescents and Medicaid was expected to be the principal payor for under 20 percent.
- Obstetrical deliveries accounted for about one third of female discharges for adolescents.
- Injury and poisoning accounted for about one third of male discharges for adolescents.

Utilization

Selected measures of hospital utilization by sex for adolescents are shown in table 1. During 1980, 2.8 million adolescents 12–19 years of age were discharged from short-stay hospitals. This was about 7 percent of the 38.5 million patients (excluding newborn infants) discharged from short-stay hospitals. Of the 2.8 million adolescent discharges, 1.0 million (36 percent) were male and 1.8 million (64 percent) were female. The rate for males was 628 per 10,000 population and for females it was 1,167 per 10,000 population. Thus, the rate for females was 86 percent higher than the rate for males. The number and rate of discharges are higher for females than for males because a large number of teenage women were hospitalized for deliv-

Table 1. Number, percent distribution, rate, and average length of stay for adolescents discharged from short-stay non-Federal hospitals by age of patient, according to sex: United States, 1980

Sex	Age								
	Total	12 years	13 years	14 years	15 years	16 years	17 years	18 years	19 years
Number of discharges in thousands									
Both sexes.....	2,837	149	167	212	290	378	475	555	610
Male.....	1,008	85	80	99	121	138	159	168	158
Female.....	1,829	64	87	113	170	240	316	386	452
Female (excluding obstetrical conditions).....	1,059	63	83	95	130	157	167	180	185
Percent distribution									
Both sexes.....	100.0	5.3	5.9	7.5	10.2	13.3	16.8	19.5	21.5
Male.....	100.0	8.4	7.9	9.9	12.0	13.7	15.8	16.7	15.7
Female.....	100.0	3.5	4.8	6.2	9.3	13.1	17.3	21.1	24.7
Female (excluding obstetrical conditions).....	100.0	6.0	7.8	9.0	12.2	14.8	15.7	17.0	17.4
Rate per 10,000 population									
Both sexes.....	894.6	423.4	462.2	566.7	727.5	905.4	1,131.5	1,334.9	1,420.0
Male.....	628.3	471.6	432.7	519.7	592.3	648.2	746.5	812.0	747.3
Female.....	1,167.3	373.2	492.9	615.6	868.2	1,173.2	1,526.6	1,856.0	2,072.4
Female (excluding obstetrical conditions).....	675.9	366.6	467.4	518.8	662.3	767.1	804.0	866.1	846.1
Average length of stay									
Both sexes.....	4.7	5.2	4.7	5.2	4.9	4.9	4.8	4.6	4.4
Male.....	5.4	4.9	4.5	4.7	4.8	5.8	6.1	5.6	6.0
Female.....	4.4	5.7	4.8	5.8	5.0	4.4	4.1	4.1	3.8
Female (excluding obstetrical conditions).....	5.0	5.7	4.9	5.4	5.3	5.0	5.0	5.0	4.6

eries and other obstetrical conditions. Excluding this category, the rate for female discharges was 676 per 10,000 population which was not significantly different from the rate for males.

Approximately three-fifths of all adolescent discharges occurred among 17–19 year olds, while only one fifth of all adolescent discharges occurred among 12–14 year olds. Nearly three-quarters of the 17–19 year olds discharged were female while only about half of the 12–14 year olds were female.

Annual rates of discharges per 10,000 population for adolescents increased consistently with increased age. The rate increased from 423 for 12 year olds to 1,402 for 19 year olds—an overall increase of 235 percent. With the exception of males 13 and 19 years old, the annual rates of discharges for males and females followed the same pattern as the annual rates of discharges for all adolescents. The rate for males increased from 433 for 13 year olds to 812 for 18 year olds—an overall increase of 88 percent. For females, the increase was from 373 for 12 year olds to 2,072 for 19 year olds—an overall increase of 455 percent. Annual rates of discharges for females, excluding deliveries and obstetrical conditions, were similar to the change in discharge rates for males—increasing from 367 for 12 year olds to 846 for 19 year olds—an overall increase of 131 percent.

The average length of stay for adolescents 12–19 years of age was 4.7 days. For males it was 5.4 days and for females it was 4.4 days. However, if females with deliveries and other obstetrical conditions are excluded, the differences in the average length of stay between sexes was not significant—5.4 for males and 5.0 for females.

In 1980, discharges from short-stay hospitals by geographic region for adolescents was higher in the South 987,000

(35 percent) and North Central 857,000 (30 percent) regions and lower in the Northeast 546,000 (19 percent) and West 446,000 (16 percent) (table 2). These figures are consistent with the distribution of discharges of all ages—34 percent for the South, 29 percent for North Central, 21 percent for the Northeast and 16 percent for the West.

Average lengths of stay in days for adolescents by geographic region were 4.2 days in the West, 4.3 days in the South, 5.0 days in the Northeast, and 5.3 days in the North Central. For adolescents, hospitalization was longest in the North Central and Northeast Regions and shortest in the South and West Regions. Average length of stay for all patients showed a slightly different pattern. For all patients the highest length of stay was 8.5 days for patients in the Northeast while the lowest length of stay was 6.1 days for patients in the South.

Of the 2.8 million adolescents discharged from non-Federal short-stay hospitals in the United States during 1980,

Table 2. Number, percent distribution, and average length of stay for adolescents discharged from short-stay non-Federal hospitals, by geographic region: United States, 1980

Region	Number of discharges (in thousands)	Percent distribution	Average length of stay in days
All regions.....	2,837	100.0	4.7
Northeast.....	546	19.2	5.0
North Central...	857	30.2	5.3
South.....	987	34.8	4.3
West.....	447	15.8	4.2

private insurance was the principal expected source of payment for 63 percent of the discharges, Medicaid for 17 percent and self (family) payment for 11 percent (table 3). However, only 36 percent of female adolescents admitted for delivery expected private insurance to pay for their bill and 30 percent expected to be covered by Medicaid (table 4).

There were no significant differences in the average length of stay for adolescents by specific age and source of payment. The average length of stay for all adolescents was 4.7 days. The average length of stay for patients using private insurance was 4.9 days, for those citing Medicaid as a source of payment it was 4.5 days, for those paying their own bills it was 3.9 days, and for those using other sources of payment, it was 5.3 days.

As shown in table 5, 2.2 million (78 percent) of the adolescents discharged from short-stay hospitals were never married while 0.4 million (16 percent) were currently married. Of those adolescents that were married, 94 percent were female. This is to be expected since many female adolescents are hospitalized for deliveries or other pregnancy-related conditions. Of the 582,000 deliveries, 279,000 (48 percent) were to never-married women and 272,000 (47 percent) were to currently married women. The remaining 30,000 (5 percent) were separated or divorced women or women whose marital status was not stated. Also of significance is that single females comprised 66,000 (73 percent) of the 91,000 abortions performed on adolescents in hospitals.

Number, rate, and average length of stay for adolescents by diagnostic classes and related diagnoses are given in table 6. Supplementary classification (which includes females with deliveries), injuries and poisons, and diseases of the digestive system, accounted for about 50 percent of all adolescent discharges.

Table 4. Number and percent distribution of female adolescents with deliveries discharged from short-stay non-Federal hospitals, by principal expected source of payment: United States, 1980

<i>Expected source of payment</i>	<i>Number</i>	<i>Percent distribution</i>
Total.....	582	100.0
Private insurance.....	211	36.2
Medicaid.....	174	30.0
Self pay.....	127	21.8
Other sources.....	70	12.1

For females, deliveries was the leading diagnostic condition and accounted for 582,000 (32 percent) of female adolescent discharges. Abortion with 91,000 discharges (5 percent) and complications mainly related to pregnancy with 83,000 discharges (5 percent) were also leading diagnostic conditions for adolescent females. A leading diagnostic condition for female adolescents not connected with the genitourinary-reproductive system was chronic disease of the tonsils and adenoids with 76,000 discharges (2 percent).

For males, fractures was the leading diagnostic condition and accounted for 105,000 (10 percent) of male adolescent discharges. Lacerations and open wounds, with 47,000 discharges (5 percent), and appendicitis and other diseases of the appendix, with 46,000 discharges (5 percent), were also leading diagnostic conditions for adolescent males.

The average length of stay for adolescent patient discharges from short-stay hospitals during 1980 was 4.7 days (table 6). This was significantly less than the average of 7.3 days for all patients discharged from these hospitals during 1980. Teenagers with mental disorders had the longest lengths of stay—

Table 3. Number, percent distribution, and average length of stay for adolescents discharged from short-stay non-Federal hospitals by age of patient, according to principal expected source of payment: United States, 1980

<i>Source of payment</i>	<i>Age</i>								
	<i>All ages</i>	<i>12 years</i>	<i>13 years</i>	<i>14 years</i>	<i>15 years</i>	<i>16 years</i>	<i>17 years</i>	<i>18 years</i>	<i>19 years</i>
Number of discharges in thousands									
Total.....	2,837	149	167	212	290	378	475	555	610
Private insurance.....	1,793	107	121	151	196	251	307	322	338
Medicaid.....	483	25	26	35	48	57	81	100	110
Self pay.....	308	8	7	14	23	36	53	76	91
All other sources.....	253	9	13	12	23	33	35	56	70
Percent distribution									
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Private insurance.....	63.2	71.3	72.3	71.1	67.6	66.6	64.6	58.0	55.5
Medicaid.....	17.0	16.9	15.6	16.6	16.5	15.2	17.1	18.1	18.1
Self pay.....	10.9	5.5	4.1	6.4	8.0	9.5	11.0	13.7	15.0
All other sources.....	8.9	6.3	8.0	5.9	8.0	8.7	7.3	10.1	11.5
Average length of stay									
Total.....	4.7	5.2	4.7	5.2	4.9	4.9	4.8	4.6	4.4
Private insurance.....	4.9	5.1	4.9	5.5	4.7	5.2	5.0	4.5	4.3
Medicaid.....	4.5	6.5	3.7	4.5	4.9	4.4	4.3	4.2	4.4
Self pay.....	3.9	4.3	4.2	3.8	4.3	3.4	3.9	4.0	3.9
All other sources.....	5.3	4.3	4.7	5.3	5.1	5.0	5.0	6.3	5.2

Table 5. Number and percent distribution of adolescents discharged from short-stay non-Federal hospitals, by marital status: United States, 1980

<i>Marital status</i>	<i>Number of discharges in thousands</i>			<i>Percent distribution</i>		
	<i>Both sexes</i>	<i>Male</i>	<i>Female</i>	<i>Both sexes</i>	<i>Male</i>	<i>Female</i>
Total	2,837	1,008	1,829	100.0	100.0	100.0
Currently married	440	27	414	15.5	2.7	22.6
Never married	2,222	926	1,297	78.3	91.8	70.9
Other and not stated	175	56	119	6.2	5.5	6.5

16.4 days for all mental disorders and 24.0 days for psychosis. The average length of stay (16.4 days) for all mental disorders was over twice as long as any other ICD-9-CM chapter total for adolescents and was significantly longer than the average length of stay of 13.5 days for patients of all ages with mental

disorders. It should be noted that the chapter mental disorders includes diagnoses of drug and alcohol dependence as well as other psychotic and neurotic disorders. By selected conditions, other long stays were noted for malignant neoplasms (7.5 days) and fractures (7.0 days).

Table 6. Number, rate, and average length of stay for adolescent discharges, by diagnoses and sex: United States, 1980

[Discharges from short-stay non-Federal hospitals. Diagnostic groupings and code numbers form the *International Classification of Diseases, 9th Revision, Clinical Modification*]

Diagnosis and ICD-9-CM code ¹	Total			Male			Female		
	Number of discharges in thousands	Rate per 10,000 population	Average length of stay	Number of discharges in thousands	Rate per 10,000 population	Average length of stay	Number of discharges in thousands	Rate per 10,000 population	Average length of stay
All conditions	2,837	1,008	1,829	894.6	628.3	1,167.3	4.7	5.4	4.4
Infectious and parasitic diseases	74	32	42	23.3	19.9	26.8	4.3	4.3	4.3
Viral diseases	41	18	24	13.0	11.0	15.1	4.3	4.1	4.4
Other infectious and parasitic diseases	32	14	18	10.2	8.9	11.6	4.3	4.5	4.1
Neoplasms	46	17	29	14.6	10.8	18.5	4.8	6.6	3.7
Malignant neoplasms	18	9	9	5.7	5.6	5.7	7.5	9.6	5.4
Benign neoplasms, carcinoma in situ and neoplasms of uncertain behavior	28	8	20	8.9	5.1	12.8	3.1	3.3	3.0
Endocrine, nutritional and metabolic diseases and immunity disorders	54	21	33	17.0	13.3	20.8	6.1	5.7	6.5
Diabetes mellitus	32	13	18	10.0	8.3	11.8	6.2	5.3	6.9
Diseases of the blood and blood forming organs	41	21	20	13.0	13.2	12.7	3.5	3.3	3.7
Mental disorders	122	57	65	38.5	35.8	41.3	16.4	17.1	15.7
Psychosis	24	13	11	7.6	8.4	6.8	24.0	20.6	28.2
Disease of the nervous system and sense organs	82	44	38	25.8	27.3	24.3	5.4	6.1	4.7
Diseases of the circulatory system	28	14	14	8.9	8.7	9.2	6.7	6.8	6.6
Diseases of the respiratory system	258	107	151	81.3	66.7	96.3	3.5	4.0	3.1
Chronic disease of the tonsils and adnoids	105	29	76	33.1	17.8	48.7	2.0	2.1	2.0
Pneumonia, all forms	26	15	11	8.1	9.0	7.0	5.7	5.9	5.5
Asthma	32	17	15	10.2	10.7	9.7	4.7	5.0	4.3
Diseases of the digestive system	320	147	173	100.8	91.6	110.2	3.9	4.0	3.7
Disturbance of tooth eruption	49	17	32	15.6	10.8	20.5	1.9	2.0	1.8
Appendicitis and other diseases of the appendix	92	46	46	29.0	28.7	29.2	4.5	4.6	4.4
Inguinal hernia	21	18	2	6.5	11.4	1.5	3.3	3.4	2.6
Non-infectious enteritis and colitis	54	25	29	16.9	15.3	18.6	3.7	3.5	3.8
Diseases of the genitourinary system	196	43	153	61.7	26.8	97.4	4.1	3.8	4.2
Inflammatory disease of female pelvic organs	46	...	46	14.6	...	29.6	4.8	...	4.8
Disorders of menstruation	56	...	56	17.6	...	35.7	3.3	...	3.3
Complications of pregnancy, childbirth, and the puerperium	188	...	188	59.2	...	119.9	2.5	...	2.5
Abortion	91	...	91	28.6	...	57.9	1.8	...	1.8
Complications mainly related to pregnancy	83	...	83	26.2	...	53.1	3.1	...	3.1
Diseases of the skin and subcutaneous tissue	63	35	28	19.8	21.9	17.7	4.8	5.6	3.9
Diseases of the musculoskeletal system and connective tissue	143	72	71	45.1	44.8	45.4	5.2	4.8	5.5
Disorders of bone and cartilage	29	20	9	9.2	12.7	5.6	6.6	6.2	7.6
Congenital anomalies	35	17	18	11.1	10.6	11.5	6.8	6.9	6.7
Certain conditions originating in the perinatal period	*0	*0	...	*0.1	*0.2	...	*9.0	*9.0	...
Symptoms, signs and ill-defined conditions	65	28	37	20.4	17.4	23.6	3.5	3.3	3.7
Injury and poisoning	490	331	159	154.6	206.6	101.4	5.2	5.1	5.6
Fractures	145	105	41	45.9	65.1	26.1	7.0	6.4	8.4
Dislocation without fracture	47	31	16	14.7	19.0	10.2	4.7	4.5	5.0
Concussion (excluding those with skull fracture)	42	27	15	13.1	16.8	9.4	3.6	2.9	4.7
Laceration and open wound	59	47	12	18.5	29.1	7.7	4.7	4.8	4.1
Sprains and strains of joints and adjacent muscles	41	28	13	13.0	17.7	8.1	4.0	3.7	4.6
Supplementary classification	632	20	612	199.3	12.6	390.5	3.7	3.7	3.7
Females with deliveries	582	...	582	183.5	...	371.5	3.7	...	3.7

¹National Center for Health Statistics: *International Classification of Diseases, 9th Revision, Clinical Modification*. DHHS Pub. No. (PHS) 80-1260. Public Health Service. Washington, U.S. Government Printing Office, Sept. 1980.

Technical Notes

Survey methodology

Source of data

The scope of the National Hospital Discharge Survey encompasses patients discharged from short-stay non-institutionalized hospitals, exclusive of military and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only hospitals with six beds or more and an average length of stay less than 30 days for all patients are included in the survey.

The universe of the survey consisted of 6,965 short-stay hospitals contained in the 1963 Master Facility Inventory of Hospitals and Institutions. New hospitals were sampled for inclusion into the survey in 1972, 1975, 1977, and 1979. In all, 544 hospitals were sampled in 1980. Of these hospitals, 72 refused to participate, and 52 were out of scope. The 420 participating hospitals provided approximately 224,000 abstracts of medical records.

Sample design

All hospitals with 1,000 beds or more in the universe of short-stay hospitals were selected with certainty in the sample. All hospitals with fewer than 1,000 beds were stratified, the primary strata being 24 size-by-region classes. Within each of these 24 primary strata, the allocation of the hospitals was made through a controlled selection technique so that hospitals in the sample would be properly distributed with regard to type of ownership and geographic division. Sample hospitals were drawn with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals.

Subsamples of discharges were selected within the sample hospitals using the daily listing sheet of discharges as the sampling frame. These discharges were selected by a random technique, usually on the basis of the terminal digit(s) of the patient's medical record number, a number assigned when the patient was admitted to the hospital. The within hospital sampling ratio for selecting sample discharges varied inversely with the probability of selection of the hospitals.

Sampling errors

Since the estimates for this report are based on a sample rather than the entire universe, they are subject to sampling variability. The standard error is primarily a measure of the variability that is attributed to using a value obtained from a sample as an estimate of a population value. The value that would have been obtained had a complete enumeration of the population been made will be contained in an interval represented by the sample estimate plus or minus 1 standard error about 68 out of 100 times, and plus or minus 2 standard errors about 95 out of 100 times.

The relative standard error is obtained by dividing the standard error by the estimate. The resulting value is multiplied by 100, which expresses the standard error as a percentage. The relative standard error applicable to patients discharged (or first-listed diagnosis) and days of care for 1980 data presented in this report are provided in table I.

Table I. Approximate relative standard errors of estimated number of first-listed diagnoses and days of care

Size of estimate in thousands	First-listed diagnoses	Days of care
	Relative standard error	
1.....	0.370	...
10.....	0.165	0.295
100.....	0.080	0.165
1,000.....	0.050	0.100
10,000.....	0.035	0.062

Tests of significance

In this report, the determination of statistical inference is based on the two-tailed Bonferroni test for multiple comparisons. Terms relating to differences such as "higher" and "less" indicate that the 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 be not significant.

Definition of Terms

Patient—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. In this report the number of patients refers to the number of discharges during the year including any multiple discharges of the same individual from one or more short-stay hospitals.

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. "Discharges" and "patient discharges" are used synonymously.

Days of care—The total number of patient days accumulated at the time of discharge by patients discharged from short-stay hospitals during a year. A stay of less than 1 day (patient admitted and discharged 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 total number of patient days accumulated at time of discharge by patients discharged during the year divided by the number of patients discharged.

First-listed diagnosis—The coded diagnosis identified as the principal diagnosis or else listed first on the face sheet of the medical record. The number of first-listed diagnoses is equivalent to the number of discharges.

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

Blue Cross and other private insurance—Health insurance provided by nongovernment sources including consumers, insurance companies, private industry, and philanthropic organizations.

Medicaid—A joint federal-state welfare program available in virtually all states that provide medical benefits for low income persons, including the aged. In order to qualify for this program, a person must meet each State's definition of "low income."

Self-pay—The major share of the total costs for this hos-

pitalization is expected to be paid by the patient, spouse, parents, or next of kin.

Other payments—This includes all other sources of payment such as workmen's compensation, medicare, no charge, and other government payments.

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 standards of reliability or precision
 - # Figure suppressed to comply with confidentiality requirements
-

Discharge Status of Inpatients Discharged From Short-Stay Hospitals: United States, 1965–81

by Robert Pokras, Division of Health Care Statistics

Introduction

This report provides national estimates on the discharge status of patients discharged from non-Federal short-stay hospitals from 1965 through 1981. For this report discharge status is defined at two levels: alive and dead. The frequency and percent distribution of patients discharged alive and dead are provided for each year from 1965 through 1981 (with "not stated" data also included); while other trend data are presented for the years 1965, 1970, 1975, and 1981 (with "not stated" data excluded).

The statistics in this report are based on data collected through the National Hospital Discharge Survey (NHDS), a continuous survey conducted by the National Center for Health Statistics since 1965. The data for the survey are obtained from the face sheets of a sample of the medical records of inpatients discharged from a national sample of short-stay general and specialty hospitals in the United States. Various revisions of the International Classification of Diseases have been used in NHDS to code medical data since 1965. The seventh revision¹ was used from 1965 through 1968, the eighth revision² covered the period 1970–78, and the ninth revision³ was used from 1979 through 1981. The survey design, data collection procedures, and estimation process are described briefly in Technical notes, and a more detailed report on the design of NHDS has been published.⁴

Familiarity with the definitions used in NHDS is important for interpreting the data and for making comparisons with statistical data on hospital utilization that are available from other sources. For example, patients who are dead on arrival or who die in the emergency room of a hospital without being admitted to the hospital are not included in the scope of this survey. Definitions of the terms used in this report are presented in Technical notes.

Information on the number and cause of deaths in the United States is collected by the Division of Vital Statistics of the National Center for Health Statistics. Estimates in this report reflecting a deceased patient's first-listed diagnosis do not necessarily reflect the underlying cause of death.

Discharge status 1965–81

The distribution of patients according to whether they were discharged alive or dead is quite consistent from 1965 through 1981 (table 1). About 2.8 percent of all patients were discharged dead from short-stay hospitals in 1965, and about 2.5 percent were discharged dead in 1981. This demonstrates one of the most notable characteristics of the statistics in this report: their consistency over time.

Between 1965 and 1976 the number of patients with their discharge status not stated never exceeded 20 percent of the number of patients discharged dead. The abstract form used by NHDS to collect data was modified in 1977. This modification produced some ambiguity in coding the variable discharge status and resulted in an increase in the number of cases of discharge status not stated for the years 1977–80. This was corrected, and in 1981 the number of patients with an unknown discharge status was reduced considerably.

When discharge status is examined by age, the data bear out the expected, that the number of patients discharged dead is largest in the older age groups. This is true for males and females for each year presented in table 1. Patients 65 years of age and over accounted for 58.8 percent of all patients discharged dead in 1965; this increased to 69.4 percent in 1981. The distribution of deaths in hospitals by age was quite similar for both sexes in each of the years 1965, 1970, 1975, and 1981 (table 2).

Table 1. Number and percent distribution of inpatients discharged from short-stay hospitals by discharge status: United States, 1965-81

[Discharges from non-Federal hospitals, excluding newborn infants]

Year of discha. '99	Discharge status							
	All discharges	Alive	Dead	Not stated	All discharges	Alive	Dead	Not stated
	Number in thousands				Percent distribution			
1981	38,544	36,905	982	657	100.0	95.7	2.5	1.7
1980	37,832	35,212	964	1,657	100.0	93.1	2.5	4.4
1979	36,747	33,812	924	2,011	100.0	92.0	2.5	5.5
1978	35,616	32,857	881	1,879	100.0	92.3	2.5	5.3
1977	35,902	32,215	851	2,836	100.0	89.7	2.4	7.9
1976	34,372	33,416	852	103	100.0	97.2	2.5	0.3
1975	34,043	33,117	839	87	100.0	97.3	2.5	0.3
1974	33,018	32,081	847	90	100.0	97.2	2.6	0.3
1973	32,125	31,154	847	97	100.0	97.0	2.7	0.3
1972	31,627	30,603	880	144	100.0	96.8	2.8	0.5
1971	29,459	28,460	833	166	100.0	96.6	2.8	0.6
1970	29,127	28,116	853	157	100.0	96.5	2.9	0.5
1969	28,529	27,502	867	160	100.0	96.4	3.0	0.6
1968	28,070	27,086	860	124	100.0	96.5	3.1	0.4
1967	27,964	26,966	838	159	100.0	96.4	3.0	0.6
1966	28,477	27,579	811	87	100.0	96.8	2.8	0.3
1965	29,100	28,246	818	35	100.0	97.1	2.8	0.1

Table 2. Number and percent distribution of inpatients discharged from short-stay hospitals by discharge status, sex, and age: United States, 1965, 1970, 1975, and 1981

[Discharges from non-Federal hospitals, excluding newborn infants]

Year of discharge, sex, and age	Discharge status							
	All discharges	Alive	Dead	Not stated	All discharges	Alive	Dead	Not stated
	Number in thousands				Percent distribution			
1965								
Both sexes, all ages	29,100	28,246	818	35	100.0	100.0	100.0	100.0
Under 15 years	4,580	4,504	69	7	15.7	15.9	8.5	19.1
15-44 years	13,126	13,063	51	13	45.1	46.2	6.2	36.4
45-64 years	6,702	6,476	217	8	23.0	22.9	26.5	23.6
65 years and over	4,692	4,203	481	7	16.1	14.9	58.8	20.9
Male, all ages	11,330	10,886	430	14	100.0	100.0	100.0	100.0
Under 15 years	2,576	2,533	40	3	22.7	23.3	9.4	19.9
15-44 years	3,464	3,436	25	4	30.6	31.6	5.8	25.8
45-64 years	3,130	3,008	117	5	27.6	27.6	27.3	33.5
65 years and over	2,159	1,909	248	3	19.1	17.5	57.5	21.0
Female, all ages	17,721	17,313	387	21	100.0	100.0	100.0	100.0
Under 15 years	1,997	1,964	29	4	11.3	11.3	7.5	18.6
15-44 years	9,646	9,610	26	9	54.4	55.5	6.7	43.2
45-64 years	3,560	3,456	99	4	20.1	20.0	25.7	17.4
65 years and over	2,519	2,282	233	5	14.2	13.2	60.2	20.8
1970								
Both sexes, all ages	29,127	28,116	853	157	100.0	100.0	100.0	100.0
Under 15 years	3,873	3,833	24	16	13.3	13.6	2.8	10.3
15-44 years	12,664	12,528	62	75	43.5	44.6	7.2	47.7
45-64 years	6,693	6,445	211	36	23.0	22.9	24.8	23.1
65 years and over	5,897	5,311	556	30	20.2	18.9	65.2	19.0
Male, all ages	11,431	10,921	451	58	100.0	100.0	100.0	100.0
Under 15 years	2,173	2,151	14	9	19.0	19.7	3.2	14.8
15-44 years	3,486	3,434	33	19	30.5	31.4	7.3	33.5
45-64 years	3,104	2,971	117	16	27.2	27.2	26.0	27.5
65 years and over	2,667	2,366	287	14	23.3	21.7	63.6	24.3
Female, all ages	17,696	17,195	402	99	100.0	100.0	100.0	100.0
Under 15 years	1,699	1,682	10	8	9.6	9.8	2.4	7.6
15-44 years	9,178	9,093	29	56	51.9	52.9	7.2	56.0
45-64 years	3,588	3,474	94	20	20.3	20.2	23.3	20.5
65 years and over	3,230	2,945	269	16	18.3	17.1	67.1	15.9

Table 2. Number and percent distribution of inpatients discharged from short-stay hospitals by discharge status, sex, and age: United States, 1965, 1970, 1975, and 1981—Con.

[Discharges from non-Federal hospitals, excluding newborn infants]

Year of discharge, sex, and age	Discharge status							
	All discharges	Alive	Dead	Not stated	All discharges	Alive	Dead	Not stated
1975								
	Number in thousands				Percent distribution			
Both sexes, all ages	34,043	33,117	839	87	100.0	100.0	100.0	100.0
Under 15 years	3,826	3,799	18	9	11.2	11.5	2.1	10.5
15-44 years	14,171	14,077	54	40	41.6	42.5	6.4	46.2
45-64 years	8,391	8,168	206	17	24.6	24.7	24.6	19.4
65 years and over	7,654	7,073	561	21	22.5	21.4	66.9	23.9
Male, all ages	13,519	13,034	450	36	100.0	100.0	100.0	100.0
Under 15 years	2,143	2,126	11	6	15.9	16.3	2.5	16.4
15-44 years	4,107	4,063	31	13	30.4	31.2	7.0	35.5
45-64 years	3,870	3,743	120	7	28.6	28.7	26.7	20.1
65 years and over	3,399	3,102	287	10	25.1	23.8	63.9	28.0
Female, all ages	20,523	20,083	390	51	100.0	100.0	100.0	100.0
Under 15 years	1,682	1,672	7	3	8.2	8.3	1.7	6.4
15-44 years	10,064	10,014	23	27	49.0	49.9	5.8	53.6
45-64 years	4,522	4,425	87	10	22.0	22.0	22.2	19.0
65 years and over	4,256	3,971	274	11	20.7	19.8	70.3	21.1
1981								
Both sexes, all ages	38,544	36,905	982	657	100.0	100.0	100.0	100.0
Under 15 years	3,733	3,631	33	69	9.7	9.8	3.3	11.5
15-44 years	15,725	15,393	57	276	40.8	41.7	5.8	41.9
45-64 years	8,677	8,309	211	157	22.5	22.5	21.5	22.8
65 years and over	10,408	9,571	681	156	27.0	25.9	69.4	23.7
Male, all ages	15,379	14,626	500	253	100.0	100.0	100.0	100.0
Under 15 years	2,101	2,049	17	35	13.7	14.0	3.4	13.9
15-44 years	4,672	4,563	31	78	30.4	31.2	6.2	31.0
45-64 years	4,098	3,924	107	67	26.7	26.8	21.5	26.7
65 years and over	4,507	4,091	344	72	29.3	28.0	68.9	28.4
Female, all ages	23,165	22,279	482	404	100.0	100.0	100.0	100.0
Under 15 years	1,632	1,582	16	24	7.0	7.1	3.2	7.3
15-44 years	11,053	10,830	26	197	47.7	48.6	5.4	49.8
45-64 years	4,579	4,386	104	89	19.8	19.7	21.6	22.0
65 years and over	5,901	5,480	337	84	25.5	24.6	69.8	20.8

The two most common causes of death in the United States are cancer and heart disease. Although data from NHDS on diagnoses do not necessarily reflect cause of death, a first-listed diagnosis of cancer or of a disease of the circulatory system accounts for a relatively large proportion of patients discharged dead. Data relating diagnosis and discharge status across years of the survey are not directly comparable because of changes in the diagnostic classification system used to code data. The changes instituted in 1970 and 1979 make comparisons across decades imprecise. Nonetheless, diseases of the circulatory system and cancer ranked first and second, respectively, as the most frequent diagnoses for patients discharged dead from 1965 through 1981. The most recent NHDS data, for 1981, indicated that 39.1 percent of all patients discharged dead had as a first-listed diagnosis

a disease of the circulatory system and that 25.0 percent had a first-listed diagnosis of cancer.

There is an interesting relationship between a patient's discharge status, whether or not the patient had surgery, and the patient's length of stay in the hospital. Figure 1 indicates that patients discharged alive had similar lengths of stay whether they had surgery or not. However, patients discharged dead had a longer length of stay on the average than patients discharged alive; furthermore, patients discharged dead who had surgery had the longest average lengths of stay. This phenomenon was fairly consistent for the years 1965, 1970, 1975, and 1981, as presented in figure 1. This pattern was examined in a previous report⁵ using 1979 data that revealed this relationship also to be consistent across patient age.

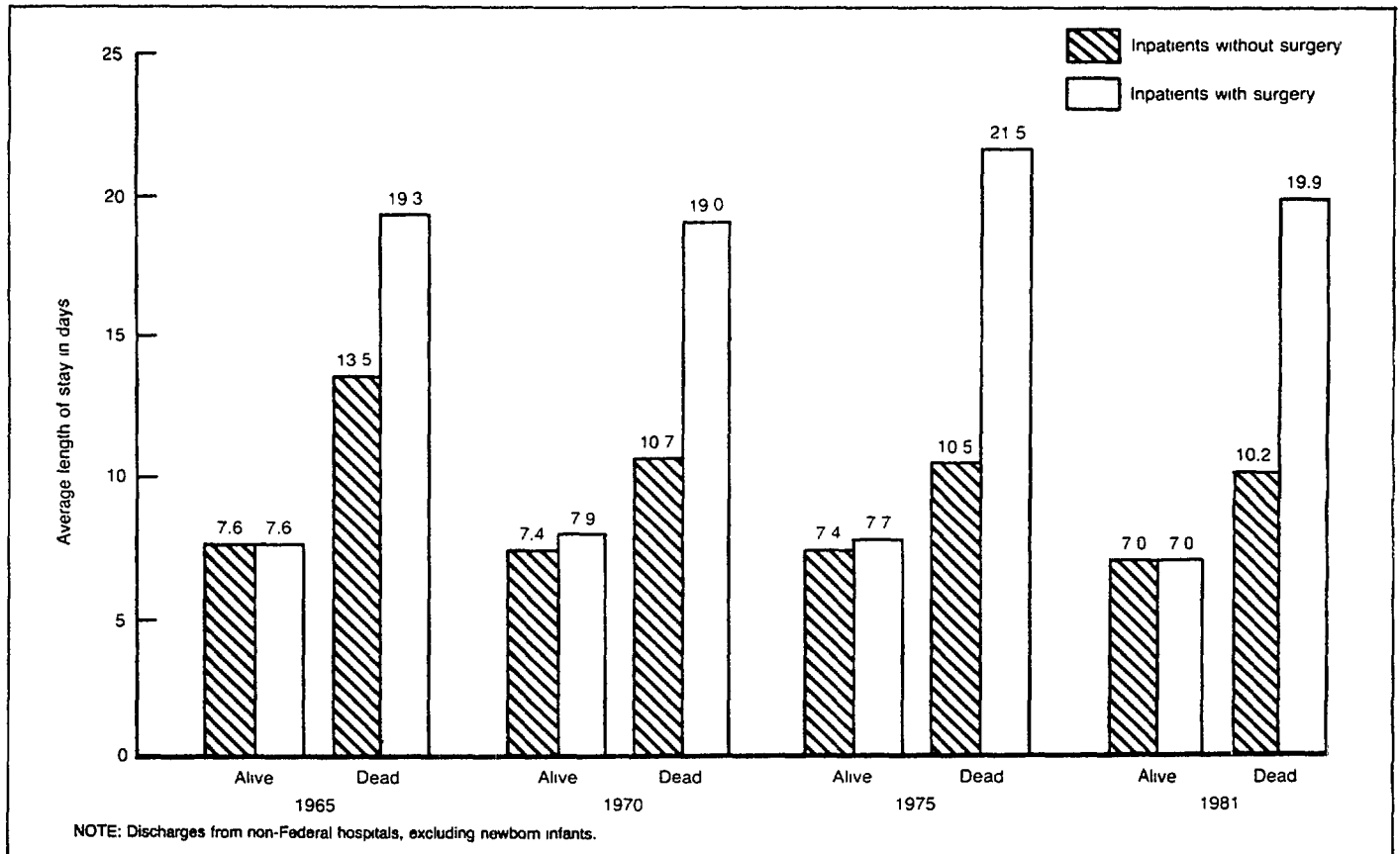


Figure 1. Average length of stay in short-stay hospitals for inpatients with surgery and for inpatients without surgery, by discharge status: United States, 1965, 1970, 1975, and 1981

References

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- ³ U.S. Public Health Service and Health Care Financing Administration: *International Classification of Diseases, 9th Revision, Clinical Modification*, Vol. 3. DHHS Pub. No. (PHS) 80-1260. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1980.
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- ⁷ National Center for Health Statistics, M.J. Witkin: Utilization of short-stay hospitals by characteristics of discharged patients, United States, 1965. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 13-No. 3. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1967.

Technical notes**Survey methodology****Source of data**

The National Hospital Discharge Survey (NHDS) encompasses patients discharged from short-stay hospitals, exclusive of military and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only hospitals with six beds or more and an average length of stay of less than 30 days for all patients are included in the survey. Discharges of newborn infants are excluded from this report.

The universe of the survey consisted of 6,965 short-stay hospitals contained in the 1963 Master Facility Inventory of Hospitals and Institutions. New hospitals were sampled for inclusion in the survey in 1972, 1975, 1977, and 1981.

Sample design

All hospitals with 1,000 beds or more in the universe of short-stay hospitals were selected with certainty in the sample. All hospitals with fewer than 1,000 beds were stratified, the primary strata being 24 size-by-region classes. Within each of these 24 primary strata, the allocation of the hospitals was made through a controlled selection technique so that hospitals in the sample would be properly distributed with regard to type of ownership and geographic division. Sample hospitals were drawn with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals.

Sample discharges were selected within the hospitals using the daily listing sheet of discharges as the sampling frame. These discharges were selected by a random technique, usually on the basis of the terminal digit or digits of the patient's medical record number, a number assigned when the patient was admitted to the hospital. The within-hospital sampling ratio for selecting sample discharges varied inversely with the probability of selection of the hospital.

Data collection and estimation

The sample selection and the transcription of information from the hospital records for abstract forms were performed by the hospital staff or by representatives of the National Center for Health Statistics or by both. The data were abstracted from the face sheets of the medical records. All discharge diagnoses were listed on the abstract in the order of the principal one, or the first-listed one if the principal one was not identified, followed by the order in which all other diagnoses were entered on the face sheet of the medical record.

Statistics produced by NHDS are derived by a complex estimating procedure. The basic unit of estimation is the sample inpatient discharge abstract. The estimating procedure used to produce essentially unbiased national estimates in NHDS has three principal components: inflation by reciprocals of the probabilities of sample selection, adjustment for non-response, and ratio adjustment to fixed totals. These components of estimation are described in appendix I of two earlier publications.^{6,7}

Sampling errors and rounding of numbers

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than an 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. Table I shows relative standard errors for discharges and first-listed diagnoses for 1981. The standard errors for average lengths of stay are shown in table II. Standard errors for each year from 1965 through 1981 are not presented, both in order to save space and because they are relatively similar from year to year. Therefore, while these tables provide a general idea of sampling variability, more precise values can be provided by NHDS.

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

Tests of significance

In this report, the determination of statistical inference is based on the two-tailed Bonferroni test for multiple comparisons. Terms relating to differences such as "higher" and "less" indicate that the differences are statistically significant. Terms such as "similar" or "no difference" mean that no statistically significant difference exists between the estimates

Table I. Approximate relative standard errors of estimated number of discharges, 1981

<i>Size of estimate</i>	<i>Relative standard error</i>
10,000	16.3
50,000	10.2
100,000	8.5
300,000	6.6
500,000	5.9
1,000,000	5.1
4,000,000	4.0

Table II. Approximate standard errors of average lengths of stay, 1981

<i>Number of discharges</i>	<i>Average length of stay in days</i>			
	<i>2</i>	<i>6</i>	<i>10</i>	<i>20</i>
	Standard error in days			
10,000	0.7	1.2	1.7	2.2
50,000	0.3	0.7	1.0	1.4
100,000	0.3	0.6	0.9	1.2
500,000	0.2	0.5	0.8	0.9
1,000,000	0.2	0.5	0.8	0.7
5,000,000	0.2	0.5	0.8	...

NOTE: A list of references follows the text.

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

Definition of terms

Patient—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. In this report the number of patients refers to the number of discharges during the year, including

any multiple discharges of the same individual from one or more short-stay hospitals.

Average length of stay—The total number of patient days accumulated at time of discharge by patients discharged during the year divided by the number of patients discharged.

First-listed diagnosis—The coded diagnosis identified as the principal diagnosis or listed first on the face sheet of the medical record. The number of first-listed diagnoses is equivalent to the number of discharges.

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 standards of reliability or precision (more than 30-percent relative standard error)
 - # Figure suppressed to comply with confidentiality requirements
-

1982 Summary: National Hospital Discharge Survey

by Barbara Haupt, formerly with the Division of Health Care Statistics

Introduction

During 1982 an estimated 38.6 million inpatients, excluding newborn infants, were discharged from short-stay non-Federal hospitals in the United States. These patients were hospitalized an average of 7.1 days and used 272.6 million days of inpatient hospital care. Patients hospitalized during 1982 accounted for 168 discharges and 1,186 days of care per 1,000 civilian population.

These and other statistics presented in this report are based on data collected by means of the National Hospital Discharge Survey, a continuous survey that has been conducted by the National Center for Health Statistics since 1965. In 1982, data were abstracted from the face sheets of medical records of approximately 214,000 patients discharged from 426 short-stay non-Federal hospitals. A brief description of the sample design, data collection procedures, and estimation process, and definitions of terms used in this report can be found in the section entitled "Technical notes." A detailed discussion of these items, as well as the survey form used to collect the data, have been published.^{1,2}

Coding of medical data for patients hospitalized is done according to the *International Classification of Diseases, 9th Revision, Clinical Modification*³ (ICD-9-CM). Up to seven diagnoses and four procedures are 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) are used by the National Hospital Discharge Survey, these diagnoses are excluded from this report. The conditions diagnosed and procedures performed are presented here by chapter of ICD-9-CM. Within these chapters, a few diagnoses and procedures or groups thereof also are shown. These specific categories were selected primarily because of large numbers of occurrences or because they are of special interest. Residual categories of the diagnostic and procedure classes, however, are not included in the tables. More

detailed analyses of these data will be presented in later reports in Series 13 of *Vital and Health Statistics*.

Data highlights

Utilization by patient and hospital characteristics

The number, rate, and average length of stay of patients discharged from short-stay non-Federal hospitals are shown by selected patient and hospital characteristics in tables 1-3. The 38.6 million patients discharged from short-stay hospitals during 1982 included an estimated 15.5 million males and 23.1 million females. The rates per 1,000 population were 139 for males and 194 for females, making the rate for females about 40 percent higher than the rate for males. The number and rate of discharges are always higher for females than for males because of the large number of women in their childbearing years (15-44 years of age) who are hospitalized for deliveries and other obstetrical conditions. Excluding deliveries, the rate for females discharged was 161, or only about 16 percent higher than the rate for males.

The average length of stay was 7.5 days for males and 6.8 days for females during 1982. The length of stay for females was shorter than that for males primarily because the average length of stay of the 3.9 million women who were hospitalized for deliveries was only 3.6 days. The average length of stay for females who were not hospitalized for deliveries during 1982 was 7.4 days.

The number of discharges from short-stay hospitals by geographic region during 1982 ranged from 13.4 million in the South Region to 6.4 million in the West Region, and the rates per 1,000 population ranged from 186 in the North Central Region to 143 in the West Region. Regional differences in the number of discharges are accounted for mainly by variations in population sizes and to a lesser extent by variations in the dis-

charge rates. This is apparent when number of discharges and rate of discharges are compared among the regions. Although the rate of discharges per 1,000 population was highest in the North Central Region, the South Region had the highest number of discharges because the population in the South was about 30 percent larger than that in the North Central Region.

Average lengths of stay by geographic region were 5.9 days in the West, 6.6 days in the South, 7.4 days in the North Central, and 8.2 days in the Northeast.

Discharges from short-stay hospitals were about 40 percent male and 60 percent female in every hospital bed-size group; females with deliveries accounted for about 10.2 percent of all discharges regardless of hospital size. The average length of stay increased steadily from 5.7 days in the smallest hospitals (6–99 beds) to 8.0 days in the largest hospitals (500 beds or more) for all patients.

During 1982, voluntary nonprofit hospitals provided medical care to an estimated 27.2 million patients, or 70 percent of all patients hospitalized. Hospitals operated by State and local governments cared for 8.3 million patients, or 21 percent of all discharges, and proprietary hospitals operated for profit cared for 3.1 million patients or 8 percent of all discharges. Average lengths of stay were 7.2 days in voluntary nonprofit hospitals, 6.4 days in State and local government hospitals, and 7.1 days in proprietary hospitals.

Utilization by diagnosis

Diseases of the circulatory system ranked first in 1982 among the ICD–9–CM diagnostic chapters as a principal or first-listed diagnosis among patients discharged from non-Federal short-stay hospitals. These conditions accounted for an estimated 5.5 million discharges. Other leading ICD–9–CM diagnostic chapters were diseases of the digestive system (4.6 million discharges) and supplementary classifications (including females with deliveries) (4.6 million discharges). Almost 40 percent of the patients discharged from non-Federal short-stay hospitals were included in these three ICD–9–CM diagnostic chapters.

The diagnostic categories presented in this report were selected either because they appear as principal or first-listed diagnoses with great frequency or because the conditions are of special interest. Although many of these categories (such as malignant neoplasms; psychoses; and fractures, all sites) are groupings of more detailed diagnoses, they are presented as single categories without showing all of the specific diagnostic inclusions.

The number and rate of discharges and average length of stay for each ICD–9–CM diagnostic chapter and selected categories are shown by sex and age in tables 4–6. The most common diagnostic category for all patients was females with deliveries. This was followed by the diagnostic categories heart disease and malignant neoplasms. Excluding females with deliveries, these last two non-sex-specific diagnostic categories were also the most common first-listed diagnoses for each sex.

The most frequent first-listed diagnoses for 1982 varied for the different age groups. For patients under 15 years of age, the most frequent diagnosis was chronic disease of tonsils and adenoids. Excluding females with deliveries, the two most fre-

quent diagnoses for patients 15–44 years of age were abortions and ectopic and molar pregnancies, and fractures, all sites. Patients 45–64 years of age were hospitalized most frequently for heart disease. The most common diagnoses for patients 65 years of age and over were heart disease and malignant neoplasms.

The average length of stay for all patients ranged from a low of 1.9 days for the diagnostic category chronic disease of tonsils and adenoids to a high of 18.6 days for fracture of neck of femur. Although the overall average length of stay for females was shorter than that for males, females stayed in the hospital longer than males for many of the specific diagnostic categories examined in this report. Some categories for which women had substantially longer stays included alcohol dependence syndrome; arthroplasties and related disorders; intervertebral disc disorders; and fractures, all sites.

The average length of stay increased with increasing age for most categories of diagnoses shown. Overall, the average length of stay ranged from 4.6 days for patients under 15 years of age to 10.1 days for patients 65 and over. By diagnosis, stays were highest (when compared with the average length of stay) for patients with fracture of neck of femur (18.6 days), psychoses (15.5 days), and cerebrovascular disease (12.2 days).

Utilization by procedures

One or more surgical or nonsurgical procedures were performed for an estimated 20.8 million of the 38.6 million inpatients discharged from short-stay hospitals during 1982. A total of 34.6 million procedures, or an average of 1.7 per patient who underwent at least one procedure, were recorded in 1982.

Procedures are grouped in the tables of this report by the ICD–9–CM procedure chapters. Selected procedures within these chapters also are presented by specific categories. Some of these categories (such as extraction of lens, open heart surgery, and hysterectomy) are presented as single categories although they may be divided into more precise subgroups.

Operations on the digestive system ranked first among the surgical and nonsurgical procedures (5.8 million) performed during 1982. These were followed by miscellaneous diagnostic and therapeutic procedures (5.5 million), operations on the female genital organs (4.0 million), and obstetrical procedures (3.9 million). Over one half (56 percent) of the procedures performed in 1982 were included in these four ICD–9–CM procedure chapters.

The number and rate of all-listed procedures in 1982 for each ICD–9–CM procedure chapter and selected procedure categories are shown by sex and age in tables 7 and 8. Of the 34.6 million procedures performed during 1982, 13.3 million were for males and 21.3 million were for females. The corresponding rates per 1,000 population were 151 for both sexes, 120 for males, and 179 for females. Of the procedures shown in table 8, the most common ones for males were endoscopies on the urinary system (natural orifice) and repair of inguinal hernia; the most frequently performed procedures for females were episiotomy and diagnostic dilation and curettage of uterus.

The rate of procedures per 1,000 population increased with advancing age from 43 for patients under 15 years to 326 for patients 65 years of age and over. The most frequently per-

formed procedures for patients under 15 years of age were tonsillectomy with or without adenoidectomy; for patients 15-44 years of age, episiotomy and cesarean section; for patients 45-64 years of age, arteriography and angiocardiology, and cardiac catheterization; and for patients 65 years of age and over, extraction of lens and endoscopies on the urinary system (natural orifice).

TABLE 1. NUMBER OF INPATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS BY SELECTED CHARACTERISTICS: UNITED STATES, 1982

(DISCHARGES FROM NONFEDERAL HOSPITALS. EXCLUDES NEWBORN INFANTS)

SELECTED CHARACTERISTIC	BOTH SEXES	MALE	FEMALE
NUMBER OF PATIENTS DISCHARGED IN THOUSANDS			
TOTAL.....	38,593	15,470	23,123
AGE			
UNDER 15 YEARS.....	3,654	2,098	1,556
15-44 YEARS.....	15,554	4,615	10,939
45-64 YEARS.....	8,688	4,143	4,545
65 YEARS AND OVER.....	10,697	4,614	6,083
REGION			
NORTHEAST.....	7,847	3,238	4,610
NORTH CENTRAL.....	10,938	4,398	6,540
SOUTH.....	13,435	5,268	8,167
WEST.....	6,373	2,566	3,807
BED SIZE			
6-99 BEDS.....	6,836	2,732	4,104
100-199 BEDS.....	6,738	2,648	4,089
200-299 BEDS.....	6,366	2,587	3,780
300-499 BEDS.....	9,547	3,874	5,673
500 BEDS OR MORE.....	9,106	3,629	5,478
OWNERSHIP			
NONPROFIT.....	27,207	10,820	16,387
STATE AND LOCAL GOVERNMENT.....	8,254	3,365	4,889
PROPRIETARY.....	3,133	1,285	1,848

TABLE 2. RATE OF INPATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS, BY AGE, GEOGRAPHIC REGION, AND SEX: UNITED STATES, 1982

(DISCHARGES FROM NONFEDERAL HOSPITALS. EXCLUDES NEWBORN INFANTS)

AGE AND REGION	BOTH SEXES	MALE	FEMALE
RATE OF PATIENTS DISCHARGED PER 1,000 POPULATION			
TOTAL.....	167.9	139.4	194.5
AGE			
UNDER 15 YEARS.....	71.2	79.9	62.0
15-44 YEARS.....	145.0	87.4	201.0
45-64 YEARS.....	195.5	196.3	194.8
65 YEARS AND OVER.....	398.8	428.1	379.1
REGION			
NORTHEAST.....	159.0	137.6	178.6
NORTH CENTRAL.....	186.1	154.3	216.0
SOUTH.....	173.9	141.8	203.5
WEST.....	143.3	117.7	167.8

TABLE 3. AVERAGE LENGTH OF STAY FOR INPATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS BY SELECTED CHARACTERISTICS: UNITED STATES, 1982

(DISCHARGES FROM NONFEDERAL HOSPITALS. EXCLUDES NEWBORN INFANTS)

SELECTED CHARACTERISTIC	BOTH SEXES	MALE	FEMALE
AVERAGE LENGTH OF STAY IN DAYS			
TOTAL.....	7.1	7.5	6.8
AGE			
UNDER 15 YEARS.....	4.6	4.6	4.6
15-44 YEARS.....	5.1	6.3	4.6
45-64 YEARS.....	7.9	7.8	8.0
65 YEARS AND OVER.....	10.1	9.8	10.3
REGION			
NORTHEAST.....	8.2	8.7	7.9
NORTH CENTRAL.....	7.4	7.8	7.1
SOUTH.....	6.6	7.1	6.4
WEST.....	5.9	6.4	5.6
BED SIZE			
6-99 BEDS.....	5.7	5.8	5.6
100-199 BEDS.....	6.5	7.0	6.3
200-299 BEDS.....	7.1	7.4	6.9
300-499 BEDS.....	7.5	7.9	7.3
500 BEDS OR MORE.....	8.0	8.8	7.5
OWNERSHIP			
NONPROFIT.....	7.2	7.7	7.0
STATE AND LOCAL GOVERNMENT.....	6.4	6.9	6.1
PROPRIETARY.....	7.1	7.4	7.0

TABLE 4. NUMBER OF INPATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS, BY CATEGORY OF FIRST-LISTED DIAGNOSIS, SEX, AND AGE: UNITED STATES, 1982¹

(DISCHARGES FROM NONFEDERAL HOSPITALS. EXCLUDES NEWBORN INFANTS. DIAGNOSTIC GROUPINGS AND CODE NUMBER INCLUSIONS ARE BASED ON THE INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION, CLINICAL MODIFICATION)

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 PATIENTS DISCHARGED IN THOUSANDS							
ALL CONDITIONS.....	38,593	15,470	23,123	3,654	15,554	8,688	10,697
INFECTIOUS AND PARASITIC DISEASES.....001-139	695	326	369	224	234	102	135
NEOPLASMS.....140-239	2,594	1,096	1,498	73	492	912	1,117
MALIGNANT NEOPLASMS.....140-208,230-234	1,972	941	1,031	46	215	716	995
MALIGNANT NEOPLASM OF TRACHEA, BRONCHUS, AND LUNG.....162,197-0,197.3	319	198	121	*	15	147	155
MALIGNANT NEOPLASM OF BREAST.....174-175,198.81	227	*	226	*	31	103	93
ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES, AND IMMUNITY DISORDERS.....240-279	1,161	432	729	62	302	372	426
DIABETES MELLITUS.....250	661	265	396	22	158	241	240
DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS.....280-289	367	159	208	66	94	55	151
MENTAL DISORDERS.....290-319	1,746	899	847	57	972	448	269
PSYCHOSES.....290-299	574	260	313	*5	305	151	113
NEUROLOGIC AND PERSONALITY DISORDERS.....300-301	285	95	190	*9	170	72	33
ALCOHOL DEPENDENCE SYNDROME.....303	417	321	95	*	238	143	33
DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.....320-389	1,828	806	1,022	309	368	413	739
DISEASES OF THE CENTRAL NERVOUS SYSTEM.....320-336,340-349	429	202	226	61	146	98	123
CATARACT.....366	555	210	345	*	18	107	428
DISEASES OF THE EAR AND MASTOID PROCESS.....380-389	345	174	170	177	62	60	46
DISEASES OF THE CIRCULATORY SYSTEM.....390-459	5,488	2,785	2,703	45	535	1,780	3,128
ESSENTIAL HYPERTENSION.....401	333	138	195	*	65	139	126
HEART DISEASE.....391-392.0,393-398,402,404,410-416,420-429	3,477	1,849	1,627	29	250	1,171	2,026
ACUTE MYOCARDIAL INFARCTION.....410	681	414	266	*	42	257	380
ATHEROSCLEROTIC HEART DISEASE.....415.0	500	272	227	*	17	165	316
OTHER ISCHEMIC HEART DISEASE.....411-413,414.1-414.9	822	474	348	*	65	386	369
CONGESTIVE HEART FAILURE.....428.0	439	195	243	*	*8	72	356
CEREBROVASCULAR DISEASE.....430-438	834	388	446	*	33	180	618
DISEASES OF THE RESPIRATORY SYSTEM.....460-519	3,459	1,715	1,744	1,029	770	656	1,003
ACUTE RESPIRATORY INFECTIONS, EXCEPT INFLUENZA.....460-466	459	224	235	229	88	63	79
CHRONIC DISEASE OF TONSILS AND ADENOIDS.....474	436	176	259	280	149	*	*
ASTHMA.....480-486	824	416	408	270	128	127	300
PNEUMONIA, ALL FORMS.....493	434	190	245	151	104	98	81
DISEASES OF THE DIGESTIVE SYSTEM.....520-579	4,628	2,162	2,466	486	1,496	1,292	1,354
ULCERS OF THE STOMACH AND SMALL INTESTINE.....531-534	351	176	174	*	87	123	139
GASTRITIS AND DUODENITIS.....535	261	113	148	12	107	79	63
APPENDICITIS.....540-543	254	145	110	62	151	28	13
INGUINAL HERNIA.....550	512	455	56	85	135	160	132
NONINFECTIOUS ENTERITIS AND COLITIS.....555-556,558	611	259	352	204	206	83	118
CHOLELITHIASIS.....574	496	129	367	*	174	167	153
DISEASES OF THE GENITOURINARY SYSTEM.....580-629	3,411	1,079	2,332	159	1,689	816	748
CALCULUS OF KIDNEY AND URETER.....592	297	196	101	*	153	99	42
DISORDERS OF MENSTRUATION AND OTHER ABNORMAL VAGINAL BLEEDING.....626	360	-	360	*	276	82	*
COMPLICATIONS OF PREGNANCY, CHILDBIRTH, AND THE PUERPERIUM.....1/ 630-676	1,018	...	1,018	*5	1,009	*5	...
ABORTIONS AND ECTOPIC AND MOLAR PREGNANCIES.....630-639	484	...	484	*	477	*	...
DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE.....680-709	566	277	289	69	229	133	135
DISEASES OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE.....710-739	2,377	1,016	1,361	78	943	778	578
ARTHROPATHIES AND RELATED DISORDERS.....710-719	568	233	336	18	188	170	193
INTERVERTEBRAL DISC DISORDERS.....722	436	238	198	*	225	158	52
CONGENITAL ANOMALIES.....740-759	335	171	163	174	93	43	25
CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD.....760-779	166	95	71	164	*	-	-
SYMPTOMS, SIGNS, AND ILL-DEFINED CONDITIONS.....780-799	624	289	334	121	267	148	88
INJURY AND POISONING.....800-999	3,568	1,985	1,583	464	1,714	643	747
FRACTURES, ALL SITES.....800-829	1,132	565	567	153	404	189	387
FRACTURE OF NECK OF FEMUR.....820	228	57	171	*	*7	26	192
SPRAINS AND STRAINS OF BACK (INCLUDING NECK).....846-847	305	136	170	*	191	78	33
INTRACRANIAL INJURIES (EXCLUDING THOSE WITH SKULL FRACTURE).....850-854	285	178	106	72	152	29	32
LACERATIONS AND OPEN WOUNDS.....870-904	328	245	83	48	204	48	28
SUPPLEMENTARY CLASSIFICATIONS.....V01-V82	4,563	177	4,385	69	4,346	92	55
PERSONS ADMITTED FOR STERILIZATION.....V25.2	200	*	197	-	197	*	*
FEMALES WITH DELIVERIES.....V27	3,945	...	3,945	13	3,928	*	...

1/ FIRST-LISTED DIAGNOSIS FOR FEMALES WITH DELIVERIES IS CODED V27, SHOWN UNDER "SUPPLEMENTARY CLASSIFICATIONS."

TABLE 5. RATE OF INPATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS, BY CATEGORY OF FIRST-LISTED DIAGNOSIS, SEX, AND AGE: UNITED STATES, 1982

(DISCHARGES FROM NONFEDERAL HOSPITALS. EXCLUDES NEWBORN INFANTS. DIAGNOSTIC GROUPINGS AND CODE NUMBER INCLUSIONS ARE BASED ON THE INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION, CLINICAL MODIFICATION)

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
RATE OF INPATIENTS DISCHARGED PER 10,000 POPULATION							
ALL CONDITIONS.....	1,679.0	1,394.0	1,944.9	711.6	1,450.2	1,955.2	3,987.9
INFECTIOUS AND PARASITIC DISEASES.....001-139	30.2	29.4	31.0	43.6	21.8	22.9	50.3
NEOPLASMS.....140-239	112.8	98.7	126.0	14.1	45.9	205.3	416.3
MALIGNANT NEOPLASMS.....140-208,230-234	85.8	84.8	86.7	8.9	20.1	161.0	370.9
MALIGNANT NEOPLASM OF TRACHEA, BRONCHUS, AND LUNG.....162,197.0,197.3	13.9	17.8	10.2	*	1.4	33.2	58.0
MALIGNANT NEOPLASM OF BREAST.....174-175,198.81	9.9	*	19.0	*	2.9	23.2	34.6
ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES, AND IMMUNITY DISORDERS.....240-279	50.5	38.9	61.3	12.0	28.2	83.7	158.6
DIABETES MELLITUS.....250	28.8	23.9	33.3	4.3	14.7	54.3	89.5
DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS.....280-289	16.0	14.3	17.5	12.9	8.8	12.4	56.5
MENTAL DISORDERS.....290-319	76.0	81.0	71.2	11.1	90.7	100.8	100.1
PSYCHOSES.....290-299	25.0	23.5	26.4	*1.0	28.5	33.9	42.0
NEUROTIC AND PERSONALITY DISORDERS.....300-301	12.4	8.6	16.0	*1.8	15.9	16.3	12.4
ALCOHOL DEPENDENCE SYNDROME.....303	18.1	29.0	8.0	*	22.2	32.2	12.5
DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.....320-389	79.5	72.6	86.0	60.1	34.3	93.0	275.4
DISEASES OF THE CENTRAL NERVOUS SYSTEM.....320-336,340-349	18.6	18.2	19.0	12.0	13.6	22.0	45.9
CATARACT.....366	24.2	19.0	29.0	*	1.6	24.1	159.7
DISEASES OF THE EAR AND MASTOID PROCESS.....380-389	15.0	15.7	14.3	34.4	5.8	13.4	17.0
DISEASES OF THE CIRCULATORY SYSTEM.....390-459	238.8	251.0	227.3	8.8	49.9	400.6	1,166.3
ESSENTIAL HYPERTENSION.....401	14.5	12.4	16.4	*	6.1	31.4	46.8
HEART DISEASE.....391-392.0,393-398,402,404,410-416,420-429	151.2	166.6	136.9	5.7	23.3	263.5	755.2
ACUTE MYOCARDIAL INFARCTION.....410	29.6	37.3	22.4	*	4.0	57.9	141.5
ATHEROSCLEROTIC HEART DISEASE.....414.0	21.7	24.5	19.1	*	1.6	37.1	118.0
OTHER ISCHEMIC HEART DISEASE.....411-413,414.1-414.9	35.8	42.7	29.2	*	6.0	86.9	137.6
CONGESTIVE HEART FAILURE.....428.0	19.1	17.6	20.5	*	*0.8	16.2	132.6
CEREBROVASCULAR DISEASE.....430-438	36.3	35.0	37.5	*	3.1	40.4	230.3
DISEASES OF THE RESPIRATORY SYSTEM.....460-519	150.5	154.5	146.7	200.5	71.8	147.7	374.0
ACUTE RESPIRATORY INFECTIONS, EXCEPT INFLUENZA.....460-466	20.0	20.2	19.7	44.5	8.2	14.2	29.6
CHRONIC DISEASE OF TONSILS AND ADENOIDS.....474	19.0	15.9	21.8	54.5	13.9	*	*
PNEUMONIA, ALL FORMS.....480-486	35.9	37.5	34.3	52.5	11.9	28.5	111.8
ASTHMA.....493	18.9	17.1	20.6	29.3	9.7	22.1	30.4
DISEASES OF THE DIGESTIVE SYSTEM.....520-579	201.3	194.8	207.4	94.6	139.5	290.7	504.7
ULCERS OF THE STOMACH AND SMALL INTESTINE.....531-534	15.3	15.9	14.7	*	8.1	27.7	51.7
GASTRITIS AND DUODENITIS.....535	11.4	10.1	12.5	2.4	10.0	17.8	23.4
APPENDICITIS.....540-543	11.1	13.1	9.2	12.2	14.1	6.2	4.9
INGUINAL HERNIA.....550	22.3	41.0	4.7	16.5	12.6	36.0	49.1
NONINFECTIOUS ENTERITIS AND COLITIS.....555-556,558	26.6	23.3	29.6	39.7	19.2	18.7	44.1
CHOLELITHIASIS.....574	21.6	11.6	30.9	*	16.2	37.5	57.2
DISEASES OF THE GENITOURINARY SYSTEM.....580-629	148.4	97.2	196.2	30.9	157.5	183.6	278.9
CALCULUS OF KIDNEY AND URETER.....592	12.9	17.6	8.5	*	14.3	22.2	15.8
DISORDERS OF MENSTRUATION AND OTHER ABNORMAL VAGINAL BLEEDING.....626	15.7	-	30.3	*	25.7	18.5	*
COMPLICATIONS OF PREGNANCY, CHILDBIRTH, AND THE PUERPERIUM.....1/ 630-676	44.3	...	85.6	*1.0	94.0	*1.0	...
ABORTIONS AND ECTOPIC AND MOLAR PREGNANCIES.....630-639	21.1	...	40.7	*	44.5	*	...
DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE.....680-709	24.6	24.9	24.3	13.5	21.3	30.0	50.3
DISEASES OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE.....710-739	103.4	91.5	114.5	15.2	87.9	175.1	215.4
ARTHROPATHIES AND RELATED DISORDERS.....710-719	24.7	21.0	28.2	3.5	17.5	38.3	71.8
INTERVERTEBRAL DISC DISORDERS.....722	19.0	21.4	16.7	*	20.9	35.6	19.5
CONGENITAL ANOMALIES.....740-759	14.6	15.4	13.7	33.9	8.7	9.6	9.3
CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD.....760-779	7.2	8.6	5.9	32.0	*	-	-
SYMPTOMS, SIGNS, AND ILL-DEFINED CONDITIONS.....780-799	27.1	26.1	28.1	23.6	24.9	33.4	32.6
INJURY AND POISONING.....800-999	155.2	178.9	133.1	90.4	159.8	144.7	278.6
FRACTURES, ALL SITES.....800-829	49.3	50.9	47.7	29.7	37.7	42.4	144.2
FRACTURE OF NECK OF FEMUR.....820	9.9	5.1	14.4	*	*0.7	5.8	71.4
SPRAINS AND STRAINS OF BACK (INCLUDING NECK).....846-847	13.3	12.2	14.3	*	17.8	17.6	12.4
INTRACRANIAL INJURIES (EXCLUDING THOSE WITH SKULL FRACTURE).....850-854	12.4	16.1	8.9	14.0	14.2	6.5	11.8
LACERATIONS AND OPEN WOUNDS.....870-904	14.3	22.1	7.0	9.3	19.0	10.8	10.4
SUPPLEMENTARY CLASSIFICATIONS.....V01-V82	198.5	16.0	368.9	13.5	405.2	20.7	20.5
PERSONS ADMITTED FOR STERILIZATION.....V25.2	8.7	*	16.6	-	18.4	*	*
FEMALES WITH DELIVERIES.....V27	171.6	...	331.8	2.5	366.2	*	...

1/ FIRST-LISTED DIAGNOSIS FOR FEMALES WITH DELIVERIES IS CODED V27, SHOWN UNDER "SUPPLEMENTARY CLASSIFICATIONS."

TABLE 6. AVERAGE LENGTH OF STAY FOR INPATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS, BY CATEGORY OF FIRST-LISTED DIAGNOSIS, SEX, AND AGE: UNITED STATES, 1982

(DISCHARGES FROM NONFEDERAL HOSPITALS. EXCLUDES NEWBORN INFANTS. DIAGNOSTIC GROUPINGS AND CODE NUMBER INCLUSIONS ARE BASED ON THE INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION, CLINICAL MODIFICATION)

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
AVERAGE LENGTH OF STAY IN DAYS							
ALL CONDITIONS.....	7.1	7.5	6.8	4.6	5.1	7.9	10.1
INFECTIOUS AND PARASITIC DISEASES.....001-139	6.7	6.3	7.0	4.2	5.6	8.6	11.0
NEOPLASMS.....140-239	9.9	10.4	9.6	5.9	6.6	9.8	11.8
MALIGNANT NEOPLASMS.....140-208,230-234	11.1	11.2	11.1	7.5	8.1	10.7	12.2
MALIGNANT NEOPLASM OF TRACHEA, BRONCHUS, AND LUNG.....162,197.0,197.3	10.9	11.2	10.5	*	7.8	10.5	11.6
MALIGNANT NEOPLASM OF BREAST.....174-175,198.81	10.0	*	10.0	*	7.4	10.1	10.8
ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES, AND IMMUNITY DISORDERS.....240-279	8.8	8.5	9.0	5.8	6.6	8.8	10.9
DIABETES MELLITUS.....250	9.5	9.1	9.7	6.2	6.9	9.7	11.3
DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS.....280-289	7.0	6.7	7.2	4.9	4.9	8.1	8.8
MENTAL DISORDERS.....290-319	12.1	11.6	12.6	13.7	11.8	12.0	13.0
PSYCHOSES.....290-299	15.5	14.7	16.2	*28.3	14.7	16.4	15.7
NEUROTIC AND PERSONALITY DISORDERS.....300-301	10.1	9.8	10.3	*11.4	10.6	9.3	9.0
ALCOHOL DEPENDENCE SYNDROME.....303	11.2	10.6	13.0	*	11.2	10.9	12.2
DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.....320-389	5.4	5.7	5.1	3.5	6.1	5.8	5.5
DISEASES OF THE CENTRAL NERVOUS SYSTEM.....320-336,340-349	11.0	11.6	10.4	7.7	9.3	11.4	14.3
CATARACT.....366	2.9	2.8	3.0	*	2.6	2.8	3.0
DISEASES OF THE EAR AND MASTOID PROCESS.....380-389	3.2	2.9	3.5	2.4	3.2	4.0	5.2
DISEASES OF THE CIRCULATORY SYSTEM.....390-459	9.4	9.0	9.8	7.1	6.6	8.2	10.5
ESSENTIAL HYPERTENSION.....401	6.4	5.9	6.8	*	4.6	6.1	7.8
HEART DISEASE.....391-392.0,393-398,402,404,410-416,420-429	8.9	8.5	9.4	6.9	6.7	7.9	9.8
ACUTE MYOCARDIAL INFARCTION.....410	11.2	11.0	11.6	*	9.1	10.7	11.9
ATHEROSCLEROTIC HEART DISEASE.....414.0	8.8	7.9	9.9	*	5.0	7.1	9.9
OTHER ISCHEMIC HEART DISEASE.....411-413,414.1-414.9	7.1	6.8	7.5	*	5.6	6.6	7.9
CONGESTIVE HEART FAILURE.....428.0	10.1	9.3	10.7	*	*10.2	8.7	10.4
CEREBROVASCULAR DISEASE.....430-438	12.2	11.5	12.9	*	11.2	11.2	12.6
DISEASES OF THE RESPIRATORY SYSTEM.....460-519	6.2	6.2	6.3	3.5	4.1	7.5	9.7
ACUTE RESPIRATORY INFECTIONS, EXCEPT INFLUENZA.....460-466	4.8	4.5	5.2	3.7	3.9	6.1	8.0
CHRONIC DISEASE OF TONSILS AND ADENOIDS.....474	1.9	1.8	2.0	1.7	2.1	*	*
PNEUMONIA, ALL FORMS.....480-486	8.0	7.9	8.1	5.0	6.3	8.8	11.1
ASTHMA.....493	5.5	4.9	5.9	3.6	5.2	6.4	8.1
DISEASES OF THE DIGESTIVE SYSTEM.....520-579	6.8	6.4	7.2	4.0	5.4	7.1	9.0
ULCERS OF THE STOMACH AND SMALL INTESTINE.....531-534	7.9	7.3	8.6	*	5.8	7.2	10.0
GASTRITIS AND DUODENITIS.....535	5.3	4.8	5.7	3.0	4.2	5.5	7.6
APPENDICITIS.....540-543	5.3	5.0	5.7	4.5	4.8	7.5	11.1
INGUINAL HERNIA.....550	4.5	4.5	4.7	2.5	3.8	4.7	6.3
NONINFECTIOUS ENTERITIS AND COLITIS.....555-556,558	5.3	5.3	5.3	4.0	5.5	5.9	6.8
CHOLELITHIASIS.....574	8.9	9.6	8.7	*	7.2	8.4	11.4
DISEASES OF THE GENITOURINARY SYSTEM.....580-629	5.6	6.4	5.2	3.5	4.6	5.5	8.5
CALCULUS OF KIDNEY AND URETER.....592	4.8	4.4	5.6	*	3.9	5.2	7.6
DISORDERS OF MENSTRUATION AND OTHER ABNORMAL VAGINAL BLEEDING.....626	3.5	-	3.5	*	3.5	3.5	*
COMPLICATIONS OF PREGNANCY, CHILDBIRTH, AND THE PUERPERIUM.....1/ 630-676	2.5	...	2.5	*2.3	2.5	*3.0	...
ABORTIONS AND ECTOPIC AND MOLAR PREGNANCIES.....630-639	2.0	...	2.0	*	2.0	*	...
DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE.....680-709	8.3	8.2	8.5	4.3	6.0	8.8	13.8
DISEASES OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE.....710-739	7.7	7.0	8.2	5.1	6.2	7.7	10.7
ARTHRITIS AND RELATED DISORDERS.....710-719	8.5	6.9	9.6	5.5	5.0	8.8	11.8
INTERVERTEBRAL DISC DISORDERS.....722	9.5	8.7	10.6	*	8.7	9.7	12.4
CONGENITAL ANOMALIES.....740-759	6.1	5.9	6.3	5.5	5.7	7.7	8.5
CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD.....760-779	12.7	12.6	12.8	12.7	*	-	-
SYMPTOMS, SIGNS, AND ILL-DEFINED CONDITIONS.....780-799	4.1	3.9	4.2	3.1	3.5	4.4	6.5
INJURY AND POISONING.....800-999	7.4	6.6	8.4	4.3	5.8	8.0	12.6
FRACTURES, ALL SITES.....800-829	10.1	8.3	11.8	5.2	7.2	9.7	15.2
FRACTURE OF NECK OF FEMUR.....820	18.6	18.2	18.7	*	*20.4	16.5	18.7
SPRAINS AND STRAINS OF BACK (INCLUDING NECK) INTRACRANIAL INJURIES (EXCLUDING THOSE WITH SKULL FRACTURE).....850-854	7.4	7.2	7.6	*	7.0	7.9	9.1
LACERATIONS AND OPEN WOUNDS.....870-904	5.6	5.5	5.8	3.1	5.7	8.4	8.7
LACERATIONS AND OPEN WOUNDS.....870-904	5.3	5.4	5.2	4.0	5.1	5.9	8.0
SUPPLEMENTARY CLASSIFICATIONS.....V01-V82	3.6	4.1	3.5	3.7	3.5	4.8	6.8
PERSONS ADMITTED FOR STERILIZATION.....V25.2	2.0	*	2.0	-	2.0	*	*
FEMALES WITH DELIVERIES.....V27	3.6	...	3.6	4.3	3.6	*	...

1/ FIRST-LISTED DIAGNOSIS FOR FEMALES WITH DELIVERIES IS CODED V27, SHOWN UNDER "SUPPLEMENTARY CLASSIFICATIONS."

TABLE 7. NUMBER OF ALL-LISTED PROCEDURES FOR INPATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS, BY PROCEDURE CATEGORY, SEX, AND AGE: UNITED STATES, 1982

(DISCHARGES FROM NONFEDERAL HOSPITALS. EXCLUDES NEWBORN INFANTS. PROCEDURE GROUPINGS AND CODE NUMBER INCLUSIONS ARE BASED ON THE INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION, CLINICAL MODIFICATION)

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 OF ALL-LISTED PROCEDURES IN THOUSANDS							
ALL PROCEDURES.....	34,632	13,331	21,302	2,219	15,296	8,368	8,750
OPERATIONS ON THE NERVOUS SYSTEM.....01-05	859	436	424	139	286	254	180
OPERATIONS ON THE ENDOCRINE SYSTEM.....06-07	109	31	79	*	46	37	22
OPERATIONS ON THE EYE.....08-16	1,402	565	837	64	128	289	922
EXTRACTION OF LENS.....13.1-13.6	599	230	369	*6	21	114	458
INSERTION OF PROSTHETIC LENS (PSEUDOPHAKOS).....13.7	418	158	261	*	*5	75	337
OPERATIONS ON THE EAR.....18-20	332	178	153	184	73	47	27
MYRINGOTOMY.....20.0	163	95	68	144	*11	*5	*
OPERATIONS ON THE NOSE, MOUTH, AND PHARYNX.....21-29	1,492	709	783	424	732	215	120
RHINOPLASTY AND REPAIR OF NOSE.....21.8	250	117	133	*10	191	39	*10
TONSILLECTOMY WITH OR WITHOUT ADENOIDECTOMY.....28.2-28.3	438	179	259	269	163	*5	*
OPERATIONS ON THE RESPIRATORY SYSTEM.....30-34	921	554	367	51	177	340	354
BRONCHOSCOPY.....33.21-33.23	207	127	81	*11	30	80	87
OPERATIONS ON THE CARDIOVASCULAR SYSTEM.....35-39	1,749	1,051	697	106	229	723	691
OPEN HEART SURGERY.....35.1-35.51, 35.53-36.2, 36.9, 37.10-37.11, 37.32-37.33, 37.5	243	168	75	15	23	130	74
DIRECT HEART REVASCULARIZATION.....36.1	170	125	45	*	14	105	50
CARDIAC CATHETERIZATION.....37.21-37.23	471	309	161	33	61	262	114
PACEMAKER INSERTION, REPLACEMENT, REMOVAL, REPAIR.....37.7-37.8	202	102	100	*	*6	34	161
OPERATIONS ON THE HEMIC AND LYMPHATIC SYSTEM.....40-41	362	182	179	27	81	104	149
OPERATIONS ON THE DIGESTIVE SYSTEM.....42-54	5,790	2,544	3,246	294	2,078	1,630	1,789
ESOPHAGOSCOPY AND GASTROSCOPY (NATURAL ORIFICE).....42.23, 44.13	249	115	134	*9	58	87	95
PARTIAL GASTRECTOMY AND RESECTION OF INTESTINE.....43.5-43.8, 45.6-45.8	240	113	127	*	34	76	127
APPENDECTOMY, EXCLUDING INCIDENTAL.....47.0	277	146	131	65	170	28	14
HEMORRHOIDECTOMY.....49.43-49.46	165	82	83	-	80	63	22
CHOLECYSTECTOMY.....51.2	493	132	361	*	186	166	138
REPAIR OF INGUINAL HERNIA.....53.0-53.1	549	489	60	93	139	167	150
DIVISION OF PERITONEAL ADHESIONS.....54.5	286	40	246	*	177	59	48
OPERATIONS ON THE URINARY SYSTEM.....55-59	1,901	1,098	802	113	448	548	792
ENDOSCOPIES (NATURAL ORIFICE).....55.21-55.22, 56.31, 57.32, 58.22	841	552	289	42	155	243	401
DILATION OF URETHRA.....58.6	184	90	94	18	51	46	69
OPERATIONS ON THE MALE GENITAL ORGANS.....60-64	850	850	...	117	128	209	396
PROSTATECTOMY.....60.2-60.6	358	358	...	...	*	96	261
CIRCUMCISION.....64.0	90	90	...	46	22	14	*7
OPERATIONS ON THE FEMALE GENITAL ORGANS.....65-71	4,023	...	4,023	13	3,006	736	268
OOPHORECTOMY AND SALPINGO-OOPHORECTOMY.....65.3-65.6	500	...	500	*	301	153	45
BILATERAL DESTRUCTION OR OCCLUSION OF FALLOPIAN TUBES.....66.2-66.3	602	...	602	-	595	*6	-
HYSTERECTOMY.....68.3-68.7	650	...	650	*	410	181	58
CURETTAGE OF UTERUS TO TERMINATE PREGNANCY.....69.01, 69.51	106	...	106	*	105	*	...
DILATION AND CURETTAGE OF UTERUS AFTER DELIVERY OR ABORTION.....69.02	275	...	275	*	272	*	...
DIAGNOSTIC DILATION AND CURETTAGE OF UTERUS.....69.09	741	...	741	*	493	200	47
REPAIR OF CYSTOCELE AND RECTOCELE.....70.5	154	...	154	-	54	55	45
OBSTETRICAL PROCEDURES.....72-75	3,945	...	3,945	16	3,925	*	...
EPISIOTOMY WITH OR WITHOUT FORCEPS OR VACUUM EXTRACTION.....72.1, 72.21, 72.31, 72.71, 73.6	2,032	...	2,032	*7	2,024	*	...
CESAREAN SECTION.....74.0-74.2, 74.4, 74.99	730	...	730	*	727	*	...
REPAIR OF CURRENT OBSTETRIC LACERATION.....75.5-75.6	449	...	449	*	447	-	...
OPERATIONS ON THE MUSCULOSKELETAL SYSTEM.....76-84	3,583	1,814	1,769	253	1,664	928	738
OPEN REDUCTION OF FRACTURE.....76.72, 76.74, 76.76-76.77, 76.79, 79.2-79.3, 79.5-79.6	434	240	195	30	195	79	130
OTHER REDUCTION OF FRACTURE.....76.70-76.71, 76.73, 76.75, 76.78, 79.0-79.1, 79.4	256	145	112	64	99	45	48
EXCISION OR DESTRUCTION OF INTERVERTEBRAL DISC AND SPINAL FUSION.....80.5, 81.0	227	126	101	*5	120	85	16
EXCISION OF SEMILUNAR CARTILAGE OF KNEE.....80.6	151	106	45	*	97	38	13
ARTHROPLASTY AND REPLACEMENT OF KNEE.....81.41-81.47	137	74	63	*	69	25	39
ARTHROPLASTY AND REPLACEMENT OF HIP.....81.5-81.6	148	46	101	*	*8	38	102
OPERATIONS ON THE INTEGUMENTARY SYSTEM.....85-86	1,862	722	1,140	126	810	555	370
MASTECTOMY.....85.4	111	*6	105	*	16	52	42
SKIN GRAFT (EXCEPT LIP OR MOUTH).....86.6-86.7	156	98	58	17	65	41	34
MISCELLANEOUS DIAGNOSTIC AND THERAPEUTIC PROCEDURES.....87-99	5,454	2,597	2,857	288	1,485	1,750	1,931
COMPUTERIZED AXIAL TOMOGRAPHY.....87.03, 87.41, 87.71, 88.01, 88.38	600	289	311	44	150	158	248
PYELOGRAM.....87.73-87.75	464	235	229	18	153	136	156
ARTERIOGRAPHY AND ANGIOCARDIOGRAPHY USING CONTRAST MATERIAL.....88.4-88.5	740	456	284	17	101	368	254
DIAGNOSTIC ULTRASOUND.....88.7	561	204	357	22	198	149	192
RADIOISOTOPE SCAN.....92.0-92.1	641	284	357	12	123	208	297

TABLE 8. RATE OF ALL-LISTED PROCEDURES FOR INPATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS, BY PROCEDURE CATEGORY, SEX, AND AGE: UNITED STATES, 1982

(DISCHARGES FROM NONFEDERAL HOSPITALS. EXCLUDES NEWBORN INFANTS. PROCEDURE GROUPINGS AND CODE NUMBER INCLUSIONS ARE BASED ON THE INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION, CLINICAL MODIFICATION)

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
RATE OF ALL-LISTED PROCEDURES PER 100,000 POPULATION							
ALL PROCEDURES.....	15,066.4	12,012.4	17,916.9	4,320.1	14,261.4	18,831.9	32,620.3
OPERATIONS ON THE NERVOUS SYSTEM.....01-05	373.8	392.6	356.3	270.1	267.1	572.5	670.0
OPERATIONS ON THE ENDOCRINE SYSTEM.....06-07	47.5	27.5	66.2	*	42.5	83.7	82.0
OPERATIONS ON THE EYE.....08-16	609.8	509.1	703.9	124.0	119.1	649.7	3,435.9
EXTRACTION OF LENS.....13.1-13.6	260.6	207.1	310.5	*11.4	19.4	256.9	1,707.7
INSERTION OF PROSTHETIC LENS (PSEUDOPHAKOS).....13.7	182.0	142.0	219.3	*	*	169.3	1,257.2
OPERATIONS ON THE EAR.....18-20	144.4	160.8	129.1	358.3	68.2	106.6	101.9
MYRINGOTOMY.....20.0	70.7	85.4	57.0	279.9	*10.5	*10.2	*
OPERATIONS ON THE NOSE, MOUTH, AND PHARYNX.....21-29	649.0	638.6	658.8	826.3	682.4	484.6	449.1
RHINOPLASTY AND REPAIR OF NOSE.....21.8	108.9	105.3	112.2	*18.8	178.1	88.8	*37.7
TONSILLECTOMY WITH OR WITHOUT ADENOIDECTOMY.....28.2-28.3	190.7	161.5	217.9	523.3	151.6	*11.2	*
OPERATIONS ON THE RESPIRATORY SYSTEM.....30-34	400.7	498.9	309.1	98.5	165.0	764.1	1,320.2
BRONCHOSCOPY.....33.21-33.23	90.2	114.0	68.0	*20.8	27.7	180.3	324.1
OPERATIONS ON THE CARDIOVASCULAR SYSTEM.....35-39	760.8	947.5	586.5	205.4	213.8	1,626.3	2,577.3
OPEN HEART SURGERY.....35.1-35.51,							
35.53-36.2,36.9,37.10-37.11,37.32-37.33,37.5	105.6	151.4	62.9	29.6	21.2	293.4	277.5
DIRECT HEART REVASCULARIZATION.....36.1	74.0	112.9	37.7	*	13.1	237.3	186.6
CARDIAC CATHETERIZATION.....37.21-37.23	204.7	278.7	135.7	64.9	57.0	590.1	424.5
PACEMAKER INSERTION, REPLACEMENT, REMOVAL, REPAIR.....37.7-37.8	87.7	91.6	84.1	*	*5.1	75.8	600.0
OPERATIONS ON THE HEMIC AND LYMPHATIC SYSTEM.....40-41	157.3	164.2	150.9	52.5	75.3	235.0	557.1
OPERATIONS ON THE DIGESTIVE SYSTEM.....42-54	2,519.0	2,292.7	2,730.2	572.1	1,937.5	3,667.4	6,669.0
ESOPHAGOSCOPY AND GASTROSCOPY (NATURAL ORIFICE).....42.23,44.13	108.4	103.4	113.0	*18.3	54.4	195.5	352.6
PARTIAL GASTRECTOMY AND RESECTION OF INTESTINE.....43.5-43.8,45.6-45.8	104.3	101.7	106.7	*	31.3	170.4	472.8
APPENDECTOMY, EXCLUDING INCIDENTAL.....47.0	120.3	131.4	110.0	126.8	158.1	62.7	52.5
HEMORRHOIDECTOMY.....49.43-49.46	71.7	74.0	69.7	-	74.6	141.7	81.6
CHOLECYSTECTOMY.....51.2	214.3	118.8	303.4	*	173.8	374.0	514.2
REPAIR OF INGUINAL HERNIA.....53.0-53.1	238.9	440.9	50.4	181.9	129.8	375.1	559.0
DIVISION OF PERITONEAL ADHESIONS.....54.5	124.6	36.1	207.3	*	165.1	133.6	177.5
OPERATIONS ON THE URINARY SYSTEM.....55-59	826.9	989.7	675.0	220.0	417.9	1,233.1	2,951.6
ENDOSCOPIES (NATURAL ORIFICE).....55.21-55.22,56.31,57.32,58.22	366.0	497.5	243.3	81.8	144.7	547.8	1,493.8
DILATION OF URETHRA.....58.6	80.1	81.5	78.9	34.2	47.8	103.9	257.9
OPERATIONS ON THE MALE GENITAL ORGANS.....60-64	369.8	766.0	...	228.4	119.5	469.7	1,475.7
PROSTATECTOMY.....60.2-60.6	155.9	322.9	...	...	*	216.3	974.8
CIRCUMCISION.....64.0	39.3	81.4	...	90.2	20.7	32.4	*27.6
OPERATIONS ON THE FEMALE GENITAL ORGANS.....65-71	1,750.0	...	3,383.4	25.4	2,802.5	1,655.7	999.1
OOPHORECTOMY AND SALPINGO-OOPHORECTOMY.....65.3-65.6	217.6	...	420.7	*	280.2	343.8	169.0
BILATERAL DESTRUCTION OR OCCLUSION OF FALLOPIAN TUBES.....66.2-66.3	261.8	...	506.1	-	555.0	*14.1	0.6
HYSTERECTOMY.....68.3-68.7	282.8	...	546.7	*	382.5	408.4	216.6
CURETTAGE OF UTERUS TO TERMINATE PREGNANCY.....69.01,69.51	46.3	...	89.5	*	97.8	*	...
DILATION AND CURETTAGE OF UTERUS AFTER DELIVERY OR ABORTION.....69.02	119.5	...	231.1	*	253.5	*	...
DIAGNOSTIC DILATION AND CURETTAGE OF UTERUS.....69.09	322.3	...	623.2	*	459.7	450.2	176.2
REPAIR OF CYSTOCELE AND RECTOCELE.....70.5	67.1	...	129.7	-	50.4	124.2	167.4
OBSTETRICAL PROCEDURES.....72-75	1,716.2	...	3,318.0	32.0	3,659.2	*	...
EPISIOTOMY WITH OR WITHOUT FORCEPS OR VACUUM EXTRACTION.....72.1,72.21,72.31,72.71,73.6	883.8	...	1,708.8	13.0	1,886.7	*	...
CESAREAN SECTION.....74.0-74.2,74.4,74.99	317.7	...	614.3	*	677.4	*	...
REPAIR OF CURRENT OBSTETRIC LACERATION.....75.5-75.6	195.4	...	377.8	*	416.7	-	...
OPERATIONS ON THE MUSCULOSKELETAL SYSTEM.....76-84	1,558.6	1,634.2	1,488.1	492.3	1,551.2	2,088.8	2,751.4
OPEN REDUCTION OF FRACTURE.....76.72,							
76.74,76.76-76.77,76.79,79.2-79.3,79.5-79.6	189.0	216.2	163.6	58.6	182.0	178.5	484.1
OTHER REDUCTION OF FRACTURE.....76.70-76.71,76.73,76.75,76.78,79.0-79.1,79.4	111.5	130.4	93.8	125.2	92.3	102.1	177.2
EXCISION OR DESTRUCTION OF INTERVERTEBRAL DISC AND SPINAL FUSION.....80.5,81.0	98.6	113.3	84.8	*9.7	112.2	190.8	61.5
EXCISION OF SEMILUNAR CARTILAGE OF KNEE.....80.6	65.5	95.3	37.7	*	90.5	86.6	46.9
ARTHROPLASTY AND REPLACEMENT OF KNEE.....81.41-81.47	59.6	66.6	53.1	*	64.5	55.2	145.7
ARTHROPLASTY AND REPLACEMENT OF HIP.....81.5-81.6	64.3	41.8	85.3	*	*7.1	84.7	380.3
OPERATIONS ON THE INTEGUMENTARY SYSTEM.....85-86	810.0	650.7	958.7	246.2	755.7	1,248.4	1,380.2
MASTECTOMY.....85.4	48.3	*5.3	88.4	*	14.7	116.7	158.2
SKIN GRAFT (EXCEPT LIP OR MOUTH).....86.6-86.7	68.0	88.7	48.7	32.9	60.2	92.1	126.7
MISCELLANEOUS DIAGNOSTIC AND THERAPEUTIC PROCEDURES.....87-99	2,372.5	2,340.0	2,402.8	559.9	1,384.4	3,938.0	7,199.9
COMPUTERIZED AXIAL TOMOGRAPHY.....87.03,87.41,87.71,88.01,88.38	260.9	260.4	261.4	84.8	139.8	355.6	925.3
PYELOGRAM.....87.73-87.75	201.9	212.1	192.3	36.0	142.6	306.5	583.0
ARTERIOGRAPHY AND ANGIOCARDIOGRAPHY USING CONTRAST MATERIAL.....88.4-88.5	321.8	410.9	238.7	33.4	94.0	828.4	945.7
DIAGNOSTIC ULTRASOUND.....88.7	244.1	184.2	300.0	42.2	184.4	335.8	717.1
RADIOISOTOPE SCAN.....92.0-92.1	278.7	255.6	300.2	23.7	114.9	468.3	1,107.3

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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 standards of reliability or precision
 - # Figure suppressed to comply with confidentiality requirements
-

Technical notes

Source of data

The National Hospital Discharge Survey (NHDS) encompasses patients discharged from short-stay hospitals, exclusive of military and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only hospitals with six or more beds and an average length of stay of less than 30 days for all patients are included in the survey. Discharges of newborn infants are excluded from this report.

The universe of the survey consisted of 6,965 short-stay hospitals contained in the 1963 Master Facility Inventory of Hospitals and Institutions. New hospitals were sampled for inclusion in the survey in 1972, 1975, 1977, 1979, and 1981. In all, 550 hospitals were sampled in 1982. Of these hospitals, 71 refused to participate, and 53 were out of scope. The 426 participating hospitals provided approximately 214,000 abstracts of medical records.

Sample design

All hospitals with 1,000 or more beds in the universe of short-stay hospitals were selected with certainty in the sample. All hospitals with fewer than 1,000 beds were stratified, the primary strata being 24 size-by-region classes. Within each of these 24 primary strata, the allocation of the hospitals was made through a controlled selection technique so that hospitals in the sample would be properly distributed with regard to type of ownership and geographic division. Sample hospitals were drawn with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals.

Sample discharges were selected within the hospitals using the daily listing sheet of discharges as the sampling frame. These discharges were selected by a random technique, usually on the basis of the terminal digit or digits of the patient's medical record number, a number assigned when the patient was admitted to the hospital. The within-hospital sampling ratio for selecting sample discharges varied inversely with the probability of selection of the hospital.

Data collection and estimation

The sample selection and the transcription of information from the hospital records for abstract forms were performed by the hospital staff or by representatives of the National Center for Health Statistics or by both. The data were abstracted from the face sheets of the medical records. All discharge diagnoses and procedures were listed on the abstract in the order of the principal one, or the first-listed one if the principal one was not identified, followed by the order in which all other diagnoses or procedures were entered on the face sheet of the medical record.

Statistics produced by the NHDS are derived by a complex estimating procedure. The basic unit of estimation is the sample inpatient discharge abstract. The estimating procedure used to produce essentially unbiased national estimates in the NHDS has three principal components: inflation by reciprocals of the probabilities of sample selection, adjustment for nonresponse,

and ratio adjustment to fixed totals. These components of estimation are described in appendix I of two earlier publications.^{4,5}

Sampling errors and rounding of numbers

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than an 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. Relative standard errors for discharges and first-listed diagnoses are shown in table I, relative standard errors for days of care are shown in table II, and relative standard errors for procedures are shown in table III.

Table I. Approximate relative standard errors of estimated numbers of discharges, first-listed diagnosis, and all-listed diagnoses, by selected patient and hospital characteristics: United States, 1982

Size of estimate	Ownership of hospital		Bed size less than 100	All other characteristics
	Proprietary or State and local government	Nonprofit		
	Relative standard error			
5,000	40.4	22.7	25.8	20.5
10,000	35.7	19.9	20.7	16.3
50,000	27.9	15.2	13.1	10.2
100,000	25.5	13.7	11.0	8.5
300,000	22.4	11.9	8.6	6.6
500,000	21.2	11.2	7.8	5.9
1,000,000	19.9	10.4	6.8	5.1
3,000,000	18.1	9.4	5.7	4.2
5,000,000	17.4	9.0	5.2	3.9
10,000,000	16.5	8.5	4.7	3.5
15,000,000	16.1	8.3	4.5	3.3
20,000,000	15.8	8.1	4.3	3.2
30,000,000	15.4	7.9	4.1	3.0
40,000,000	15.2	7.8	4.0	2.9

Table II. Approximate relative standard errors of estimated numbers of days of care by selected patient and hospital characteristics: United States, 1982

Size of estimate	Proprietary hospitals	All other characteristics
10,000	46.3	29.2
30,000	37.1	22.2
50,000	33.7	19.6
100,000	29.6	16.6
300,000	24.5	13.0
500,000	22.6	11.6
1,000,000	20.3	10.0
3,000,000	17.3	8.0
5,000,000	16.1	7.2
10,000,000	14.8	6.4
50,000,000	12.3	4.9
100,000,000	11.5	4.4
200,000,000	10.7	4.0
300,000,000	10.4	3.8

NOTE: A list of references follows the text.

Table III. Approximate relative standard errors of estimated numbers of all-listed procedures: United States, 1982

<i>Size of estimate</i>	<i>Relative standard error</i>
5,000	21.9
10,000	18.3
25,000	14.6
50,000	12.6
100,000	10.9
500,000	8.2
1,000,000	7.4
3,000,000	6.4
5,000,000	6.0
10,000,000	5.5
15,000,000	5.3
20,000,000	5.1
25,000,000	5.0
35,000,000	4.9

Estimates have been rounded to the nearest thousand. For this reason detailed 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, the determination of statistical inference is based on the two-tailed Bonferroni test for multiple comparisons. Terms relating to differences such as “higher” and “less” indicate that the 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 be not significant.

Definition of terms

Hospitals and hospital characteristics

Hospitals—Short-stay special and general hospitals have six or more beds for inpatient use and an average length of stay of less than 30 days. Federal hospitals and hospital units of institutions are not included.

Bed size of hospital—Measured by the number of beds, cribs, and pediatric bassinets regularly maintained (set up and staffed for use) for patients; bassinets for newborn infants are not included. In this report the classification of hospitals by bed size reported by the hospitals is based on the number of beds at or near midyear.

Type of ownership of hospital—Determined by the organization that controls and operates the hospital. Hospitals are grouped as follows:

- *Voluntary nonprofit*—Hospitals operated by a church or another nonprofit organization.
- *Government*—Hospitals operated by a State or local government.

- *Proprietary*—Hospitals operated by individuals, partnerships, or corporations for profit.

Terms relating to hospitalization

Patient—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. In this report the number of patients refers to the number of discharges during the year including any multiple discharges of the same individual from one or more short-stay hospitals. Infants admitted on the day of birth, directly or by transfer from another medical facility, with or without mention of disease, disorder, or immaturity, are included. All newborn infants, defined as those admitted by birth to the hospital, are excluded from this report. The terms “patient” and “inpatient” are used synonymously.

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 total number of patient days accumulated at time of discharge by patients discharged from short-stay hospitals during a year. 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.

Rate of days of care—The ratio of the number of patient days accumulated at time of discharge by patients discharged from short-stay hospitals during a year to the number of persons in the civilian population on July 1 of that year.

Average length of stay—The total number of patient days accumulated at time of discharge by patients discharged during the year, divided by the number of patients discharged.

Terms relating to diagnoses

Discharge diagnoses—One or more diseases or injuries (or some factor that influences health status and contact with health services which is not itself a current illness or injury) listed by the attending physician or the medical record of a patient. In the NHDS all discharge (or final) diagnoses listed on the face sheet (summary sheet) of the medical record for patients discharged from the inpatient service of short-stay hospitals are transcribed in the order listed. Each sample discharge is assigned a maximum of seven five-digit codes according to ICD-9-CM.³ The number of principal or first-listed diagnoses is equivalent to the number of discharges.

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 of the

NOTE: A list of references follows the text.

medical record if the principal diagnosis cannot be identified. The number of first-listed diagnoses is equivalent to the number of discharges.

Procedure—One or more surgical or nonsurgical operations, procedures, or special treatments assigned by the physician to patients discharged from the inpatient service of short-stay hospitals. In the NHDS all terms listed on the face sheet (summary sheet) of the medical record under the captions “operation,” “operative procedures,” “operations and/or special treatment,” and the like are transcribed in the order listed. A maximum of four procedures are coded.

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

Demographic terms

Age—Refers to the age of the patient on the birthday prior to admission to the hospital inpatient service.

Geographic regions—One of the four geographic regions of the United States corresponding 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
North Central . . .	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

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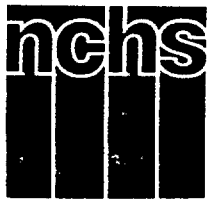
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Utilization of Analgesic Drugs in Office-Based Ambulatory Care: National Ambulatory Medical Care Survey, 1980–81

by Hugo Koch, Division of Health Care Statistics, and Deanne E. Knapp, Ph.D., National Center for Drugs and Biologics

Introduction

The purpose of this report is to describe the utilization of analgesic drugs in office-based ambulatory care. The report combines the 1980 and 1981 findings of the National Ambulatory Medical Care Survey, an annual, sample survey of office-based physicians conducted from 1973 through 1981 by the National Center for Health Statistics. The National Ambulatory Medical Care Survey (NAMCS) is scheduled to take the field again in 1985 and every third year following.

The term *utilization* is limited to the ordering or providing of an analgesic drug by the office-based physician in the course of an office visit. It does not include drugs ordered by phone contact, nor does it attempt to measure ultimate patient compliance with the doctor's instruction.

The drugs described are those classified as *Central Nervous System Drugs: Analgesics and Antipyretics*, according to the American Hospital Formulary Service Classification System.¹ Description centers on drugs of this class that were named by physician respondents in 1980–81. A list of the named analgesics appears in figure 1. Along with all *new* analgesics ordered or provided, the physician also recorded *continued* analgesics if the patient was specifically instructed during the visit to continue the medication. (However, the data base does not distinguish between the new and the continued medication.) The listed agents appear as brand² or generic names, depending on the choice made by the physician in ordering the analgesic. They are divided into two subcategories:³

- Opioids: Produce analgesia by their interaction with specific opioid binding sites in the central nervous system. (The terms "opioid" and "opiate" are interchangeable).

- Nonopioids: Do not bind to the opioid receptors. (Indeed, the exact mechanism of their analgesic action remains unknown).

By restricting its scope to an arbitrarily selected class of analgesics this study understates the overall use of pain-relieving drugs in office practice. For example, it does not account for the presence of analgesic ingredients in drugs primarily classified under other rubrics, as in the following cases:

<i>Drug class</i>	<i>Members with analgesic ingredients</i>
Psychotropic agents	such as Equagesic, Fiorinal
Skeletal muscle relaxants	such as Parafon forte, Soma compound
Antihistamines	such as Synalgos
Antitussives	codeine combinations
Antidiarrheal agents	opium combinations

Because the estimates presented in this report are based on a sample of office visits and drug mentions rather than the entire universe of visits and mentions, they are subject to sampling variability. The technical notes at the end of the report provide a brief description of the sample design, an explanation of sampling errors, and guidelines for judging the precision of the estimates.

¹American Hospital Formulary Service Classification System and Therapeutic Category Codes: Copyright, 1980, American Society of Hospital Pharmacists, Inc.

²The use of trade names is for identification only and does not imply endorsement by the Public Health Service of the U.S. Department of Health and Human Services.

³Based on *AMA Drug Evaluations, Fifth Edition*: Chapter 4: American Medical Association, 1983.

Opioids			Nonopioids			
Aceta w/codeine	Dilaudid	pentazocine	Aceta	Buffern	Gemnisyn	phenylbutazone
acetaminophen	Dolacet	Percocet-5	acetaminophen	Buffern arthritis	ibuprofen	alka
w/codeine	Dolene	Percodan	Acetycol	strength	Indocin	Ponstel
Anexsia-D	Dolene	Percodan-demi	Aluprin	Butazolidin	indomethacin	Presalin
Anexsia w/codeine	compound-65	Phenaphen	Amphenol	Butazolidin alka	Liquiprin	SK-APAP
Anodynos-DHC	Dolophine	w codeine	Anacin	Cama	Magan	sodium
APAP w/codeine	Dovaphen	propoxyphene	Anaprox	Capron	Measurin	salicylate
aspirin, phenacetin,	Duradyne DHC	propoxyphene	APAP	choline salicylate	Meclomen	sulindac
caffeine, codeine	Empirin w/codeine	compound 65	aspirin, phenacetin,	Cirin	Mobidin	Suppap
Ascriptin w/codeine	Empirin compound	propoxyphene	caffeine	Clinoril	Motrin	Tandearl
aspirin w/codeine	w/codeine	w acetaminophen	aspirin, phenacetin,	colchicine	Nalfon	Tempra
B&O supprettres	Empracet	propoxyphene	caffeine compound	Colsalide	Naprosyn	Thiolate
Capital w/codeine	innovar	w APAP	Arthralgen	Dasin	naproxen	Thioral
Christodyne-DHC	Levo-dromoran	SK-65	Arthritis pain	Datril	Neopap	Thiosal
Codap	Liquix C	SK-65 APAP	formula	Dimindol	Norgesic	Tolectin
codeine	Mepergan	SK-65 compound	Arthrolate	Disalcid	Os-cal-gesic	tolmetin
Copavin	mependine	Stadol	Arthropan	Ecotrin	Oxalid	Ngesic
Damason-P	methadone	Talwin	Ascriptin	Empirin	P-A-C compound	Trilisate
Darvocet-N	morphine	Talwin compound	Aspergum	Empirin compound	Pabalate	Tylenol
Darvon	Nubain	Tylenol	aspirin	Esgic	Pain reliever-E	Valacet
Darvon compound	opium and	w/codeine	aspirin compound	Excedrin	Persistin	Vanquish
Darvon w.A.S.A.	belladonna	Tylox	Azolid	Febrinol	Phenaphen	Zactinn
Darvon-N	opium extract	Unigesic-A	B-A	Fever reducer	Phencaset	Zomax
Darvon-N w.A.S.A.	P-A-C compound	Vicodin	Buffadyne	St. Joseph	phenylbutazone	
Demerol	w/codeine	Wygesic				
Demerol-APAP						

NOTES Included in the category Opioids are all opioid-nonopioid combinations, included in the category Nonopioids are nonopioid-nonopioid combinations
Drug names are listed in brand or generic form, according to actual survey responses

Figure 1. Analgesic drugs named by physician respondents: United States, 1980-81

General findings

According to findings from the National Ambulatory Medical Care Survey for 1980 and 1981 combined, an estimated 1,160,922,000 visits were made to physicians who identified themselves as primarily engaged in office-based, patient care practice. Of this total, 717,775,000 (62 percent) were *drug visits*; that is, visits at which one or more of any type of drug was ordered or provided. The total number of drug mentions for the 2-year span amounted to an estimated 1,330,746,000 mentions.

Visits involving the utilization of an in-scope analgesic numbered 106,718,000, about 9 percent of the overall number of office visits and about 15 percent of all drug visits. The total number of analgesic drug mentions was 116,641,000. Of these an estimated 31,380,000 (27 percent) were opioids. The remaining 85,261,000 (73 percent) were nonopioids.

Table 1 lists the 25 analgesic products most frequently mentioned. They accounted for virtually nine-tenths of all analgesic mentions. The generic names most frequently represented among these 25 products are shown in the following listing:

Generic name	Number of mentions in thousands
aspirin	28,448
acetaminophen	21,318
codeine	12,794
ibuprofen	11,786
sulindac	6,670
propoxyphene	6,497
naproxen	6,431
indomethacin	6,288
phenylbutazone	4,252
zomepirac	3,495

Table 1. The 25 analgesic drugs most frequently mentioned in office-based practice, by name of drug and number and percent distribution of mentions: United States, 1980-81

R a n k	Name of drug	Number of mentions in thousands	Percent distribution
	All analgesics	116,641	100.0
	25 drugs most frequently mentioned		
1	aspirin (includes A.S.A.)	16,342	14.0
2	Motrin (ibuprofen)	11,786	10.1
3	Tylenol w/codeine (acetaminophen, codeine)	7,746	6.6
4	Tylenol (acetaminophen)	7,086	6.1
5	Clinoril (sulindac)	6,670	5.7
6	Naprosyn (naproxen)	6,431	5.5
7	Indocin (indomethacin)	6,288	5.4
8	Darvocet-N (acetaminophen, propoxyphene)	5,199	4.4
9	Zomax (zomepirac)	3,495	3.0
10	Nalfon (fenopropfen)	3,153	2.7
11	Butazolidin alka (phenylbutazone, aluminum hydroxide, magnesium trisilicate)	3,092	2.7
12	Norgesic (orphenadrine, aspirin, phenacetin, caffeine)	2,691	2.3
13	Empirin w/codeine (aspirin, codeine)	2,519	2.2
14	Ascriptin (aspirin)	2,368	2.0
15	Percodan and Percodan-demi (oxycodone, aspirin)	2,144	1.8
16	Tolectin (tolmetin)	2,077	1.8
17	Demerol (mependine)	1,703	1.5
18	Talwin (pentazocine)	1,505	1.3
19	Meclomen (meclofenamate)	1,346	1.2
20	Darvon and Darvon-N (propoxyphene)	1,298	1.1
21	Phenaphen w/codeine (acetaminophen, codeine)	1,287	1.1
22	Empirin compound w codeine (aspirin, codeine)	1,242	1.1
23	Butazolidin (phenylbutazone)	1,160	1.0
24	Buffern (buffered aspirin)	1,142	1.0
25	Tandearl (oxyphenbutazone)	1,051	0.9

Table 2. Number and percent distribution of analgesic mentions by category of analgesic, according to selected drug dimensions: United States, 1980-81

Selected drug dimensions	Analgesic mentions		
	All analgesics	Opioids	Nonopioids
	Number in thousands		
Total mentions	116,641	31,380	85,261
	Percent distribution		
	100.0	100.0	100.0
Entry status ¹			
Generic name	19.2	10.1	22.6
Brand name	80.7	89.9	77.3
Prescription status			
Prescription drug	72.8	100.0	62.8
Nonprescription drug	27.2	-	37.1
Federal control status			
Controlled by DEA ²	26.4	100.0	-
Schedule II	5.7	21.1	-
Schedule III	11.9	46.1	-
Schedule IV	8.7	32.4	-
Schedule V	*0.1	*0.4	-
Not controlled	73.5	-	100.0
Composition status			
Single-ingredient drug	74.4	21.2	93.9
Combination drug	25.6	78.8	6.0

¹The form of the drug name (brand or generic) represents the choice of the physician in preparing the order.

²Drug Enforcement Administration.

Drug dimensions

Table 2 describes some key dimensions of the analgesic drugs.

Entry status—In ordering an analgesic, physicians showed a strong tendency to favor brand name choices over their generic counterparts. About 4 of every 5 of the overall class were identified by trade name. The tendency was strongest in the opioid subclass; here, only 1 of every 10 mentions was generically identified.

Prescription status—The utilization of nonprescription drugs, apparent in 27 percent of analgesic mentions, was more than double their proportionate use in overall, office-based drug therapy (12 percent).

Control status—Because of its opioid component, the analgesic family has a substantial proportion of controlled agents among its members. Controlled agents accounted for 26 percent of analgesic mentions, the majority of their number classified in Schedules III and IV. Thus the prescribing physician, faced with the need to moderate pain, also needs to weigh the desired therapeutic effect against the potential hazards of dependence or habituation.

Composition status

The proportionate use of combination products among the analgesics (apparent in about 26 percent of mentions) conforms closely to the proportionate use of combinations throughout office-based drug therapy. By far the most common analgesic mixtures involved the combination of an opioid

with a nonopioid, with codeine or propoxyphene appearing as the most common opioid ingredient. Ample support for the use of this type of analgesic combination is provided by the *AMA Drug Evaluations, Fifth Edition*:

The combination of an opiate or opioid with a non-opiate (analgesic-antipyretic) appears to be rational because the mechanism of action of each drug differs and the results of controlled studies have shown that the analgesic effects of the individual drugs are additive. Since the nonopioids have a ceiling analgesic effect and the dosage of opiates should be limited to prevent adverse effects, a combination of this type may provide greater pain relief with a minimum of adverse effects in a convenient form for the patient.⁴

Apparent in only 6 percent of analgesic mentions, the combination of a nonopioid with another nonopioid is manifestly uncommon in the office-based utilization of analgesics, possibly because of the reason stated in *AMA Drug Evaluations, Fifth Edition*: "...it can be concluded that mixtures of analgesic-antipyretic drugs with or without caffeine have not been proved to be superior to optimal doses of their individual components."⁴

Diagnosis

By far the most intensive use of analgesic therapy occurs within two diagnostic groups: "Injuries" and "Diseases of the Musculoskeletal System" (table 3).⁵ This is demonstrated more clearly in the following listing of the specific conditions most frequently associated with analgesic utilization:

Opioid therapy	
Rank	Diagnosis and ICD-9-CM Code ⁵
1	Back sprains and strains 847
2	Intervertebral disc disorders 722
3	Other and unspecified back disorders 724
4	Sprains and strains of the sacroiliac 846
5	Osteoarthritis 715
Nonopioid therapy	
Rank	Diagnosis and ICD-9-CM Code ⁵
1	Osteoarthritis 715
2	Other and unspecified arthropathies 716
3	Peripheral enthesopathies 726
4	Rheumatoid arthritis 714
5	Acute upper respiratory infection 465

In contrast to other drug classes, the rate of analgesic utilization in the category "Symptoms and ill-defined conditions" is relatively higher, documenting the physician's tendency to respond to symptomatic pain in advance of a clearly established diagnosis. However, it would be a mistake to assume that an analgesic is automatically ordered whenever pain appears as a symptom. Indeed, according to another NAMCS study (in preparation), about 70 percent of nearly 70 million newly encountered problems where pain was the chief presenting symptom did not involve the use of an in-scope analgesic.

⁴AMA Drug Evaluations, op cit, p 101.

⁵Based on International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM).

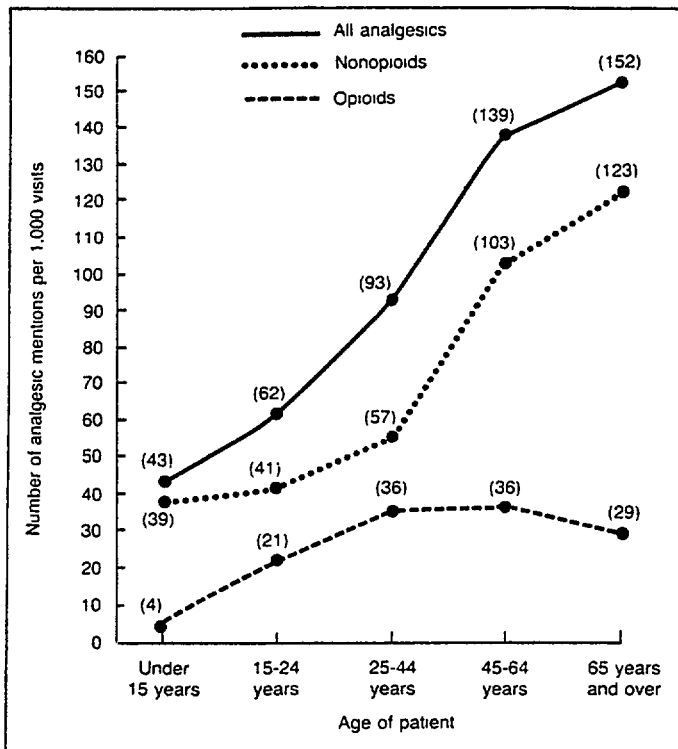
Table 3. Number of office visits, number of analgesic mentions, and number of mentions per 1,000 visits, by principal diagnosis and problem categories; and percent distribution by opioid and nonopioid mentions, according to principal diagnosis and problem category: United States, 1980-81

Principal diagnosis and problem category	Number of visits in thousands	Analgesic mentions			
		All analgesics		Opioids	Nonopioids
		Number in thousands	Rate per 1,000 visits	Percent of all analgesic mentions	Percent of all analgesic mentions
All principal diagnoses	1,160,922	99,581	86	28.3	71.7
Major diagnostic groups (selected)					
Infectious and parasitic diseases	37,714	2,451	65	21.9	78.1
Neoplasms	30,707	1,300	42	57.0	43.0
Endocrine, nutritional, and metabolic diseases, and immunity disorders	45,371	2,281	50	16.1	83.9
Mental disorders	47,624	1,622	34	50.5	49.5
Diseases of nervous system and sense organs	109,573	4,465	41	43.1	56.9
Diseases of circulatory system	112,344	8,142	72	19.5	80.5
Diseases of respiratory system	146,014	10,255	70	22.3	77.7
Diseases of digestive system	49,080	2,610	53	44.2	55.8
Diseases of genitourinary system	68,504	3,394	50	52.5	47.5
Diseases of skin and subcutaneous tissue	69,421	1,303	19	39.5	60.5
Diseases of musculoskeletal system	79,206	37,208	470	18.9	81.0
Symptoms, signs, and ill-defined conditions	38,526	3,261	85	39.4	60.6
Injury and poisoning	94,723	16,561	175	38.1	61.9
Normal pregnancy	51,307	*205	*4	...	...
Problem categories					
Acute problem	422,223	48,386	115	29.0	71.0
Chronic problem, routine	325,791	25,066	77	24.2	75.8
Chronic problem, flareup	106,393	16,239	153	27.9	72.1
Postsurgery or postinjury	101,792	7,125	70	41.8	58.2
Nonillness care	204,722	2,765	14	*20.6	79.4

*Includes only those analgesics ordered or provided for the principal diagnosis, excluding some 17,060,000 mentions where analgesics were utilized for "all other reasons."

Table 4. Number of office visits, number of analgesic mentions, and number of mentions per 1,000 visits, by age and sex of patient; and percent distribution by opioid and nonopioid mentions, according to age and sex of patient: United States, 1980-81

Age and sex of patient	Number of visits in thousands	Analgesic mentions			
		All analgesics		Opioids	Nonopioids
		Number in thousands	Rate per 1,000 visits	Percent of all analgesic mentions	Percent of all analgesic mentions
All visits	1,160,922	116,641	100	26.9	73.1
Age					
Under 15 years	216,128	9,310	43	9.8	90.2
15-24 years	160,795	10,044	62	34.2	65.8
25-44 years	310,384	28,899	93	39.0	61.0
25-29 years	97,109	7,159	74	42.6	57.4
30-34 years	86,896	7,421	85	37.4	62.6
35-39 years	69,611	7,053	101	37.8	62.2
40-44 years	56,768	7,266	128	38.3	61.7
45-64 years	265,700	36,838	139	26.3	73.7
45-49 years	56,265	6,459	115	29.6	70.4
50-54 years	68,032	9,907	146	30.9	69.1
55-59 years	70,825	10,390	147	24.2	75.8
60-64 years	70,578	10,081	143	21.7	78.3
65 years and over	207,915	31,550	152	19.3	80.7
65-69 years	67,884	9,549	141	22.8	77.2
70-74 years	57,577	8,925	155	19.5	80.5
75-79 years	43,309	6,931	160	15.2	84.8
80 years and over	39,145	6,145	157	17.9	82.1
Sex					
Female	699,718	69,856	100	26.7	73.3
Male	461,204	46,785	101	27.2	72.8



Patient characteristics

From its lowest rate, for patients under 15 years of age, the overall utilization of analgesics generally increased in each successive age group throughout the age spectrum, the sharpest acceleration occurring in the age interval from the 25th through the 64th year (table 4 and figure 2). It is the utilization rates for the nonopioids that chiefly determine the shape of the overall curve; these rates, in their turn, largely reflected the strong preference for the nonopioids in the treatment of the musculoskeletal diseases. Opioid utilization, probably due chiefly to the above-average preference for opioids in the treatment of injuries, rises steadily up to the 45th year (the injury-prone period), levels off in the 45-to-64 age group, and probably declines slightly in the later years of life.

Although the average overall rates of analgesic utilization were the same for both male and female patients (table 4), there were marked differences between the sexes in the age intervals at which the analgesic therapy was most intensely applied (table 5 and figure 3). The male rate, substantially higher in the age interval 15-44 years, results chiefly from the fact that the proportion of visits for injuries in this age group was almost twice as great among male patients as among females. The female rate, higher among patients age 45 years and over, largely reflects a growing proneness toward musculoskeletal disease that is proportionately greater among older females than among their male counterparts.

Figure 2. Analgesic utilization rates by category of analgesic and age of patient: United States, 1980-81

Table 5. Number of office visits, number of analgesic mentions, and number of mentions per 1,000 visits, by selected patient characteristics; and percent distribution by opioid and nonopioid mentions, according to selected patient characteristics: United States, 1980-81

Selected patient characteristic	Number of visits in thousands	Analgesic mentions			
		All analgesics		Opioids	Nonopioids
		Number in thousands	Rate per 1,000 visits	Percent of all analgesic mentions	Percent of all analgesic mentions
All visits	1,160,922	116,641	100	26.9	73.1
Sex and age					
Female					
Under 15 years	102,633	4,394	43	8.0	92.0
15-24 years	107,276	5,525	52	37.4	62.6
25-44 years	206,394	16,352	79	39.5	60.5
45-64 years	157,031	22,311	142	26.4	73.6
65 years and over	126,383	21,275	168	18.1	81.9
Male					
Under 15 years	113,495	4,916	43	11.4	88.6
15-24 years	53,519	4,519	84	30.4	69.6
25-44 years	103,990	12,548	121	38.3	61.7
45-64 years	108,668	14,527	134	26.1	73.9
65 years and over	81,532	10,275	126	21.6	78.4
Race¹					
White	1,037,590	100,634	97	25.5	74.5
Black	110,546	14,784	134	36.4	63.6
Ethnicity					
Hispanic	53,337	6,144	115	25.7	74.3
Not Hispanic	1,107,585	110,497	100	27.0	73.0

¹Excludes about 12,786,000 visits by patients of races other than white or black.

The significantly higher rate among black office patients (table 5) is chiefly related to the finding that black patients suffered proportionately more than white patients from the four conditions that command the highest rates of analgesic use: musculoskeletal diseases, injuries, circulatory diseases, and symptoms and ill-defined conditions.

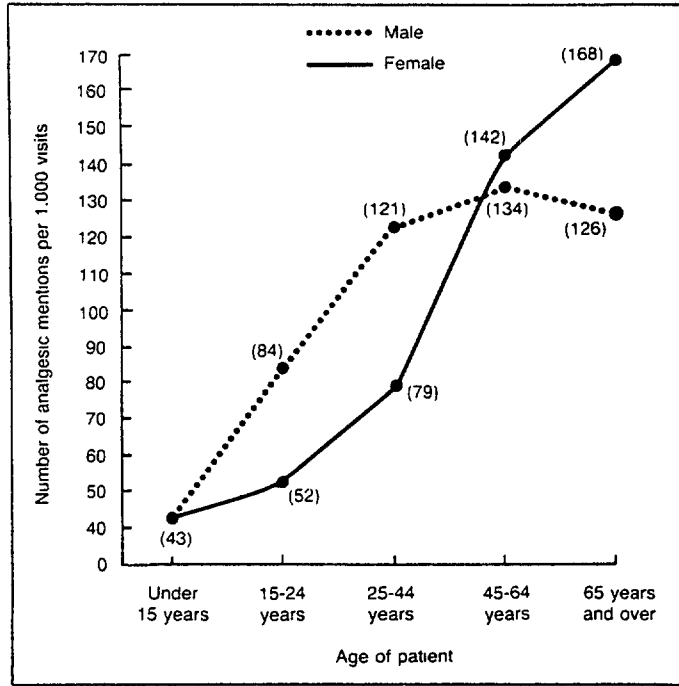


Figure 3. Analgesic utilization rates by sex and age of patient: United States, 1980-81

Physician characteristics

Of the most-visited, office-based specialties, five exceeded the average rate of analgesic utilization (table 6). Ranked by magnitude of rate, these specialties were:

- | Rank | Specialty |
|-------------|-----------------------------|
| 1 | Orthopedic surgery |
| 2 | Internal medicine |
| 3 | Neurology |
| 4 | General and family practice |
| 5 | Cardiovascular disease |

Shifting attention from rate of analgesic utilization to sheer volume of use, it is worthy of note, however, that two primary-care providers, the internist and the general or family practitioner, accounted for fully two-thirds of all analgesic mentions and nearly the same proportion (62 percent) of opioid mentions.

Other visit characteristics

The most conservative utilization of analgesics occurred with new patients (table 7), a pattern common throughout all office-based drug therapy. The most intensive use occurred when a new problem was presented by a patient with whom the doctor already had a clinical relationship. Thus, given what may be the same problem, the physician's decision whether or not to use an analgesic is obviously influenced by familiarity with the patient's history, including possible drug reactions.

The findings in table 8 document the associations of analgesic therapy with the forms of nondrug treatment that most frequently accompanied it. Perhaps most arresting is

Table 6. Number of office visits, number of analgesic mentions, and number of mentions per 1,000 visits, by selected physician characteristics; and percent distribution by opioid and nonopioid mentions, according to selected physician characteristics: United States, 1980-81

Selected physician characteristic	Number of visits in thousands	Analgesic mentions			
		All analgesics		Opioids	Nonopioids
		Number in thousands	Rate per 1,000 visits	Percent of all analgesic mentions	Percent of all analgesic mentions
All office-based physicians	1,160,922	116,641	100	26.9	73.1
Selected specialties					
General and family practice	381,710	51,255	134	27.9	72.1
Internal medicine	144,172	26,252	182	19.8	80.2
Pediatrics	128,762	5,429	42	*10.6	89.4
Obstetrics and gynecology	109,035	2,669	24	38.1	61.9
General surgery	61,013	5,823	95	38.7	61.2
Orthopedic surgery	55,470	12,071	218	26.3	73.7
Cardiovascular disease	14,781	1,887	128	*21.9	78.1
Psychiatry	31,810	*615	*19	*57.6	*42.4
Neurology	6,379	1,117	175	*19.7	80.3
Professional identity					
Doctor of medicine	1,089,638	108,468	100	27.0	73.0
Doctor of osteopathy	71,284	8,173	115	25.3	74.7
Type of practice					
Solo	635,651	63,624	100	27.4	72.6
Multiple member	525,271	53,017	101	26.3	73.7

Table 7. Number of office visits, number of analgesic mentions, and number of mentions per 1,000 visits, by selected visit characteristics; and percent distribution by opioid and nonopioid mentions, according to selected visit characteristics: United States, 1980-81

Selected visit characteristic	Number of visits in thousands	Analgesic mentions			
		All analgesics		Opioids	Nonopioids
		Number in thousands	Rate per 1,000 visits	Percent of all analgesic mentions	Percent of all analgesic mentions
All visits	1,160,922	116,641	100	26.9	73.1
Referral status					
Referred by another physician	51,392	4,513	88	28.9	71.1
Not referred by another physician	1,109,530	112,128	101	26.8	73.2
Patient visit status					
New patient	166,675	15,346	92	31.0	69.0
Old patient	994,247	101,294	102	26.3	73.7
New problem	258,778	31,793	123	26.4	73.6
Old problem	735,469	69,501	94	26.2	73.8
Problem status					
New problem	425,453	47,140	111	27.9	72.1
Return visit for old problem	735,469	69,501	94	26.2	73.8

the broad extent to which drug therapy was the exclusive form of treatment employed. At about one-half of the visits that involved the use of an analgesic—alone or accompanied by agents of other drug classes—there was no concurrent use of any form of nondrug therapy.

Table 8. Number and percent distribution of analgesic visits, by nonmedication therapy: United States, 1980-81

Nonmedication therapy ¹	Analgesic visits ²	
	Number in thousands	Percent distribution
Total visits	106,718	100.0
None	52,070	48.8
Medical counseling	31,454	29.5
Physiotherapy	14,891	14.0
Office surgery	4,178	3.9
Psychotherapy or therapeutic listening	3,557	3.3
Other	12,436	11.7

¹Because it was possible to use more than one form of nonmedication therapy at a given visit, estimates will exceed the totals at the top of the columns.

²An analgesic visit is an office visit at which one or more analgesic agents was utilized.

provided in office practice. Further, when they do use a drug, physicians tend to use more than one. The overall average is about two drugs per drug visit, but larger multiples are not uncommon, especially when the patient suffers from more than one disorder. With co-occurrence the rule rather than the exception, it is instructive to explore the patterns of concomitant utilization of drugs that occurred in the office visits at which an analgesic agent was ordered or provided.

At the 106.7 million visits at which an analgesic agent was utilized, its use (expressed as a percent of these visits) co-occurred most frequently with the use of one or more members of the following ten therapeutic families:

Co-occurring therapeutic family ⁶	Percent of co-occurrence
Antibiotics	12.2
Diuretics	12.2
Antianxiety agents, sedatives, hypnotics	8.3
Cardiac drugs	6.9
Adrenals	6.6
Antihypertensives	6.4
Gastrointestinal drugs	5.3
Skeletal muscle relaxants	3.9
Antidepressives and antipsychotics	3.4
Expectorants and cough preparations	3.0

⁶American Hospital Formulary Classification System, op cit.

Co-occurrence

Utilized at 62 percent of all office visits, drug therapy (of all types) is by far the most frequent form of treatment

Technical notes

Source of data and sample design

The estimates presented in this report are based on the findings of the National Ambulatory Medical Care Survey (NAMCS), a sample survey of office-based care conducted annually from 1973 through 1981 by the National Center for Health Statistics. The target universe of NAMCS is composed of office visits made by ambulatory patients to non-Federal and noninstitutional physicians who are principally engaged in office-based, patient-care practice. Visits to physicians practicing in Alaska and Hawaii are excluded from the range of NAMCS, as are visits to anesthesiologists, pathologists, and radiologists.

NAMCS uses a multistage probability sample design that involves a step sampling of primary sampling units (PSU's), physicians' practices within PSU's, and patient visits within physicians' practices. The physician sample (5,805 physicians for 1980 and 1981) was selected from master files maintained by the American Medical Association and the American Osteopathic Association. Those members of the sample who proved to be in scope and eligible participated at a rate of 77.3 percent. Responding physicians completed visit records for a systematic random sample of office visits made during a randomly assigned weekly reporting period. Telephone contacts were excluded. During 1980 and 1981 responding physicians completed 89,447 visit records on which they recorded 97,796 drug mentions. Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained during an induction interview. The National Opinion Research Center, under contract to the National Center for Health Statistics, was responsible for the field operations of the survey.

Table I. Approximate relative standard errors of estimated numbers of office visits and of drug mentions when drug is listed by product name (for example, Darvon), based on all physician specialties: National Ambulatory Medical Care Survey, 1980-81

<i>Estimated number of office visits or specific drug mentions</i>	<i>Relative standard error</i>
Number in thousands	Percent
*200	*44.8
*400	*31.7
*450	*30.0
600	26.0
800	22.6
1,000	20.2
2,000	14.5
5,000	9.5
10,000	7.1
20,000	5.6
50,000	4.4
100,000	3.9
200,000	3.6
500,000	3.5
1,000,000	3.4

Example of use of table: An aggregate estimate of 35,000,000 office visits has a relative standard error of 5.0 percent or a standard error of 1,750,000 visits (5.0 percent of 35,000,000 visits).

Sampling errors and rounding

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than the entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. In this report, any estimate that exceeds a relative standard error of 30 percent is marked with an asterisk. Table I should be used to obtain the relative standard error for aggregates of office visits or for mentions of drugs by specific name (for example, Darvon). Table II should be used to obtain the relative standard error for drug mentions expressed as drug groups (for example, the analgesic drug family).

In the tables of this report estimates have been rounded to the nearest thousand. For this reasons, detailed estimates do not always add to totals.

Table II. Approximate relative standard errors of estimated numbers of drug mentions when drugs appear in groups (for example, the analgesic drug family), based on all physician specialties: National Ambulatory Medical Care Survey, 1980-81

<i>Estimated number of grouped drug mentions</i>	<i>Relative standard error</i>
Number in thousands	Percent
*200	*54.2
*400	*38.5
*600	*31.5
*650	*30.0
800	27.3
1,000	24.5
2,000	17.6
5,000	11.6
10,000	8.7
20,000	6.8
50,000	5.3
100,000	4.7
200,000	4.4
500,000	4.2
1,000,000	4.1

Example of use of table: An aggregate estimate of 30,000,000 drug mentions has a relative standard error of 7.0 percent or a standard error of 2,100,000 mentions (7.0 percent of 30,000,000 mentions).

Definitions

An *office* is a place that physicians identify as a location for their ambulatory practice. Responsibility for patient care and professional services rendered in an office resides with the individual physician rather than an institution.

A *visit* is a direct personal exchange between an ambulatory patient seeking health care and a physician, or staff member working under the physician's supervision, who provides the health services.

A *drug mention* is the physician's entry on the visit record of a pharmaceutical agent ordered or provided by any route of administration for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included.

as are nonprescription as well as prescription drugs. The physician records all new drugs and also records all continued medications if the patient is specifically instructed during the visit to continue the medication.

An *acute problem* is a morbid condition with a relatively sudden or recent onset (within 3 months of the visit).

A *chronic problem* is a morbid condition that existed for 3 months or longer before the visit. The care indicated

is of a regular, maintenance nature.

A *chronic problem flare up* is a sudden exacerbation of a preexisting chronic condition.

Nonillness care denotes health examinations and care provided for presumably healthy persons. Examples of nonillness care include prenatal and postnatal care, annual physicals, well-child examinations, and insurance examinations.

The Management of New Pain in Office-Based Ambulatory Care: National Ambulatory Medical Care Survey, 1980 and 1981

by Dee A. Knapp, Ph.D., University of Maryland at Baltimore, and Hugo Koch, Division of Health Care Statistics

Introduction

The office-based practitioner is no stranger to the management of acute and chronic pain. The problem of diagnosing and treating pain-producing conditions is especially challenging when the pain and its associated morbidity are encountered for the first time in a particular patient—that is, at the so-called *new-pain visit*. The purpose of this report is to present and analyze some of the defining features of these new-pain visits. To accomplish this end, the authors combined the 1980 and 1981 findings of the National Ambulatory Medical Care Survey, an annual sample survey of office-based physicians conducted from 1973 through 1981 by the National Center for Health Statistics.

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. A brief description of the sample design and guidelines for judging the precision of the estimates is provided in the "Technical notes" at the end of the report. Also provided are definitions of key terms used in the survey.

The reader will find it useful to refer to the data collection instrument (figure 1: Patient Record, National Ambulatory Medical Care Survey) as selected aspects of new-pain visits are discussed.

Data highlights

Over the 2-year span from January 1980 through December 1981, ambulatory patients made 1.2 billion visits to the offices of non-Federal, office-based physicians practicing in the coterminous United States. Of this total, 70,259,000

(6.1 percent) were new-pain visits. A new-pain visit is distinguished by the following characteristics:

- The visit was unreferred (figure 1, item 13).
- Pain was the chief symptom presented by the patient (figure 1, item 6a).
- The physician had not previously seen the patient for the condition associated with the pain (figure 1, item 10).

Symptoms

The pain symptoms most frequently associated with the new-pain visits are listed in table 1. (See figure 1, item 6a.) Symptoms have been classified and coded according to a previous publication.¹

Though the list is headed by such diverse complaints as earache, headache, and general chest pain, it is musculoskeletal pain—with upper or lower back pain predominant—that accounts for the largest proportion (41 percent) of the pain symptoms associated with the new-pain visits.

Diagnostic effort

Confronted with a new-pain symptom, the office-based practitioner tends to intensify the diagnostic effort required to find its cause. At virtually every new-pain visit, one or more of the diagnostic procedures appearing in figure 1, item 8, was ordered or provided. Considering the dominating presence of

¹National Center for Health Statistics, D. Schneider, L. Appleton, and T. McLemore: A reason for visit classification for ambulatory care. *Vital and Health Statistics*. Series 2, No. 78. DHEW Pub. No. (PHS) 79-1352. Public Health Service. Washington. U.S. Government Printing Office, Feb. 1979.

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, Education, and Welfare Public Health Service Office of Health Research, Statistics and Technology National Center for Health Statistics		CNo. 499932
PATIENT RECORD NATIONAL AMBULATORY MEDICAL CARE SURVEY				
1. DATE OF VISIT _____ <small>Month Day Year</small>				
2. DATE OF BIRTH _____ <small>Month Day Year</small>	3. SEX 1 <input type="checkbox"/> FEMALE 2 <input type="checkbox"/> MALE	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/ALASKAN NATIVE	5. ETHNICITY 1 <input type="checkbox"/> HISPANIC ORIGIN 2 <input type="checkbox"/> NOT HISPANIC	6. 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 _____
7. MAJOR REASON FOR THIS VISIT <i>[Check one]</i> 1 <input type="checkbox"/> ACUTE PROBLEM 2 <input type="checkbox"/> CHRONIC PROBLEM, ROUTINE 3 <input type="checkbox"/> CHRONIC PROBLEM, FLAREUP 4 <input type="checkbox"/> POST SURGERY/POST INJURY 5 <input type="checkbox"/> NON-ILLNESS CARE (ROUTINE PRENATAL, GENERAL EXAM, WELL BABY, ETC.)		8. DIAGNOSTIC SERVICES THIS VISIT <i>[Check all ordered or provided]</i> 1 <input type="checkbox"/> NONE 2 <input type="checkbox"/> LIMITED HISTORY/EXAM 3 <input type="checkbox"/> GENERAL HISTORY/EXAM 4 <input type="checkbox"/> PAP TEST 5 <input type="checkbox"/> CLINICAL LAB TEST 6 <input type="checkbox"/> X-RAY 7 <input type="checkbox"/> BLOOD PRESSURE CHECK 8 <input type="checkbox"/> EKG 9 <input type="checkbox"/> VISION TEST 10 <input type="checkbox"/> ENDOSCOPY 11 <input type="checkbox"/> MENTAL STATUS EXAM 12 <input type="checkbox"/> OTHER <i>(Specify)</i> _____		9. PHYSICIAN'S DIAGNOSES a. PRINCIPAL DIAGNOSIS/PROBLEM ASSOCIATED WITH ITEM 6a _____ b. OTHER SIGNIFICANT CURRENT DIAGNOSES _____
10. HAVE YOU SEEN PATIENT BEFORE? 1 <input type="checkbox"/> YES 2 <input type="checkbox"/> NO IF YES, FOR THE CONDITION IN ITEM 9a? 1 <input type="checkbox"/> YES 2 <input type="checkbox"/> NO		11. MEDICATION THERAPY THIS VISIT <input type="checkbox"/> NONE <i>[Using brand or generic names, record all new and continued medications ordered, injected, administered, or otherwise provided at this visit. Include immunizing and desensitizing agents]</i> a. FOR PRINCIPAL DIAGNOSES IN ITEM 9a 1 _____ 2 _____ 3 _____ 4 _____ b. FOR ALL OTHER REASONS 1 _____ 2 _____ 3 _____ 4 _____		
12. NON-MEDICATION THERAPY <i>[Check all services ordered or provided this visit]</i> 1 <input type="checkbox"/> NONE 2 <input type="checkbox"/> PHYSIOTHERAPY 3 <input type="checkbox"/> OFFICE SURGERY 4 <input type="checkbox"/> FAMILY PLANNING 5 <input type="checkbox"/> PSYCHOTHERAPY/THERAPEUTIC LISTENING 6 <input type="checkbox"/> DIET COUNSELING 7 <input type="checkbox"/> FAMILY/SOCIAL COUNSELING 8 <input type="checkbox"/> MEDICAL COUNSELING 9 <input type="checkbox"/> OTHER <i>(Specify)</i> _____		13. WAS PATIENT REFERRED FOR THIS VISIT BY ANOTHER PHYSICIAN? 1 <input type="checkbox"/> YES 2 <input type="checkbox"/> NO	14. 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> _____	
				15. DURATION OF THIS VISIT <i>[Time actually spent with physician]</i> _____ Minutes

PHS-6105-C (9/79)

OMB No. 68-R1498

Figure 1. National Ambulatory Medical Care Survey Patient Record, 1980 and 1981

musculoskeletal pain, it is not surprising to find that X-ray was utilized about three times as often at the new-pain visit as it was at the average office visit. A visit for what is perhaps the most ominous of new-pain symptoms—general chest pain—is three times as likely to elicit an EKG as the average office visit and twice as likely to elicit a blood pressure reading.

Diagnoses

Findings on the principal (first-listed) diagnoses associated with new-pain visits are presented in tables 2 and 3. (See figure 1,

item 9a.) In most cases their agreement with the symptoms in table 1 is close. For example, a new earache most frequently signals the presence of an otitis media or a disorder of the external ear. Musculoskeletal pain, presented at 41 percent of new-pain visits, results in a corresponding 40 percent of diagnoses being identified as injuries or diseases of the musculoskeletal system. The ominous overtones of chest-pain symptoms are for the most part relieved by the finding that the symptoms were most frequently linked to respiratory disease, musculoskeletal problems, or disorders of the digestive system. At only 6 percent of the 6,485,000 visits with new chest pain

Table 1. Number and percent distribution of new-pain visits by selected principal reasons for visit: United States, 1980 and 1981

Rank	Principal reason for pain visit and RVC code ^{1,2}	Number of visits in thousands	Percent distribution
	All principal reasons	70,259	100.0
1	Earache, pain	355.1	8,761
2	Chest pain and related symptoms	050.0	6,485
3	Headache, pain in head	210.0	6,190
4	Back pain, ache, soreness	905.1	5,939
5	Low back pain, ache, soreness	910.1	4,068
6	Stomach pain, cramps, spasms	545.0	3,375
7	Abdominal pain, cramps, spasms	550.0	3,086
8	Knee pain, ache, soreness	925.1	3,068
9	Pain, site not referable to specific body system	055.0	2,951
10	Shoulder pain, ache, soreness	940.1	2,817
11	Foot and toe pain, ache, soreness	935.1	2,625
12	Neck pain, ache, soreness	900.1	2,334
13	Painful urination	650.0	2,108
14	Leg pain, ache, soreness	920.1	2,039
15	Pain and related symptoms, generalized, site unspecified	060.0	1,592
16	Arm pain, ache, soreness	945.1	1,509
17	Eye pain	320.1	1,434
18	Hand and finger pain, ache, soreness	960.1	1,292
19	Hip pain, ache, soreness	915.1	1,027
20	Ankle pain, ache, soreness	930.1	935
21	Pain or soreness of breast	800.0	817
22	Elbow pain, ache, soreness	950.1	743
23	Wrist pain, ache, soreness	955.1	729
24	Pain in anus-rectum	605.1	710
	All other pain reasons ³	3,625	5.2

¹Based on codes in National Center for Health Statistics, D. Schneider, L. Appleton, and T. McLemore: A reason for visit classification for ambulatory care [RVC]. *Vital and Health Statistics*. Series 2, No. 78. DHEW Pub. No. (PHS) 79-1352. Public Health Service. Washington. U.S. Government Printing Office, Feb. 1979.

²Only principal reasons accounting for ≥1.0 percent of new-pain visits are listed.

³Includes the following symptom RVC codes: 285.0, 410.1, 455.2, 500.2, 510.1, 515.1, 610.1, 665.1, 670.1, 700.1, 715.1, 745.2, 765.1, 775.1, 790.1, 790.4, 825.0, 870.1, 965.1, 970.1, 980.0.

Table 2. Number and percent distribution of new-pain visits by selected principal diagnostic classes: United States, 1980 and 1981

Rank	Principal diagnostic class and ICD-9-CM codes ^{1,2}	Number of visits in thousands	Percent distribution
	All principal diagnostic classes	70,259	100.0
1	Musculoskeletal and connective tissue diseases	710-739	15,711
2	Injuries and poisonings	800-999	12,336
3	Nervous system and sense organ diseases	320-389	9,780
4	Genitourinary diseases	580-629	5,929
5	Digestive diseases	520-579	5,639
6	Respiratory diseases	460-519	5,509
7	Symptoms, signs, and ill-defined conditions	780-799	3,803
8	Circulatory diseases	390-459	2,641
9	Supplementary classification ³	V01-V82	1,687
10	Skin and subcutaneous tissue diseases	680-709	1,659
11	Infectious and parasitic diseases	001-139	1,650
12	Mental disorders	290-319	1,634
13	Endocrine, nutritional, and metabolic diseases and immunity disorders	240-279	743

¹Based on U.S. Public Health Service and Health Care Financing Administration: *International Classification of Diseases, 9th Revision, Clinical Modification* [ICD-9-CM]. DHHS Pub. No. (PHS) 80-1260. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1980.

²Only principal diagnosis classes accounting for ≥1.0 percent of new-pain visits are listed.

³Contains categories for entries other than diseases and injuries.

as the chief presenting symptom did the pain signal a clear or suspected angina pectoris; at only 1.5 percent was the diagnosis one of ischemic heart disease; and fewer than 1 percent of the visits were listed as an acute myocardial infarction. (Interestingly, another 6 percent of the chest-pain visits were treated as "neurotic disorders," more than double the average appearance of these diagnoses in office practice.)

Patient characteristics

It was noted earlier that new-pain visits accounted for 6.1 percent of all office visits. Expressed as a new-pain rate, this amounted to an average of 61 new-pain visits per 1,000 office visits. The extent to which this average rate fluctuates with patient age and sex is shown in table 4 and figure 2. Ac-

Table 3. Number and percent distribution of new-pain visits by selected principal diagnoses: United States, 1980 and 1981

Rank	Principal diagnosis and ICD-9-CM code ^{1,2}	Number of visits in thousands		Percent distribution
	All principal diagnoses	70,259	100.0	
1	Suppurative and unspecified otitis media	382	4,176	5.9
2	Peripheral enthesopathies and allied syndromes	726	2,482	3.5
3	Sprains and strains of other and unspecified parts of back	847	2,407	3.4
4	Other soft tissue disorders	729	2,341	3.3
5	Other and unspecified back disorders	724	2,214	3.2
6	External ear disorders	380	2,135	3.0
7	Sprains and strains of sacroiliac region	846	1,866	2.7
8	Other and unspecified arthropathies	716	1,302	1.9
9	Other synovium, tendon, and bursa disorders	727	1,222	1.7
10	Osteoarthritis and allied disorders	715	1,142	1.6
11	Acute upper respiratory infections of multiple or unspecified sites	465	1,120	1.6
12	Cystitis	595	1,110	1.6
13	Other urethra and urinary tract disorders	599	1,089	1.6
14	Other and ill-defined sprains and strains	848	1,070	1.5
15	Symptoms involving respiratory system and other chest symptoms	786	921	1.3
16	Influenza	487	840	1.2
17	Symptoms involving head and neck	784	819	1.2
18	Chronic sinusitis	473	811	1.2
19	Other symptoms involving abdomen and pelvis	789	771	1.1
20	Intervertebral disc disorders	722	766	1.1
21	Sprains and strains of ankle and foot	845	757	1.1
22	Special mental disorder symptoms or syndromes, not elsewhere classified	307	748	1.1
23	Gastritis and duodenitis	535	712	1.0
24	Other noninfectious gastroenteritis and colitis	558	695	1.0
25	Neurotic disorders	300	692	1.0
26	Other and unspecified joint disorders	719	687	1.0
27	Muscle, ligament, and fascia disorders	728	682	1.0

¹Based on U.S. Public Health Service and Public Health Care Financing Administration: *International Classification of Diseases, 9th Revision, Clinical Modification* [ICD-9-CM]. DHHS Pub. No. (PHS) 80-1260. Public Health Service, Washington, U.S. Government Printing Office, Sept. 1980.

²Only principal diagnoses accounting for ≥ 1.0 percent of new-pain visits are listed.

Table 4. Number of office visits, number and percent distribution of new-pain visits, and new-pain visit rate by patient age and sex-age groups: United States, 1980 and 1981

Patient age and sex	All office visits		New-pain visits	
	Number in thousands	Number in thousands	Percent distribution	New-pain visit rate ¹
Both sexes				
All ages	1,160,922	70,259	100.0	61
Under 15 years	216,129	10,982	15.6	51
15-24 years	160,795	11,304	16.1	70
25-44 years	310,384	22,313	31.8	72
45-64 years	265,700	16,853	24.0	63
65 years and over	207,914	8,806	12.5	42
Female				
All ages	699,718	40,840	58.1	58
Under 15 years	102,633	5,462	7.8	53
15-24 years	107,276	6,634	9.4	62
25-44 years	206,395	12,854	18.3	62
45-64 years	157,031	10,252	14.6	65
65 years and over	126,383	5,638	8.0	45
Male				
All ages	461,204	29,419	41.9	64
Under 15 years	113,495	5,521	7.9	49
15-24 years	53,519	4,671	6.6	87
25-44 years	103,990	9,459	13.5	91
45-64 years	108,668	6,600	9.4	61
65 years and over	81,532	3,169	4.5	39

¹Number of new-pain visits per 1,000 office visits.

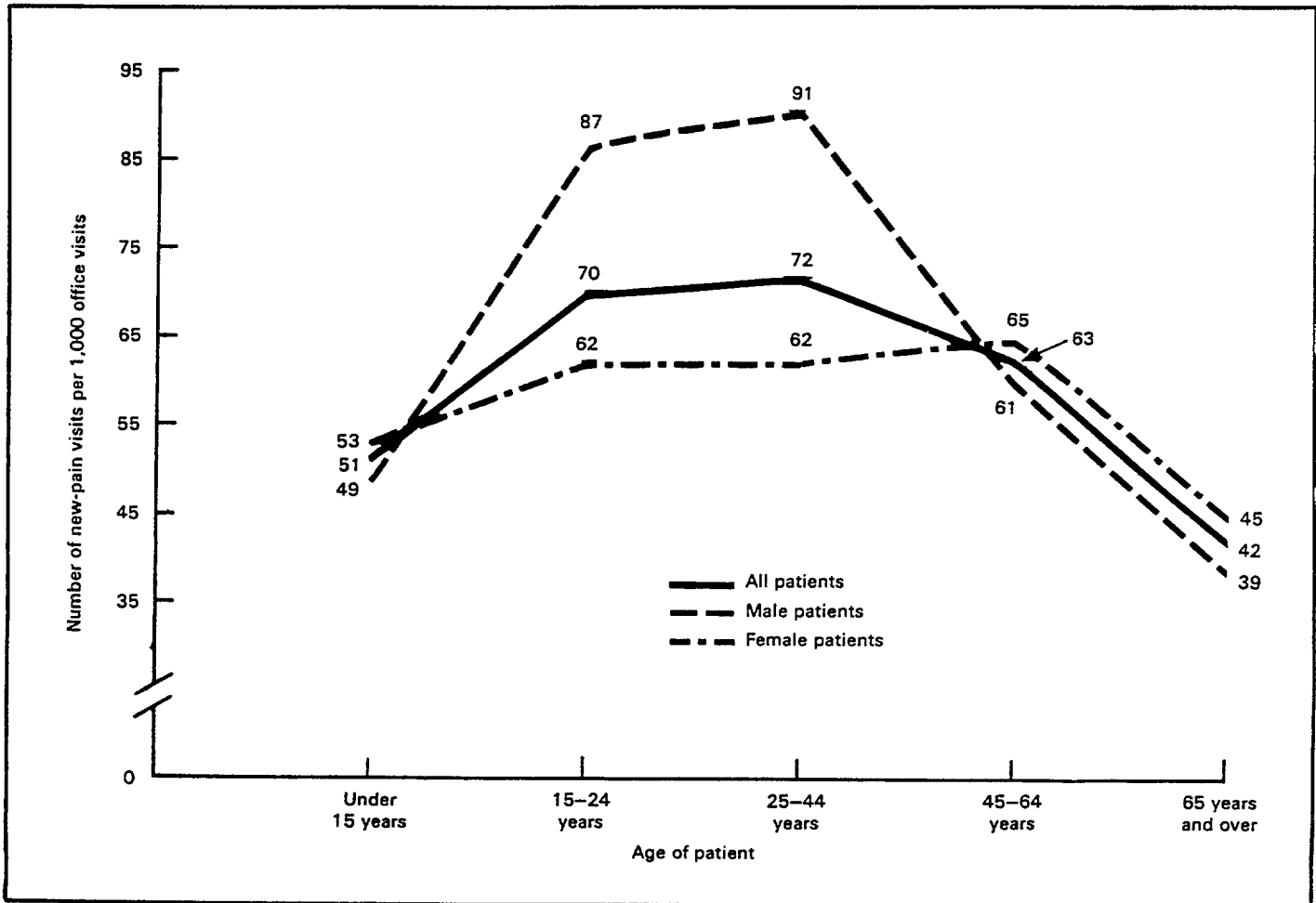


Figure 2. New-pain visit rates by sex and age of patient: United States, 1980-1981

cording to the findings, new-pain visits were most frequent among patients in age group 15-44 years. It is among these patients, for example, that many pain-producing injuries and acute diseases are most prevalent or that the physician observes the first warning signals of painful, chronic diseases that will continue into the later years of life. At the older extreme of the age spectrum the volume and rate of new-pain visits are at their lowest point. With this group the physician is probably more concerned with the management of chronic pain, which lost its newness some time before. New-pain visit rates for male and female patients do not differ markedly in the age groups under 15 years or over 44 years. It is in the age interval from the 15th to the 45th year that sex differences are most notable, revealed in male rates that substantially exceed those for female patients. In large part, this finding is explained by diagnostic evidence that the proportion of accidents or injuries in this age group was almost twice as great among male office patients as among females.

Variations in new-pain visit rates as they occurred among selected racial or ethnic groups of office patients are examined in table 5. Between black and white patients the apparent difference is not sufficiently marked to demonstrate statistical significance. (Much of it could be accounted for by sampling error.) It would be premature to infer that the significantly higher

Hispanic rate points to any special ethnic predisposition toward the new-pain conditions. The difference may simply be due to the relative fractions of visits by patients in the 15-44 years of age interval—the interval with the highest volume and rate of new-pain visits. This proportion was about 7 percent higher among Hispanic patients than it was for their non-Hispanic counterparts.

Physician characteristics

The extent to which the various office-based specialties were involved in the new-pain visits is documented in table 6. In magnitude of new-pain visit rate (number of new-pain visits per 1,000 office visits), three specialties were appreciably more active than others; these were general or family practice, internal medicine, and orthopedic surgery. Owing to the essentially primary nature of a new-pain visit, it is not surprising that two of these three are conventionally classified as primary care specialties. In total volume of visits, the three specialties accounted for about 7 of every 10 new-pain visits.

Chiefly owing to their traditional involvement with musculoskeletal problems, it was predictable that osteopathic physicians would reveal a higher new-pain visit rate (77 per 1,000 visits) than doctors of medicine (59 per 1,000).

Table 5. Number of office visits, number and percent distribution of new-pain visits, and new-pain visit rate by patient race and Hispanic origin: United States, 1980 and 1981

<i>Patient race and Hispanic origin</i>	<i>All office visits</i>		<i>New-pain visits</i>	
	<i>Number in thousands</i>	<i>Number in thousands</i>	<i>Percent distribution</i>	<i>New-pain visit rate¹</i>
All patients	1,160,922	70,259	100.0	61
<i>Race²</i>				
White	1,037,590	61,842	88.0	60
Black	110,546	7,384	10.5	67
<i>Hispanic origin</i>				
Hispanic	53,337	4,064	5.8	76
Non-Hispanic	1,107,585	66,195	94.2	60

¹Number of new-pain visits per 1,000 office visits.²Excludes 12,786,000 office visits by members of other racial groups such as American Indian or Asian.**Table 6. Number of office visits, number and percent distribution of new-pain visits, and new-pain visit rate by physician specialty: United States, 1980 and 1981**

<i>Physician specialty</i>	<i>All office visits</i>		<i>New-pain visits</i>	
	<i>Number in thousands</i>	<i>Number in thousands</i>	<i>Percent distribution</i>	<i>New-pain visit rate¹</i>
All specialties	1,160,922	70,259	100.0	61
General and family practice	381,710	33,966	48.3	89
Internal medicine	144,172	9,952	14.2	69
Pediatrics	128,762	6,181	8.8	48
Obstetrics and gynecology	109,035	3,148	4.5	29
Ophthalmology	62,485	1,561	2.2	25
General surgery	61,013	3,207	4.6	53
Orthopedic surgery	55,470	6,105	8.7	110
Otolaryngology	26,151	1,190	1.7	46
Cardiovascular disease	14,781	783	1.1	53
Urology	19,470	546	0.8	28
All other specialties	157,873	3,620	5.1	23

¹Number of new-pain visits per 1,000 office visits.

Treatment

Ordered or provided at about 62 percent of all office visits, drug therapy is by far the most popular form of treatment in office practice. For new-pain visits, the utilization of drugs (at 70 percent of these visits) was even more intensive. The 25 drugs most frequently mentioned in the treatment of new-pain conditions are listed (using generic names) in table 7. On this list the largest single proportion of mentions (about 36 percent) are analgesics; the next largest fraction (33 percent) are anti-infectives; and the balance of the mentions are distributed diffusely among such drug classes as autonomic drugs, anti-inflammatory agents, antihistamines, diuretics, and the sedative-hypnotics. Perhaps the most useful insight to be derived from these findings is not the expected fact that the analgesic family dominated other drug families in frequency of mention, but rather the discovery that the utilization of analgesics was substantially less intensive than might have been anticipated. After all, every one of the new-pain visits was, by definition, associ-

ated with pain of varying degrees of severity. The obvious conclusion is that it would be a mistake to assume that an analgesic is routinely ordered whenever new pain appears as a symptom. The findings suggest that drug therapy at new-pain visits is more strongly linked to the associated diagnosis than it is to the pain that attends that diagnosis.

At 38 percent of the 70,259,000 new-pain visits, drug therapy was the only form of treatment utilized. At another 32 percent it was used in conjunction with some form(s) of nondrug therapy. (See figure 3 and table 8.) Thus, only at the remaining 30 percent of the new-pain visits did physicians choose an alternative approach that did not involve drug treatment. At about one-half of these nondrug visits, physicians specified the form of nondrug therapy used. At the remaining half of the nondrug visits, no alternative nondrug therapy was specified. In these cases, it seems safe to infer that physicians were at least partly relying on the self-restorative capacities of the body as an alternative to intervention by drugs or other means of treatment.

Table 7. Number of mentions and percent distribution of the 25 drugs most frequently ordered or provided for principal diagnoses of new-pain visits by generic name of drug: United States, 1980 and 1981

Rank	Generic name of drug	Number of mentions in thousands ¹	Percent distribution	Rank	Generic name of drug	Number of mentions in thousands ¹	Percent distribution
Top 25 drugs				58,857	100.0		
1	Aspirin	6,863	11.7	13	Polymixin B	2,201	3.7
2	Acetaminophen	4,695	8.0	14	Hydrocortisone	2,108	3.6
3	Ampicillin	2,662	4.5	15	Bacitracin	1,907	3.2
4	Phenylpropanolamine	2,607	4.4	16	Chlorpheniramine	1,898	3.2
5	Amoxicillin	2,560	4.3	17	Sulfamethoxazole	1,757	3.0
6	Neomycin	2,531	4.3	18	Hydrochlorothiazide	1,709	2.9
7	Penicillin	2,529	4.3	19	Erythromycin	1,638	2.8
8	Caffeine	2,481	4.2	20	Trimethoprim	1,632	2.8
9	Phenacetin	2,410	4.1	21	Hyoscyamine	1,612	2.7
10	Ibuprofen	2,398	4.1	22	Propoxyphene	1,598	2.7
11	Phenylephrine	2,339	4.0	23	Phenylbutazone	1,521	2.6
12	Pseudoephedrine	2,281	3.9	24	Codeine	1,461	2.5
				25	Phenobarbital	1,459	2.5

¹Combines the mentions of a generic substance as a single-ingredient agent with its mentions as an ingredient of a fixed-combination drug.

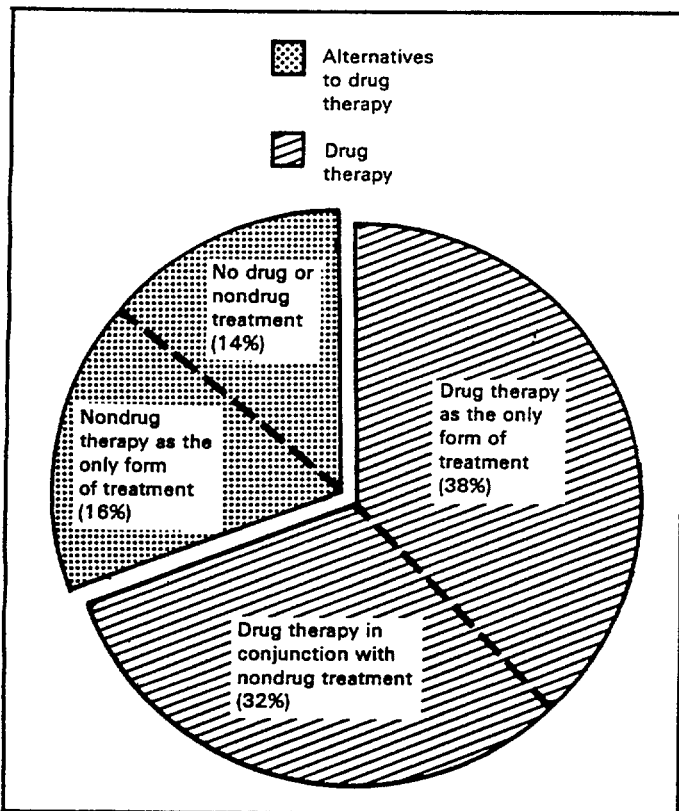


Figure 3. Percent of new-pain visits by treatment modalities: United States, 1980 and 1981

Duration and followup instruction

Physician-patient contact was somewhat longer for the average new-pain visit than it was for the office visit in general (table 9), a difference probably due to the increased intensity of diagnostic effort at the new-pain visit.

As documented in table 10, the physician's followup of

Table 8. Percent of visits by most frequent forms of nondrug therapy: United States, 1980 and 1981

Nondrug therapy	All visits	New-pain visits
	Percent	
Physiotherapy	4.8	12.2
Medical counseling	23.0	27.5

Table 9. Percent of visits by duration of physician-patient contact: United States, 1980 and 1981

Duration	All visits	New-pain visits
	Percent	
1-10 minutes	42.7	38.8
11 minutes or longer	54.7	60.7

Table 10. Percent of visits by selected forms of followup instructions for visits: United States, 1980-81

Followup	All visits	New-pain visits
	Percent	
No followup planned	11.5	12.3
Return at specified time	60.7	42.8
Return if needed	22.7	34.8
Telephone followup planned	3.4	6.5

new-pain conditions was substantially less specific than it was for office visits in general. Helped to an undetermined extent by the self-restorative capacities of the body, the treating physician placed a below-average reliance on the formal return visit and an above-average reliance on the more tentative "telephone followup" or "return if needed."

Technical notes

Source of data and sample design

The estimates presented in this report are based on the findings of the National Ambulatory Medical Care Survey (NAMCS), a sample survey of office-based care conducted annually from 1973 through 1981 by the National Center for Health Statistics. The target universe of NAMCS is composed of office visits made by ambulatory patients to non-Federal and noninstitutional physicians who are principally engaged in office-based, patient-care practice. Visits to physicians practicing in Alaska and Hawaii are excluded from the range of NAMCS, as are visits to anesthesiologists, pathologists, and radiologists.

NAMCS uses a multistage probability sample design that involves a step-wise sampling of primary sampling units, physicians' practices within primary sampling units, and patient visits within physicians' practices. The physician sample (5,805 for the combined years 1980 and 1981) was selected from master files maintained by the American Medical Association and the American Osteopathic Association. Those members of the sample who proved to be in scope participated at a rate of 77.3 percent. Responding physicians completed visit records (figure 1) for a systematic random sample of their office visits made during a randomly assigned weekly reporting period. Telephone contacts were excluded. During 1980 and 1981 responding physicians completed a 2-year total of 89,447 Patient Record forms on which they recorded 97,796 drug mentions. Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained during an induction interview. The National Opinion Research Center, under contract to the National Center for Health Statistics, was responsible for the field operations of the survey.

Sampling errors, statistical significance, and rounding

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than the

entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. Table I should be used to obtain the relative standard error for aggregates of office visits or for mentions of drugs by generic name (for example, hydrocortisone). Standard errors for estimated percents of visits (or for new-pain visit rates per 1,000 visits) are shown in table II.

In this report, the determination of statistical significance is based on the *t*-test with a critical value of 1.96 (0.95 level of significance). Terms relating to differences, such as "higher" or "less," indicate that the difference are statistically significant. Terms such as "similar" or "no difference" mean that no statistical significance exists between the estimates being compared. A lack of comment in a comparison between any two

Table I. Approximate relative standard errors of estimated numbers of office visits and drug mentions, based on all physician specialties: National Ambulatory Medical Care Survey, 1980 and 1981

<i>Estimated number of office visits or drug mentions in thousands</i>	<i>Relative standard error in percent</i>
450.....	30.0
600.....	26.0
800.....	22.6
1,000.....	20.2
2,000.....	14.5
5,000.....	9.5
10,000.....	7.1
20,000.....	5.6
50,000.....	4.4
100,000.....	3.9
200,000.....	3.6
500,000.....	3.5
1,000,000.....	3.4

EXAMPLE OF USE OF TABLE: An aggregate estimate of 35,000,000 office visits has a relative standard error of 5.0 percent or a standard error of 1,750,000 visits (5.0 percent of 35,000,000 visits).

Table II. Approximate standard errors of percent of estimated numbers of office visits or of new-pain visit rates per 1,000 visits: NAMCS, 1980-81

<i>Estimated number of office visits in thousands</i>	<i>Estimated percent of office visits or estimated new-pain visit rates per 1,000 visits</i>					
	<i>1 or 99</i>	<i>5 or 95</i>	<i>10 or 90</i>	<i>20 or 80</i>	<i>30 or 70</i>	<i>50</i>
	Standard error in percent					
500.....	2.8	6.2	8.5	11.3	12.9	14.1
1,000.....	2.0	4.4	6.0	8.0	9.1	10.0
2,000.....	1.4	3.1	4.2	5.6	6.5	7.1
5,000.....	0.9	1.9	2.7	3.6	4.1	4.5
10,000.....	0.6	1.4	1.9	2.5	2.9	3.2
20,000.....	0.4	1.0	1.3	1.8	2.0	2.2
50,000.....	0.3	0.6	0.8	1.1	1.3	1.4
200,000.....	0.1	0.3	0.4	0.6	0.6	0.7
1,000,000.....	0.1	0.1	0.2	0.3	0.3	0.3

EXAMPLE OF USE OF TABLE: An estimate of 20 percent based on an aggregate of 3,500,000 visits has a standard error of 4.6 percent or a relative standard error of 23 percent (4.6 percent ÷ 20 percent).

estimates does not mean that the difference was tested and was not significant.

In the tables of this report estimates have been rounded to the nearest thousand. For this reason, detailed estimates do not always add to the total.

Definitions

Ambulatory patient—An individual seeking personal health services who is neither bedridden nor currently admitted to any health care institution on the premises.

Drug mention—The physician's entry of a pharmaceutical agent ordered or provided—by any route of administration—for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included, as are nonprescription as well as prescription drugs. The physician records all new drugs and continued medications when the patient is specifically instructed during the visit to continue the medication. (This report includes only those drug mentions that were associated with the principal diagnosis.)

Medical counseling—Instructions and recommendations regarding any health problem, including advice or counsel about change of habit or behavior. Physicians were instructed to check this category only if medical counseling was a critical part of the treatment.

Office—A place that physicians identify as a location for ambulatory practice. Responsibility over time for patient care and professional services rendered there generally resides with the individual physician rather than an institution.

Physiotherapy—Any form of physical therapy ordered or provided, including any treatment using heat, light, sound, physical pressure, or movement; for example, ultrasonic, ultraviolet, infrared, whirlpool, diathermy, cold therapy, and manipulative therapy.

Visit—A direct personal exchange between an ambulatory patient and a physician, or with a staff member working under the physician's supervision, for the purpose of seeking care or rendering health services.

X-ray—Any single or multiple X-ray examination for diagnostic or screening purposes. Radiation therapy is not included in this category.

Diagnosis-Related Groups Using Data From the National Hospital Discharge Survey: United States, 1981

by Robert Pokras, Division of Health Care Statistics

Introduction

This report presents selected estimates on diagnosis-related groups for 1981. These groups, developed at the Yale School of Organization and Management, are being used by the Health Care Financing Administration, some States, and some third party payors to reimburse hospitals for inpatient care.¹ This approach to health care reimbursement operates on the principle that patients with similar medical conditions should receive similar care and use approximately the same amount of resources; therefore, the hospital should be reimbursed the same amount. While there is variation in resource consumption among individuals within a diagnosis-related group, these are expected to balance across all patients. Diagnosis-related groups and prospective reimbursement are likely to play an increasingly important role in health care financing in the future.

The Health Care Financing Administration, which operates the Medicare program, is taking the next several years to make the transition to the use of diagnosis-related groups (DRG's) for hospital inpatient reimbursement. The phase-in period allows adjustments based on selected hospital characteristics and geographic locations so hospitals can adjust to this method of reimbursement. At the end of this time, care provided to an inpatient covered by Medicare in a specific DRG will translate into a preestablished amount of payment to the hospital regardless of its characteristics and location.

DRG's were developed under the guiding principle that "The primary objective in the construction of DRG's was a definition of case type, each of which could be expected to receive similar outputs or services from a hospital."² This was accomplished using clinical judgment and statistical procedures that classify patients by measuring resource utilization. The first step in this process was to cluster the universe of medical diagnosis into broad, mutually exclusive categories. These groups were formed to be consistent in their anatomical or

physiopathological classification, or in the manner in which they are clinically managed. Once these major diagnostic groups were formed, an interactive statistical program (AUTOGRP²) was used to further classify each major group into discrete DRG's. This process incorporated patient information regarding diagnoses (primary and secondary), procedures, sex, and age to explain maximally a patient's resource use, which was approximated by a patient's length of stay. In all, there are currently 470 DRG's.

There are many important issues to be studied concerning a change in reimbursement procedures, most of which are beyond the scope of this paper. One issue relevant to the National Hospital Discharge Survey (NHDS) is how this system may affect the selection of a patient's principal diagnosis. For example, two patients admitted to the hospital for treatment of chest pain—one diagnosed as having chest pain and the other diagnosed as having angina—will have different reimbursement rates.¹ There is speculation that DRG reimbursement may influence the selection of a diagnosis in cases such as this. If so, changes may show up in future DRG estimates produced from NHDS data. The estimates in this report can be viewed as a baseline to compare future estimates of DRG's.

The statistics in this report are based on data collected by means of the NHDS, a continuous survey conducted by the National Center for Health Statistics since 1965. Data for this survey are sampled from short-stay non-Federal general and specialty hospitals in the 50 States and the District of Columbia. The sample for 1981 contained approximately 227,000 medical records from 428 hospitals. The relevant variables required to produce DRG's (diagnoses, procedures, sex, age, and other variables) were abstracted from the face sheet of each sampled medical record, and the NHDS could thereby produce national estimates of DRG's. These estimates may be of value for hospitals to compare their experience with that of other hospitals. For this reason, statistics in this report are frequency estimates

and associated average length of stay for DRG's by hospital bed size and region of the country.

Highlights

The frequency and average length of stay for the most common DRG's are presented by age, region of the country, and hospital bed size (tables 1-4). Age is dichotomized as under 65 years of age and 65 years of age and older. This allows a comparison with the Medicare population because Medicare covers most hospital costs for approximately 94 percent of discharges 65 years of age and over. Tables 1 and 2 provide regional data, while tables 3 and 4 provide bed-size data for these DRG's. Within each of these sets of tables, the first (tables 1 and 3) are for patients under 65 years of age, and the second (tables 2 and 4) are for patients 65 years of age and over.

By definition, some DRG's are only for patients in a specific age range. In such a case the DRG title and the table title (tables 1-4) together define the age group of the estimate. That is, the most restrictive case of either the table or DRG title determines the age group of the estimate. For example, "Diabetes, age greater than 35 years" in table 2 only refers to patients 65 years of age and over because of the table title; whereas, "Simple pneumonia and pleurisy, age greater than 69 years and/or substantial comorbidity and complication" in table 2 would not include a patient under 70 years of age because of the restriction in the DRG title.

The most common DRG for patients under 65 years of age is vaginal delivery without complicating diagnoses (table 1), with an estimated 2.8 million discharges in 1981. Cesarean section, with 631,000 discharges, was also among the most frequent DRG's in this age group. For patients 65 years of age and older (table 2), atherosclerosis is the most

Table 1. Number of discharges and average length of stay of patients under 65 years of age discharged from short-stay hospitals, by selected diagnosis-related groups and geographic region: United States, 1981

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

Diagnosis-related group	All regions					North Central				
	North	South	West	North	South	West	North	South	West	
	Number in thousands					Average length of stay in days				
All discharges	28,136	5,621	8,177	9,715	4,624	5.9	6.6	6.2	5.7	5.1
Vaginal delivery without complicating diagnoses	2,790	517	796	922	555	3.0	3.5	3.5	2.8	2.3
Medical back problems	800	126	267	280	127	7.2	8.9	7.4	6.9	5.9
Esophagitis, gastroenteritis, and miscellaneous digestive disorders, ages 18-69 years without substantial comorbidity and/or complication	688	83	188	340	76	4.3	5.0	4.3	4.3	3.3
Cesarean section without substantial comorbidity and/or complication	631	133	154	228	115	6.1	7.3	6.3	5.7	5.0
Nonradical hysterectomy, age less than 70 years without substantial comorbidity and/or complication	527	71	130	218	109	7.3	8.2	8.0	7.1	6.1
Unrelated operating room procedures	406	71	117	148	70	10.7	14.3	10.4	10.1	8.8
Alcohol- and substance-induced organic mental syndrome	403	182	112	66	44	10.0	8.7	12.8	9.9	8.6
Dilation and curettage of uterus, conization except for malignancy	392	114	101	135	42	1.9	1.7	2.0	2.2	1.2
Psychoses	383	99	129	86	69	16.9	20.1	17.0	13.3	16.4
Esophagitis, gastroenteritis, and miscellaneous digestive disorders, ages 0-17 years	379	68	110	168	32	3.7	3.9	3.4	3.7	4.0
Abortion with dilation and curettage of uterus	355	140	71	101	44	1.4	1.1	1.8	1.6	1.1
Bronchitis and asthma, ages 0-17 years	299	62	95	108	33	4.1	4.3	4.2	4.3	2.9
Tonsillectomy and/or adenoidectomy, ages 0-17 years	295	49	109	90	48	1.7	1.6	1.8	2.0	1.3
Inguinal and femoral hernia procedures, ages 18-69 years without substantial comorbidity and/or complication	253	68	71	67	47	4.4	4.4	4.7	4.9	3.2
Diabetes, age more than 35 years	249	52	66	103	27	8.1	10.8	7.7	7.4	6.9
Vaginal delivery with sterilization and/or dilation and curettage of uterus	246	39	51	119	37	3.6	4.5	3.9	3.4	3.1
Simple pneumonia and pleurisy, ages 0-17 years	243	29	70	120	25	5.1	5.6	5.1	5.2	3.8
Knee procedures, age less than 70 years without substantial comorbidity and/or complication	232	39	85	59	48	4.6	5.3	4.2	5.3	3.7
Hypertension	229	38	60	102	29	5.9	6.3	6.5	5.6	5.3
Otitis media and upper respiratory infection, ages 0-17 years	227	37	71	99	20	3.3	3.5	3.1	3.5	2.8

Table 2. Number of discharges and average length of stay of patients 65 years of age and over from short-stay hospitals, by selected diagnosis-related groups and geographic region: United States, 1981

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

Diagnosis-related group	All regions					Average length of stay in days				
	All regions	Northeast	North Central	South	West	All regions	Northeast	North Central	South	West
	Number in thousands					Average length of stay in days				
All discharges	10,408	2,201	2,955	3,488	1,764	10.5	13.1	10.6	9.9	8.3
Atherosclerosis, age greater than 69 years and/or substantial comorbidity and complication	422	93	107	161	60	9.4	11.7	9.5	8.9	6.8
Lens procedures	387	75	114	100	97	3.2	3.4	3.4	3.1	2.9
Esophagitis, gastroenteritis, and miscellaneous digestive disorders, age greater than 69 years and/or substantial comorbidity and complication	372	58	111	154	49	7.0	8.9	7.0	6.9	5.4
Heart failure and shock	363	83	100	122	59	9.9	12.6	9.9	9.1	7.5
Chronic obstructive pulmonary disease	304	59	79	116	50	9.9	11.7	10.0	9.3	9.0
Specific cerebrovascular disorders except transient ischemic attack	294	67	83	95	48	15.8	20.4	14.7	15.2	12.2
Simple pneumonia and pleurisy, age greater than 69 years and/or substantial comorbidity and complication	281	50	75	114	41	11.2	13.9	11.4	10.5	9.7
Diabetes, age greater than 35 years	218	44	61	90	23	9.9	14.1	9.4	8.9	7.4
Unrelated operating room procedures	211	55	66	62	28	18.5	24.8	16.1	17.2	14.3
Circulatory disorders with acute myocardial infarction without cardiovascular complications, discharged alive	179	42	44	56	37	12.6	14.1	13.7	12.5	9.6
Medical back problems	173	31	49	64	28	8.8	10.1	8.6	8.4	8.4
Cardiac arrhythmia and conduction disorders, age greater than 69 years and/or substantial comorbidity and complication	168	36	49	51	32	7.3	9.0	8.2	6.9	5.1
Hypertension	162	26	47	68	22	7.7	9.5	7.6	7.7	5.7
Angina pectoris	161	35	47	58	21	7.0	8.4	8.0	6.1	5.1
Transient ischemic attacks	150	35	39	53	24	7.6	10.3	8.1	6.7	4.9
Transurethral prostatectomy, age greater than 69 years and/or substantial comorbidity and complication	140	32	39	44	24	10.5	13.4	10.7	9.9	7.3
Bronchitis and asthma, age greater than 69 years and/or substantial comorbidity and complication	126	25	34	46	21	8.7	12.0	8.4	8.2	6.6
Gastrointestinal hemorrhage, age greater than 69 years and/or substantial comorbidity and complication	126	29	34	39	24	9.2	11.2	9.5	9.4	6.3
Respiratory neoplasms	126	33	29	40	23	11.3	13.4	11.1	11.4	8.3
Kidney and urinary tract infections, age greater than 69 years and/or substantial comorbidity and complications	124	19	30	59	16	9.3	11.0	9.8	9.2	6.4

common DRG, 422,000, and lens procedures, 387,000, is the second most common DRG for the elderly.

The average length of stay for specific DRG's in the four regions of the country generally reflects the pattern found for all patients: the northeast has the longest average length of stay and the west has the shortest. Regional length-of-stay differences are greater for patients 65 years of age or more than for younger patients. The west has an average length of stay of 5.1 days for patients under 65 years of age and the northeast has an average length of stay of 6.6 days; a difference of 1.5 days, or 29.4 percent greater. For older patients, however, the northeast has an average length of stay 4.8 days greater than the elderly patients in the west (13.1 versus 8.3 days), a difference of 57.8 percent.

Overall there is a tendency for length of stay to increase with hospital bed size (table 3 and 4) for patients under 65

years of age as well as for older patients, but this pattern is not consistent for some of the individual DRG's. For example, patients with psychoses under 65 years (table 3) had a longer length of stay in the smallest hospitals, and for some DRG's the average length of stay in medium-size hospitals is equal to or greater than the average length of stay in large hospitals (500 or more beds).

The average length of stay associated with a DRG (tables 1-4) allows hospitals to compare their experience with that of other hospitals. While comparison is tenuous on a case-by-case basis, a hospital with an average length of stay 2, 3, or more days longer than the national average for a specific DRG may need to examine why it is so far from the norm. This kind of comparison may be worthwhile as a starting point, but even within a DRG, average length of stay is not an exact measure of resource consumption.

Table 3. Number of discharges and average length of stay of patients under 65 years of age discharged from short-stay hospitals, by selected diagnosis-related groups and hospital bed size: United States, 1981

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

Diagnosis-related group	All hospitals	6-99 beds	100-199 beds	200-299 beds	300-499 beds	500 or more beds	All hospitals	6-99 beds	100-199 beds	200-299 beds	300-499 beds	500 or more beds
	Number in thousands						Average length of stay in days					
All discharges.....	28,136	4,783	5,149	4,351	6,874	6,979	5.9	4.7	5.4	5.7	6.3	7.0
Vaginal delivery without complicating diagnoses.....	2,790	422	488	454	672	755	3.0	2.5	2.9	2.8	3.3	3.3
Medical back problems.....	800	159	155	133	193	159	7.2	6.6	7.0	6.8	7.6	7.8
Esophagitis, gastroenteritis, and miscellaneous digestive disorders, ages 18-69 years without substantial comorbidity and/or complication.....	688	204	132	106	134	112	4.3	3.7	4.2	4.6	4.5	4.9
Cesarean section without substantial comorbidity and/or complication.....	631	76	122	91	159	182	6.1	5.7	5.5	6.0	6.2	6.4
Nonradical hysterectomy, age less than 70 years without substantial comorbidity and/or complication.....	527	70	127	87	110	133	7.3	7.1	6.6	7.2	7.5	7.8
Unrelated operating room procedures.....	406	49	72	67	99	118	10.7	7.2	8.2	11.0	11.0	13.2
Alcohol- and substance-induced organic mental syndrome.....	403	133	61	48	96	65	10.0	8.3	11.0	13.9	9.4	10.9
Dilation and curettage of uterus, conization except for malignancy.....	392	66	82	50	99	95	1.9	2.0	1.7	2.0	1.9	2.0
Psychoses.....	383	44	54	46	122	117	16.9	22.0	15.4	12.2	17.5	16.8
Esophagitis, gastroenteritis, and miscellaneous digestive disorders, ages 0-17 years.....	379	74	87	59	91	67	3.7	3.0	3.6	4.1	3.6	4.1
Abortion with dilation and curettage of uterus.....	355	40	65	46	83	122	1.4	1.8	1.3	1.5	1.6	1.1
Bronchitis and asthma, ages 0-17 years.....	299	55	75	43	70	56	4.1	3.3	4.3	4.6	4.3	3.9
Tonsillectomy and/or adenoidectomy, ages 0-17 years.....	295	52	61	62	67	53	1.7	1.8	1.9	1.6	1.6	1.8
Inguinal and femoral hernia procedures, ages 18-69 years without substantial comorbidity and/or complication.....	253	41	44	43	73	53	4.4	4.6	4.3	4.5	4.3	4.4
Diabetes, age more than 35 years.....	249	57	42	41	57	51	8.1	6.8	7.8	8.0	9.3	8.5
Vaginal delivery with sterilization and/or dilation and curettage of uterus.....	246	47	53	31	48	67	3.6	3.3	3.4	3.5	3.8	4.0
Simple pneumonia and pleurisy, ages 0-17 years.....	243	75	57	39	38	34	5.1	4.2	5.3	6.0	5.3	5.1
Knee procedures, age less than 70 years without substantial comorbidity and/or complication.....	232	22	33	53	66	59	4.6	4.2	4.2	4.6	4.9	4.6
Hypertension.....	229	56	45	33	52	43	5.9	5.0	5.8	6.2	6.1	7.0
Otitis media and upper respiratory infection, ages 0-17 years.....	227	58	59	34	43	33	3.3	2.9	3.3	3.6	3.2	3.8

Table 4. Number of discharges and average length of stay of patients 65 years of age and over discharged from short-stay hospitals, by selected diagnosis-related groups and hospital bed size: United States, 1981

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

Diagnosis-related group	All hospitals	6-99 beds	100-199 beds	200-299 beds	300-499 beds	500 or more beds	All hospitals	6-99 beds	100-199 beds	200-299 beds	300-499 beds	500 or more beds
	Number in thousands						Average length of stay-in days					
All discharges	10,408	2,160	1,867	1,741	2,543	2,097	10.5	8.3	9.8	10.9	11.3	11.9
Atherosclerosis, age greater than 69 years and/or substantial comorbidity and complication	422	93	85	79	98	68	9.4	7.3	9.1	9.6	10.5	10.5
Lens procedures	387	32	79	77	115	82	3.2	3.2	3.2	3.1	3.1	3.3
Esophagitis, gastroenteritis, and miscellaneous digestive disorders, age greater than 69 years and/or substantial comorbidity and complication	372	127	69	58	73	46	7.0	6.3	7.0	7.2	7.8	7.4
Heart failure and shock	363	105	67	61	74	56	9.9	8.6	9.8	9.3	11.2	11.1
Chronic obstructive pulmonary disease	304	89	62	46	64	42	9.9	8.4	10.2	10.2	10.8	10.9
Specific cerebrovascular disorders except transient ischemic attack	294	66	56	47	70	54	15.8	12.2	14.9	18.2	16.8	17.4
Simple pneumonia and pleurisy, age greater than 69 years and/or substantial comorbidity and complication	281	101	47	38	57	37	11.2	10.1	10.7	13.1	12.5	11.2
Diabetes, age greater than 35 years	218	56	44	36	50	32	9.9	8.1	10.7	10.0	10.6	10.7
Unrelated operating room procedures	211	22	42	39	57	51	18.5	13.1	15.3	20.3	18.5	21.9
Circulatory disorders with acute myocardial infarction without cardiovascular complications, discharged alive	179	38	28	38	44	31	12.6	10.4	13.2	12.3	14.0	13.1
Medical back problems	173	47	32	26	39	29	8.8	8.1	7.9	8.5	9.6	10.1
Cardiac arrhythmia and conduction disorders, age greater than 69 years and/or substantial comorbidity and complication	168	45	29	28	33	33	7.3	5.8	6.2	7.7	7.8	9.6
Hypertension	162	50	35	24	27	26	7.7	6.9	7.7	7.8	7.9	8.9
Angina pectoris	161	46	31	23	39	22	7.0	5.6	6.7	8.3	7.7	7.8
Transient ischemic attacks	150	37	30	30	34	19	7.6	5.6	6.3	7.6	10.0	9.2
Transurethral prostatectomy, age greater than 69 years and/or substantial comorbidity and complication	140	18	33	22	34	33	10.5	9.7	10.2	9.8	10.6	11.7
Bronchitis and asthma, age greater than 60 years and/or substantial comorbidity and complication	126	38	26	17	28	17	8.7	6.8	8.9	9.1	10.6	9.3
Gastrointestinal hemorrhage, age greater than 69 years and/or substantial comorbidity and complication	126	26	21	19	34	24	9.2	7.2	9.4	9.5	10.1	9.8
Respiratory neoplasms	126	15	18	21	35	36	11.3	11.4	9.9	12.3	11.7	10.9
Kidney and urinary tract infections, age greater than 69 years and/or substantial comorbidity and complication	124	43	24	14	25	18	9.3	8.4	8.8	9.6	10.0	10.5

Advanced data

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Technical notes

Survey methodology

Source of data

The National Hospital Discharge Survey (NHDS) encompasses patients discharged from short-stay hospitals, exclusive of military and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only hospitals with six or more beds and an average length of stay of less than 30 days for all patients are included in the survey. Discharges of newborn infants are excluded from this report.

The universe of the survey consisted of 6,965 short-stay hospitals contained in the 1963 Master Facility Inventory of Hospitals and Institutions. New hospitals were sampled for inclusion in the survey in 1972, 1975, 1977, and 1981. The sample for 1981 consisted of 550 hospitals. Of these, 71 refused to participate, and 51 were out of scope either because the hospital had gone out of business or because it failed to meet the definition of a short-stay hospital. Thus 428 hospitals participated in the survey during 1981 and provided approximately 227,000 abstracts of medical records.

Sample design

All hospitals with 1,000 or more beds in the universe of short-stay hospitals were selected with certainty in the sample. All hospitals with fewer than 1,000 beds were stratified, the primary strata being 24 size-by-region classes. Within each of these 24 primary strata, the allocation of the hospitals was made through a controlled selection technique so that hospitals in the sample would be properly distributed with regard to type of ownership and geographic division. Sample hospitals were drawn with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals.

Sample discharges were selected within the hospitals using

the daily listing sheet of discharges as the sampling frame. These discharges were selected by a random technique, usually on the basis of the terminal digit or digits of the patient's medical record number, a number assigned when the patient was admitted to the hospital. The within-hospital sampling ratio for selecting sample discharges varied inversely with the probability of selection of the hospital.

Data collection and estimation

The sample selection and the transcription of information from the hospital records for abstract forms were performed by the hospital staff or by representatives of the National Center for Health Statistics or by both. The data were abstracted from the face sheets of the medical records. All discharge diagnoses were listed on the abstract in the order of the principal one, or the first-listed one if the principal one was not identified, followed by the order in which all other diagnoses were entered on the face sheet of the medical record.

Statistics produced by NHDS are derived by a complex estimating procedure. The basic unit of estimation is the sample inpatient discharge abstract. The estimating procedure used to produce essentially unbiased national estimates in NHDS has three principal components: inflation by reciprocals of the probabilities of sample selection, adjustment for nonresponse, and ratio adjustment to fixed totals. These components of estimation are described in appendix I of two earlier publications.^{3,4}

Diagnosis-related groups

The diagnosis-related groups (DRG's) used in this report were produced using the most current DRG program available at the time (summer of 1983). This is a computer program that groups patients into DRG's based on diagnostic, surgical, and

NOTE: A list of references follows the text.

patient information. The program is maintained and is commercially available at Health Systems International (DRG Support Group, 100 Broadway, New Haven, Conn. 06511). However, the actual program used to produce estimates in this report was obtained from the Health Care Financing Administration.

To help interpret the data in this report, two points are worth mentioning. First, the entire NHDS file was used to produce estimates, including outliers. None of the data was excluded, or trimmed, because of an abnormally long length of stay. Second, the NHDS only codes three ICD-9-CM Class 4 procedures:^{5,6} circumcision, code 64.0; episiotomy, code 73.6; and removal of intrauterine contraceptive device, code 97.71. In certain instances Class 4 procedures can alter the DRG designation for a patient. The effect of not coding these procedures in the NHDS on determining DRG's is unknown, but probably quite small. In all other respects, the DRG's presented in this report are consistent with those in the *Federal Register* of Thursday, September 1, 1983.⁷

In publications from the National Center for Health Statistics using NHDS data, several schemes have been used to group patients into categories based on either their diagnoses or the procedures performed. These groups were developed to report general purpose statistics to the many users of NHDS data, and any similarity between the titles of those categories and DRG titles is coincidental.

Sampling errors and rounding of numbers

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than an 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. Table I shows relative standard errors for discharges and first-listed diagnoses for 1981. The standard errors for average lengths of stay are shown in table II. Estimates have been rounded to the nearest thousand. For this reason detailed figures within tables do not always add to the totals.

Tests of significance

In this report, the determination of statistical inference is based on the two-tailed Bonferroni test for multiple comparisons. Terms relating to differences, such as "higher" and "less,"

NOTE: A list of references follows the text.

Table I. Approximate relative standard errors of estimated number of discharges and first-listed diagnoses: United States, 1981

Size of estimate	Relative standard error
10,000	16.3
50,000	10.2
100,000	8.5
300,000	6.6
500,000	5.9
1,000,000	5.1
4,000,000	4.0

Table II. Approximate standard errors of average lengths of stay by number of discharges: United States, 1981

Number of discharges	Average length of stay in days			
	2	6	10	20
	Standard error in days			
10,000	0.7	1.2	1.7	2.2
50,000	0.3	0.7	1.0	1.4
100,000	0.3	0.6	0.9	1.2
500,000	0.2	0.5	0.8	0.9
1,000,000	0.2	0.5	0.8	0.7
5,000,000	0.2	0.5	0.8	...

indicate that the 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 be not significant.

Definition of terms

Patient—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. In this report the number of patients refers to the number of discharges during the year, including any multiple discharges of the same individual from one or more short-stay hospitals.

Average length of stay—The total number of patient days accumulated at time of discharge by patients discharged during the year divided by the number of patients discharged.

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

Discharge—Discharge is 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.

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:

Region	States included
Northeast	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania
North Central	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

Hospitals—Short-stay special and general hospitals have six or more beds for inpatient use and an average length of stay of less than 30 days. Federal hospitals and hospital units of institutions are not included.

Bed size of hospital—Size is measured by the number of

beds, cribs, and pediatric bassinets regularly maintained (set up and staffed for use) for patients; bassinets for newborn infants are not included. In this report the classification of hospitals by bed size is based on the number of beds at or near midyear reported by the hospitals.

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Health Care of Adolescents by Office-Based Physicians: National Ambulatory Medical Care Survey, 1980–81

by Beulah K. Cypress, Ph.D., Division of Health Care Statistics

Introduction

Adolescents 11–20 years of age do not utilize physician services as frequently as other persons do. Among age groups of patients visiting office-based physicians in 1980 and 1981, adolescents 11–20 years of age had the lowest visit rate (figure 1). Although persons 11–20 years old constituted 17 percent of the population of the United States, they made only 11 percent of the office visits. However, this does not necessarily indicate

a low incidence of illness for this group because they also had a higher incidence of acute conditions than older age groups in the population did. The low rate of office visits may be related to the self-limiting nature of most acute conditions that usually do not require as many return visits to the physician's office as chronic conditions do.

This report examines the nature of the conditions presented by adolescents and the health care provided by office-based physicians. It is based on data collected in the National Ambulatory Medical Care Survey (NAMCS) during the 2-year period January 1980–December 1981. NAMCS is a sample survey of office-based physicians conducted annually through 1981 by the National Center for Health Statistics. Data will be collected again in 1985. 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. A brief description of the sample design and guidelines for judging the precision of the estimates are provided in the "Technical notes" at the end of the report. Definitions of key terms used in the survey also are provided.

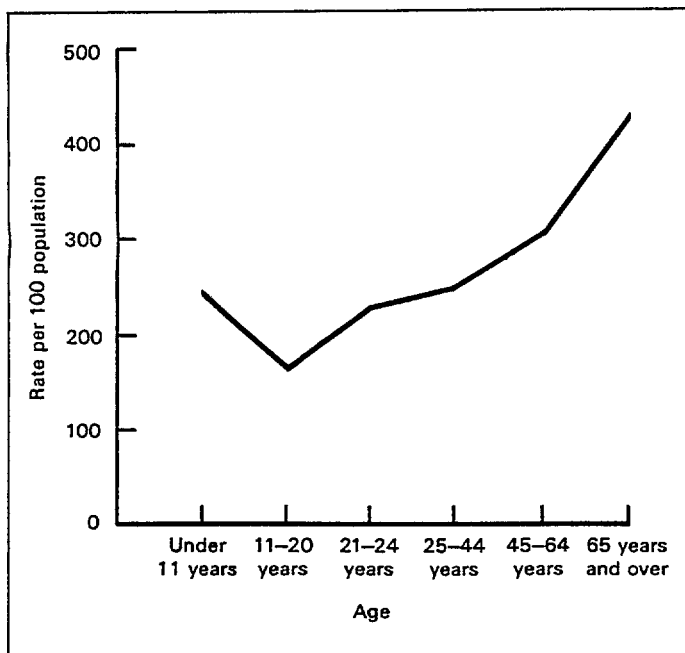


Figure 1. Average annual rate of office visits by age of patient: United States, 1980–81

Patient characteristics

Because of the many developmental changes patients 11–20 years of age undergo during this period of life, data on visit characteristics are presented for "early" adolescence, 11–14 years, and "late" adolescence, 15–20 years. Table 1 indicates that the latter group visited at a higher rate than the former, and, as in NAMCS data for other age groups, females 15–20 years of age visited at a higher rate than males the same age did. The visit rate for white adolescents exceeded that of black adolescents.

Table 1. Average annual office visit rate of adolescents and all other age groups by sex, race, and age: United States, 1980-81

Sex and race	Age			All other ages
	11-14 years	15-20 years	11-20 years	
Rate per 100 population				
Sex				
Both sexes	140	179	165	281
Female	142	219	191	326
Male	138	139	139	231
Race				
White	151	192	177	291
Black	89	124	111	239
Other	95	50	67	127

Visit characteristics

Table 2 includes data on the condition and management of adolescent patients, and the specialties most likely to provide their health care. For contrast, similar information is provided on visits by all other patients. As suggested in the introduction, adolescents tend to make proportionately fewer return visits to the same physician than other patients. About half their visits were made by patients the physician had seen before, who were returning for care of old problems, compared with about 65 percent by returning patients in all other age groups. The higher than average proportion of acute problems as the major reason for visit reflects the higher incidence of acute conditions found in the adolescent population. Nonillness care is proportionately greater in late adolescence than in early adolescence because visits for prenatal care and gynecological examinations are more likely at that age. Table 3 shows the 20 most frequent reasons given by patients for their visits. Symptoms of acute illness such as cough, throat, or ear problems accounted for 13 percent of the reasons presented by the younger group. General medical examination and physical examinations for extracurricular activities and for school were reasons in 11 percent of visits. Acne, skin rash, allergy medication, and allergy, not otherwise specified, were also common reasons for visit for this group. Prenatal examination and acne account for about 15 percent of the visits by the older group. The juxtaposition of these two reasons provides some insight into the rapid changes that occur during adolescence.

The distinction between the health care needs of patients in the early and late stages of adolescence is also evident in the kinds of diagnoses rendered during their visits to physicians. For the younger group, diseases of the respiratory system (21 percent) was the leading diagnostic category, followed by diagnoses in the supplementary classification (chiefly examinations, 16 percent), and injury and poisoning (16 percent, table 2). For the older group, diagnoses in the supplementary classification (25 percent) were the most common, with diseases of the skin and subcutaneous tissue ranked second with 14 percent. Diseases of the respiratory system and injury and poisoning each accounted for 13 percent.

The developmental process is more clearly exemplified by an examination of the distribution of specific principal diagnoses. The 20 most frequent principal diagnoses are shown in table 4. The variability in the degree of maturation that is typical of adolescence is reflected by the two leading diagnoses made for patients 15-20 years of age: normal pregnancy (9 percent) and diseases of the sebaceous glands (chiefly acne other than varioliformis, 7 percent). Acne accounted for 8 percent of males' visits and 6 percent of females' visits, but the difference is not statistically significant. General medical examination is prominent on the list of diagnoses for each adolescent age group. Gynecological examination and contraceptive management emerge as diagnoses in late adolescence.

Adolescents are more likely to visit dermatologists and less likely to visit internists than other patients are. It is not unexpected that visits to obstetrician-gynecologists were more likely during late adolescence (14 percent) than during the earlier period.

The diagnostic services and therapy likely to be utilized when adolescents visit office-based physicians do not differ considerably from those used when other patients visit (table 2). The higher proportion of office surgery performed for adolescents than for other age groups was probably the result of the former's greater tendency to have injuries. Family planning was included in about 5 percent of visits by patients 15-20 years of age, a higher than average proportion. However, diet counseling was relatively less frequent than average. The importance of proper nutrition at this stage of life may need greater emphasis. Physicians also tend to make proportionately fewer blood pressure measurements for patients under 21 years of age than for those older.

One or more drugs were included in about 57 percent of adolescents' visits, and a single drug was more likely to be prescribed than were two, three, or more. NAMCS data indicate that multiple drug prescription is more likely to occur during visits by middle-aged and older patients than during those by younger patients. For these young patients, antibiotics, anti-histamine drugs, skin and mucous membrane preparations, and analgesics and antipyretics accounted for over 60 percent of drug mentions (table 5). The specific drugs most frequently prescribed during their visits are listed in table 6 according to the drug name recorded by the physician on the NAMCS Patient Record form (the NAMCS data collection instrument). The generic substances represented by these drugs are shown in table 7 with a description of their most common therapeutic uses.

Visits lasting less than 11 minutes were more likely for adolescents than for other age groups. About 46 percent of encounters with physicians by patients 11-14 years of age and 51 percent of those by patients 15-20 years of age were less than 11 minutes in duration, compared with 42 percent of those by all other age groups (table 2). In about 6 percent of the youngest group's visits, patients were not seen by the physician but by a member of the staff. This higher than average proportion of "0-minute" visits probably reflects the visits in which patients were given allergy relief or shots (table 6).

The disposition of the visit is often related to the likelihood of acute or chronic conditions. Generally, patients with

Table 2. Number of office visits made by adolescents and all other age groups and percent distribution by selected visit characteristics, according to age: United States, 1980-81

Characteristic	Age			Characteristic	Age		
	11-14 years	15-20 years	All other ages		11-14 years	15-20 years	All other ages
	Number in thousands				Percent distribution		
All visits	40,269	87,172	1,033,482	None	13.0	9.8	7.8
	Percent distribution			Limited history and/or examination	62.1	64.3	64.4
Total	100.0	100.0	100.0	General history and/or examination	15.9	15.3	15.5
Sex				Pap test	*0.4	4.8	4.5
Female	49.4	61.3	60.6	Clinical laboratory test	20.3	23.9	21.8
Male	50.6	38.7	39.4	X-ray	9.2	7.4	7.4
Race				Blood pressure check	15.8	29.5	35.4
White	88.8	89.7	89.4	Electrocardiogram	*0.5	0.5	3.3
Black	9.4	9.7	9.5	Vision test	8.2	5.6	5.7
All other	1.8	0.7	1.1	Endoscopy	*0.2	*0.4	1.0
Hispanic origin				Mental status examination	*0.9	1.4	1.5
Hispanic	4.6	5.4	4.5	Other	3.3	3.9	5.1
Non-Hispanic	95.4	94.6	95.5	Nonmedication therapy ²			
Prior visit status				None	57.3	52.9	53.8
New patient	18.3	20.8	13.7	Physiotherapy	4.6	5.3	4.8
Old patient, new problem	31.7	26.1	21.6	Office surgery	13.2	11.7	6.8
Old patient, old problem	50.0	53.2	64.7	Family planning	*0.5	4.9	1.9
Major reason for visit				Psychotherapy or therapeutic listening	2.3	3.7	5.1
Acute problem	47.2	41.0	35.6	Diet counseling	3.8	4.6	8.5
Chronic problem, routine	20.5	19.4	29.1	Family or social counseling	2.5	2.2	2.1
Chronic problem, flareup	6.2	5.7	9.6	Medical counseling	19.5	20.3	23.4
Postsurgery or postinjury	9.4	9.9	8.7	Other	3.4	2.4	2.5
Nonillness care	16.8	24.0	17.1	Number of medications			
Principal diagnosis category and ICD-9-CM code ¹				None	43.8	43.3	37.5
Infectious and parasitic diseases	6.2	5.5	2.9	1	34.3	31.5	30.7
Neoplasms	*0.7	0.9	2.9	2	15.3	17.0	17.9
Endocrine, nutritional and metabolic diseases, and immunity disorders	*0.7	1.5	4.2	3 or more	6.6	8.3	13.9
Mental disorders	2.2	2.9	4.3	Physician specialty			
Diseases of the nervous system and sense organs	11.1	6.3	9.6	General and family practice	34.1	35.8	32.6
Diseases of the circulatory system	*0.5	1.1	10.8	Internal medicine	2.8	5.8	13.4
Diseases of the respiratory system	20.7	13.3	12.2	Pediatrics	29.3	8.3	10.6
Diseases of the digestive system	3.0	2.8	4.4	Obstetrics and gynecology	*0.9	13.9	9.3
Diseases of the genitourinary system	2.7	6.0	6.0	Dermatology	6.4	11.1	3.8
Diseases of the skin and subcutaneous tissue	8.7	13.6	5.2	General surgery	3.3	4.7	5.4
Diseases of the musculoskeletal system and connective tissue	4.8	3.6	7.2	Ophthalmology	4.9	3.9	5.5
Symptoms, signs, and ill-defined conditions	3.4	2.5	3.4	Otolaryngology	2.6	2.1	2.3
Injury and poisoning	16.1	12.5	7.5	Psychiatry	1.7	2.3	2.8
Supplementary classification	16.4	24.9	16.9	All other specialties	14.1	12.1	14.4
All other diagnoses	1.4	1.5	1.3	Duration of visit			
Unknown diagnoses	1.6	1.0	1.2	0 minutes ³	5.6	2.2	2.5
				1-5 minutes	15.6	17.8	12.1
				6-10 minutes	30.7	32.9	29.8
				11-15 minutes	26.0	25.5	28.1
				16-30 minutes	18.6	17.3	21.2
				31 minutes or longer	3.7	4.3	6.3
				Disposition of visit ⁴			
				No followup planned	19.7	17.6	10.7
				Return at specified time	47.2	53.2	61.8
				Return if needed	28.2	24.1	22.4
				Telephone followup planned	3.8	3.5	3.4
				Referred to other physician	2.6	2.7	2.6
				Returned to referring physician	*0.7	*0.4	0.8
				Admit to hospital	1.2	1.6	2.4
				Other	*0.2	*0.3	0.2

¹Based on U.S. Public Health Service and Health Care Financing Administration: *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). DHHS Pub. No. (PHS) 80-1260. Public Health Service, Washington, U.S. Government Printing Office, Sept. 1980.

²Percents will not total 100.0 because more than 1 service or therapy may have been provided during a visit.

³Visits in which there was no face-to-face encounter between patient and physician.

⁴Percents will not total 100.0 because more than 1 disposition was possible.

Table 3. Number of office visits made by adolescents and percent distribution by the 20 most frequent principal reasons for visit, according to age: United States, 1980–81

11–14 years			15–20 years		
Age, principal reason for visit, and RVC code ¹	Number of visits in thousands	Percent distribution	Age, principal reason for visit, and RVC code ¹	Number of visits in thousands	Percent distribution
Total	40,269	100.0	Total	87,172	100.0
Symptoms referable to throat S455	2,646	6.6	Prenatal examination, routine X205	6,985	8.0
General medical examination X100	2,431	6.0	Acne or pimples S830	5,811	6.7
Allergy medication T100	1,780	4.4	Symptoms referable to throat S455	4,937	5.7
Earache, or ear infection S355	1,482	3.7	General medical examination X100	2,892	3.3
Acne or pimples S830	1,356	3.4	Skin rash S860	2,084	2.4
Cough S440	1,196	3.0	Postoperative visit T205	1,761	2.0
Skin rash S860	1,187	2.9	Progress visit, not otherwise specified T800	1,737	2.0
Physical examination for extracurricular activities A115	1,091	2.7	Cough S440	1,452	1.7
Knee symptoms S925	860	2.1	Abdominal pain, cramps, spasms S550	1,441	1.7
Progress visit, not otherwise specified T800	723	1.8	Physical examination required for school A110	1,423	1.6
Physical examination required for school A110	708	1.8	Allergy medication T100	1,329	1.5
Headache, pain in head S210	678	1.7	Physical examination for extracurricular activities A115	1,268	1.5
Stomach pain, cramps and spasms . . . S545	670	1.7	Earache, or ear infection S355	1,239	1.4
Eye examination X230	644	1.6	Knee symptoms S925	1,138	1.3
Postoperative visit T205	626	1.6	Headache, pain in head S210	1,120	1.3
Fever S010	575	1.4	Head cold, upper respiratory infection (coryza) S445	1,062	1.2
Warts, not otherwise specified S850	555	1.4	Back symptoms S905	1,044	1.2
Allergy, not otherwise specified . . . S090	555	1.4	Eye examination X230	965	1.1
Vision dysfunctions S305	543	1.3	Gynecological examination X225	889	1.0
Head cold, upper respiratory infection (coryza) S445	491	1.2	Warts, not otherwise specified S850	878	1.0
Residual . . . . .	...	48.3	Residual . . . . .	...	52.4

¹Based on: National Center for Health Statistics, D. Schneider, L. Appleton, and T. McLemore: A reason for visit classification for ambulatory care (RVC). *Vital and Health Statistics*. Series 2, No. 78. DHEW Pub. No. (PHS) 79-1352. Public Health Service, Washington, U.S. Government Printing Office, Feb. 1979.

chronic conditions are more likely to be scheduled for return visits than are those with acute self-limiting conditions.

Because the youngest group (11–14 years) had proportionately more acute problems than other patients, they were also least likely to be told to return at a specified time. As table 2

shows, the proportion of visits that culminated with this instruction is higher in late adolescence than in early, but both groups have lower proportions of visits in which return visits were scheduled than other age groups did.

Table 4. Number of office visits made by adolescents and percent distribution by the 20 most frequent principal diagnoses, according to age: United States, 1980-81

<i>Age, principal diagnosis, and ICD-9-CM code¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>	<i>Age, principal diagnosis, and ICD-9-CM code¹</i>	<i>Number of visits in thousands</i>	<i>Percent distribution</i>
11-14 years			15-20 years		
Total.....	40,269	100.0	Total.....	87,172	100.0
General medical examination..... V70	2,832	7.0	Normal pregnancy..... V22	7,926	9.1
Allergic rhinitis..... 477	1,760	4.4	Diseases of sebaceous glands..... 706	7,306	8.4
Diseases of sebaceous glands ² 706	1,629	4.0	General medical examination..... V70	5,457	6.3
Acute pharyngitis..... 462	1,297	3.2	Acute pharyngitis..... 462	2,439	2.8
Acute upper respiratory infections of multiple or unspecified sites..... 465	1,296	3.2	Acute upper respiratory infections of multiple or unspecified sites..... 465	2,242	2.6
Suppurative and unspecified otitis media..... 382	1,177	2.9	Special investigations and examinations ⁴ V72	1,756	2.0
Asthma..... 493	1,109	2.8	Disorders of refraction and accommodation..... 367	1,525	1.7
Disorders of refraction and accommodation..... 367	1,054	2.6	Allergic rhinitis..... 477	1,482	1.7
Routine infant or child health check..... V20.2	930	2.3	Other diseases due to viruses and chlamydiae..... 078	1,427	1.6
Certain adverse effects not elsewhere classified ³ 995	808	2.0	Followup examination..... V67	1,345	1.5
Acute tonsillitis..... 463	791	2.0	Acute tonsillitis..... 463	1,254	1.4
Other diseases due to viruses and chlamydiae..... 078	770	1.9	Contact dermatitis and other eczema..... 692	1,146	1.3
Contact dermatitis and other eczema..... 692	684	1.7	Suppurative and unspecified otitis media..... 382	955	1.1
Fracture of radius and ulna..... 813	551	1.4	Contraceptive management..... V25	866	1.0
Disorders of external ear..... 380	527	1.3	Asthma..... 493	851	1.0
Curvature of spine..... 737	460	1.1	Disorders of menstruation and other abnormal bleeding from female genital tract..... 626	820	0.9
Bronchitis, not specified as acute or chronic..... 490	*435	1.1	Bronchitis, not specified as acute or chronic..... 490	78.8	0.9
Observation and evaluation for suspected conditions..... V71	*422	1.0	Disorders of external ear..... 380	731	0.8
Other noninfective gastroenteritis and colitis..... 558	*413	1.0	Chronic sinusitis..... 473	722	0.8
Followup examination..... V67	*405	1.0	Neurotic disorders..... 300	719	0.8
Residual.....	...	52.1	Residual.....	...	52.3

¹Based on U.S. Public Health Service and Health Care Financing Administration: *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). DHHS Pub. No. (PHS) 80-1260. Public Health Service, Washington, U.S. Government Printing Office, Sept. 1980.

²Chiefly 706.1, acne other than varioliformis.

³Chiefly 995.3, allergy unspecified.

⁴Chiefly V72.3, gynecological examination.

Table 5. Number of drug mentions in office visits made by adolescents and all other age groups and percent distribution by therapeutic category, according to age: United States, 1980-81

Therapeutic category ¹	Age		
	11-14 years	15-20 years	All other ages
	Number in thousands		
All categories	34,950	81,382	1,214,414
	Percent distribution		
Total	100.0	100.0	100.0
Antihistamine drugs	17.7	9.0	6.1
Anti-infective agents	27.4	29.6	14.5
Antibiotics	26.3	27.2	12.2
Autonomic drugs	3.3	3.3	3.8
Blood formation and coagulation	*0.4	1.0	1.3
Antianemia drugs	*0.4	1.0	0.8
Cardiovascular drugs	*0.5	*0.7	10.9
Central nervous system drugs	7.9	9.5	16.9
Analgesics and antipyretics	5.6	6.3	9.0
Psychotherapeutic agents	*0.3	0.9	2.5
Sedatives and hypnotics	*1.0	1.5	3.8
Diagnostic agents	1.8	0.8	0.4
Tuberculosis	1.8	0.8	0.4
Electrolytic, caloric, and water balance	*0.6	1.0	8.8
Expectorants and cough preparations	5.1	3.2	2.7
Eye, ear, nose and throat preparations	5.2	3.4	3.7
Anti-infectives	2.4	1.4	0.9
Anti-inflammatory agents	*1.0	0.8	0.7
Gastrointestinal drugs	*1.5	2.2	3.8
Hormones and synthetic substitutes	4.2	8.2	8.5
Adrenals	2.7	2.6	3.0
Contraceptives	*0.4	4.2	0.9
Serums, toxoids and vaccines	4.8	3.0	3.4
Toxoids	1.9	1.8	1.3
Vaccines	2.6	1.1	2.0
Skin and mucous membrane preparations	13.9	17.6	7.0
Anti-infectives	2.8	3.2	1.7
Anti-inflammatory agents	4.4	4.1	2.9
Cell stimulants and proliferants	*1.0	1.8	0.2
Keratolytic agents	3.2	5.6	0.6
Spasmolytic agents	2.2	*0.7	1.7
Vitamins	*0.8	4.4	3.4
Other, unclassified or undetermined	2.7	2.4	3.1

¹Based on American Society of Hospital Pharmacists, Inc.: *The American Hospital Formulary Service*. Washington, Jan. 1980.

Table 6. Number and percent distribution of drug mentions in office visits made by adolescents (and percent distribution) by age and most frequently named drugs: United States, 1980-81

<i>Age and name of drug¹</i>	<i>Number in thousands</i>	<i>Percent distribution</i>	<i>Age and name of drug¹</i>	<i>Number in thousands</i>	<i>Percent distribution</i>
11-14 years			15-20 years—Con.		
Total	34,950	100.0	Retin-A	1,335	1.6
Allergy relief or shots	2,878	8.2	Aspirin	1,253	1.5
Ampicillin	1,090	3.1	Desquam-X (benzoyl peroxide)	946	1.2
Penicillin	1,032	3.0	Minocin	911	1.1
Aspirin	937	2.7	Actifed	858	1.1
Tetracycline	912	2.6	Ortho-novum	831	1.0
Tuberculin tine test	835	2.4	Tuberculin tine test	812	1.0
E.E.S. (erythromycin)	609	1.7	E-mycin (erythromycin)	806	1.0
Erythromycin	554	1.6	Pen-Vee K	777	1.0
Amoxicillin	533	1.5	Prednisone	692	0.9
Dimetapp	503	1.4	Keflex	687	0.8
Pen-Vee K	461	1.3	E.E.S. (erythromycin)	629	0.8
Actifed	461	1.3	Lo/ovral	624	0.8
V-Cillin (penicillin)	*433	1.2	Prenatal vitamins	624	0.8
Cleocin	*427	1.2	Benzac (benzoyl peroxide)	618	0.8
Poliomyelitis vaccine	*405	1.2	Diphtheria tetanus toxoids	572	0.7
Diphtheria tetanus toxoids	*360	1.0	Tetanus toxoid	564	0.7
Residual .....	...	64.6	Dimetapp	542	0.7
15-20 years			Cortisporin	509	0.6
Total	81,382	100.0	Skin preparation	496	0.6
Tetracycline	3,724	4.6	Benadryl	478	0.6
Allergy relief or shots	2,354	2.9	Benzoyl (benzoyl peroxide)	476	0.6
Cleocin	2,307	2.8	Sumycin (tetracycline)	471	0.6
Penicillin	2,195	2.7	Benzagel (benzoyl peroxide)	457	0.6
Ampicillin	2,065	2.5	Drixoral	457	0.6
Erythromycin	1,446	1.8	Monistat	*446	0.5
			Residual .....	...	60.5

¹Based on the physician's entry on the Patient Record form.

Table 7. Number of generic drugs utilized in office visits made by adolescents by age and the 30 most frequently used generic substances described by their most common therapeutic uses: United States, 1980-81

<i>Age, generic substance, and most common therapeutic use</i>	<i>Number in thousands</i>	<i>Age, generic substance, and most common therapeutic use</i>	<i>Number in thousands</i>
11-14 years		15-20 years	
Penicillin (antibiotic)	2,179	Tetracycline (antibiotic)	5,077
Erythromycin (antibiotic)	1,696	Penicillin (antibiotic)	4,031
Phenylpropanolamine (sympathomimetic)	1,645	Erythromycin (antibiotic)	3,473
Phenylephrine (sympathomimetic)	1,369	Benzoyl peroxide (keratolytic, acne treatment)	3,367
Ampicillin (antibiotic)	1,308	Estradiol (estrogen)	2,579
Pseudoephedrine (antihistaminic, cough suppressant)	1,239	Aspirin (analgesic, antipyretic)	2,461
Chlorpheniramine (antihistaminic)	1,232	Clindamycin (antibiotic)	2,347
Tetracycline (antibiotic)	1,191	Pseudoephedrine (antihistaminic, cough suppressant)	2,302
Guaifenesin (cough suppressant)	1,112	Ampicillin (antibiotic)	2,201
Amoxicillin (antibiotic)	1,097	Multivitamins prenatal (vitamins)	2,128
Aspirin (analgesic, antipyretic)	1,025	Phenylpropanolamine (sympathomimetic)	1,964
Neomycin (antibiotic)	959	Phenylephrine (sympathomimetic)	1,712
Tuberculin (tuberculosis skin test)	835	Chlorpheniramine (antihistaminic)	1,657
Hydrocortisone (anti-inflammatory)	830	Norethindrone (oral contraceptive)	1,615
Brompheniramine (expectorant)	803	Hydrocortisone (anti-inflammatory)	1,445
Benzoyl peroxide (keratolytic, acne treatment)	736	Brompheniramine (expectorant)	1,390
Codeine (analgesic, antitussive)	714	Tretinoin (keratolytic)	1,335
Polymyxin B (antibacterial)	694	Neomycin (antibiotic)	1,278
Bacitracin (antibiotic)	660	Codeine (analgesic, antitussive)	1,272
Theophylline (vasodilator)	647	Acetaminophen (analgesic, antipyretic)	1,246
Tripolidine (antihistaminic)	584	Iron preparations (iron deficiency)	1,186
Atropine (anticholinergic)	513	Polymyxin B (antibacterial)	1,059
Hyoscyamine (anticholinergic)	508	Amoxicillin (antibiotic)	1,058
Promethazine (antihistaminic)	499	Guaifenesin (cough suppressant)	1,044
Acetaminophen (analgesic, antipyretic)	498	Salicylic acid (antifungal, keratolytic)	1,021
Salicylic acid (antifungal, keratolytic)	491	Tropolidine (antihistaminic)	998
Phenobarbital (anticonvulsant, sedative, hypnotic)	463	Bacitracin (antibiotic)	983
Scopolamine (hypnotic, sedative, anticholinergic)	460	Triamcinolone (anti-inflammatory)	923
Clindamycin (antibiotic)	*427	Minocycline (antibiotic)	919
Polio vaccine (immunization)	*405	Norgestrel (oral contraceptive)	901

Technical notes

Source of data and sample design

The estimates presented in this report are based on the findings of the National Ambulatory Medical Care Survey (NAMCS), a sample survey of office-based care conducted annually from 1973 through 1981 by the National Center for Health Statistics. The target universe of NAMCS is composed of office visits made by ambulatory patients to non-Federal and noninstitutional physicians who are principally engaged in office-based, patient-care practice. Visits to physicians practicing in Alaska and Hawaii are excluded from the range of NAMCS, as are visits to anesthesiologists, pathologists, and radiologists.

NAMCS uses a multistage probability sample design that involves a step sampling of primary sampling units (PSU's), physicians' practices within PSU's, and patient visits within physicians' practices. The physician sample (5,805 physicians for 1980 and 1981) was selected from master files maintained by the American Medical Association and the American Osteopathic Association. Those members of the sample who proved to be in scope and eligible participated at a rate of 77.3 percent. Responding physicians completed visit records for a systematic random sample of office visits made during a randomly assigned weekly reporting period. Telephone contacts were excluded. During 1980 and 1981 responding physicians completed 89,447 visit records on which they recorded 97,796 drug mentions. Characteristics of the physician's practice, such as primary specialty and type of practice, were obtained during an induction interview. The National Opinion Research Center, under contract to the National Center for Health Statistics, was responsible for the field operations of the survey.

Sampling errors and rounding

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than the entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. In this report, any estimate that exceeds a relative standard error of 30 percent is marked with an asterisk. Table I should be used to obtain the relative standard error for aggregates of office visits or for mentions of drugs by specific name (for example, Darvon). Table II should be used to obtain the relative standard error for drug mentions expressed as drug groups (for example, the analgesic drug family).

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

In the tables of this report estimates have been rounded to the nearest thousand. For this reason, detailed estimates do not always add to totals.

Table I. Approximate relative standard errors of estimated numbers of office visits and of drug mentions when drug is listed by product name (for example, Darvon), based on all physician specialties: National Ambulatory Medical Care Survey, 1980-81

<i>Estimated number of office visits or specific drug mentions</i>		<i>Relative standard error</i>
Number in thousands		Percent
*200.....		*44.8
*400.....		*31.7
*450.....		*30.0
600.....		26.0
800.....		22.6
1,000.....		20.2
2,000.....		14.5
5,000.....		9.5
10,000.....		7.1
20,000.....		5.6
50,000.....		4.4
100,000.....		3.9
200,000.....		3.6
500,000.....		3.5
1,000,000.....		3.4

EXAMPLE OF USE OF TABLE: An aggregate estimate of 35,000,000 office visits has a relative standard error of 5.0 percent or a standard error of 1,750,000 visits (5.0 percent of 35,000,000 visits).

Table II. Approximate relative standard errors of estimated numbers of drug mentions when drugs appear in groups (for example, the analgesic drug family), based on all physician specialties: National Ambulatory Medical Care Survey, 1980-81

<i>Estimated number of grouped drug mentions</i>		<i>Relative standard error</i>
Number in thousands		Percent
*200.....		*54.2
*400.....		*38.5
*600.....		*31.5
*650.....		*30.0
800.....		27.3
1,000.....		24.5
2,000.....		17.6
5,000.....		11.6
10,000.....		8.7
20,000.....		6.8
50,000.....		5.3
100,000.....		4.7
200,000.....		4.4
500,000.....		4.2
1,000,000.....		4.1

EXAMPLE OF USE OF TABLE: An aggregate estimate of 30,000,000 drug mentions has a relative standard error of 7.0 percent or a standard error of 2,100,000 mentions (7.0 percent of 30,000,000 mentions).

Definitions

An *office* is a place that physicians identify as a location for their ambulatory practice. Responsibility for patient care and professional services rendered in an office resides with the individual physician rather than an institution.

A *visit* is a direct personal exchange between an ambulatory patient seeking health care and a physician, or staff member working under the physician's supervision, who provides the health services.

A *drug mention* is the physician's entry on the visit record of a pharmaceutical agent ordered or provided by any route of administration for prevention, diagnosis, or treatment. Generic as well as brand-name drugs are included as are nonprescription as well as prescription drugs. The physician records all new drugs and also records all continued medications if the patient is specifically instructed during the visit to continue the medication.

An *acute problem* is a morbid condition with a relatively sudden or recent onset (within 3 months of the visit).

A *chronic problem* is a morbid condition that existed for 3 months or longer before the visit. The care indicated is of a regular, maintenance nature.

A *chronic problem flareup* is a sudden exacerbation of a preexisting chronic condition.

Nonillness care denotes health examinations and care provided for presumably healthy persons. Examples of nonillness care include prenatal and postnatal care, annual physicals, well-child examinations, and insurance examinations.

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 standards of reliability or precision
 - # Figure suppressed to comply with confidentiality requirements
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CAT Scan Use in Short-Stay Non-Federal Hospitals: United States, 1979–82

by Edmund J. Graves, Division of Health Care Statistics

This report presents statistics on the use of computerized axial tomography scans by inpatients during the period 1979–82. The age and sex of the patients who received these scans, their diagnoses, the types of scans they received, and the expected sources of payment for the scans are shown. In addition, information on the hospitals in which the scans were performed is reported, including the geographic region, size, and ownership of the facility. Hospital use measurements include frequencies, percent distributions, and population-based rates.

The statistics presented in this report are based on data collected by means of the National Hospital Discharge Survey, a continuous survey that has been conducted by the National Center for Health Statistics since 1965. Statistics are presented for discharges from 1979 through 1982. In each of these years data were abstracted from the face sheets of medical records of approximately 220,000 patients discharged from over 400 short-stay non-Federal hospitals. A brief description of the sample design, data collection and estimation procedures, and definition of terms used in this report can be found in the section entitled "Technical notes." A detailed discussion of these items and the survey form used to collect the data have been published.^{1,2}

The coding of medical data for hospitalized patients is done according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM).³

Background of CAT scans

A computerized axial tomography (CAT) scanner is a radiographic device that combines the technologies of radiology, computer processing, and cathode ray tube (CRT) display. This radiographic device produces an image of the transverse section of the body part in question. The image resembles an anatomic section.⁴ Tomography is defined as a technique of X-ray photography by which a single plane is photographed, with the

outlines of structures in other planes eliminated.⁵ Computerized tomography, also known as computerized axial tomography and computerized transverse axial tomography, has been rapidly accepted by the American medical community since its development in 1970.⁶ The number of CAT scanners in use in hospitals in the United States has grown from a mere handful in 1973, when the technique was introduced in the United States, to 1,716 in 1982.⁷ The principles underlying CAT were first elucidated in 1961, and 11 years later the first scanner (designed by G. H. Hounsfield, a researcher with the British firm EMI, Ltd.⁸) became available.^{9,10}

Clinical applications and historical background of CAT scanners

The CAT scanner can depict various intracranial or intra-abdominal abnormalities that previously might have required invasive procedures or surgical exploration. CAT scans can generally identify space-occupying lesions of the brain, such as tumors, hematomas, cysts, cerebral infarcts, hemorrhagic changes, calcification, metastatic disease, and hydrocephalus. Body scanners enable technicians to evaluate extensive abnormalities in the liver, retroperitoneal area, pancreas, bladder and related structures, and other pelvic structures.⁴

The major advantage of CAT scanning lies in its ability to provide clear radiographic definition of structures not visible by other techniques. It is a noninvasive procedure without significant risk, morbidity, or discomfort. The quality of CAT scans may be improved if used in conjunction with a dye that produces clearer images, especially of tumors. A disadvantage of the early units was the relatively slow scan time, which not only resulted in image degradation but also necessitated relatively long exposure to radiation. New scanners have been developed that can scan in 5 seconds or less. Motion, which once caused image degradation, is no longer a serious technical

limitation. Scanners that will evaluate cardiac function in a matter of milliseconds are being developed.⁴

The CAT scan provides surgeons with a long-sought method for better diagnosing of low back pain. It can spot spinal anomalies that were missed by the myelogram and by the operating surgeon. It has been reported by one hospital that the success rate for certain back surgeries has increased from 5 to 80 percent, with most of the credit for the success rate increase given to CAT scans.¹¹ The CAT scan is now used in conjunction with the position emission tomography (PET) scanner to provide an accurate diagnosis of Alzheimer's disease without extensive testing.¹²

The data presented in the National Hospital Discharge Survey have shown a tremendous increase in inpatient use from 1979 through 1982. In spite of the rapid growth of this technology, there are some drawbacks to the use of the CAT scanner. First, a CAT scanner is expensive. In 1974 the cost of a scanner was \$300,000. By 1980 this cost had risen to \$700,000. This increase was offset partially by the efficiency of the newer models.¹³ Second, the cost to the patient is high; the cost of one scan was approximately \$250 in 1980.¹⁴ A third drawback is the exposure to radiation. This is a serious deterrent, despite the faster scanning time of new equipment, and limits the number of CAT scans that can be performed on a patient in any one year. Because of concern with the cost and appropriate supply and distribution of this expensive technology, the national health planning program promulgated standards for the purchase and use of CAT scanners. These standards were included in the "National guidelines for health planning," which were published in March 1978.¹⁵ Health planning agencies were to use the standards as benchmarks against which to assess local conditions and needs. The agencies' assessments, based on these standards, determined whether a certificate of need was granted to allow purchase of new or additional equipment.

The standards published in 1978 were as follows: (1) A CAT scanner (head and body) should operate (for the second and subsequent years of operation) at a minimum of 2,500 medically necessary patient procedures per year, and (2) no additional scanners should be approved unless each scanner in the health service area is performing at a rate greater than 2,500 medically necessary patient procedures per year.

These standards were in effect until November 1982. At that time, the Department of Health and Human Services rescinded the CAT standard from the "National guidelines for health planning."¹⁶ It was decided that the standard did not adequately take into account recent advances in scanner technology. State health planning agencies remain free to develop their own standards for review of certificate-of-need applications to purchase CAT scanners.

The CAT scanner may eventually be supplanted by equipment that has broader capabilities. These are the positron emission tomography (PET) scanner¹⁷ and the nuclear magnetic resonance (NMR) scanner.¹⁸ The latter uses a magnetic field, thus avoiding radiation altogether. Unlike the CAT scanner, which only shows the size of tumor, stroke damage, and so forth, NMR equipment reveals anatomical changes (by examining the chemical and metabolic functioning of organs) that indicate not only current problems but problems that may occur

in the future. For example, the NMR scanner reveals the sodium content of brain cells, which aids in ascertaining the extent of stroke damage. The Food and Drug Administration has recently given its approval for the use of the NMR scanner, which makes its use eligible for patient insurance coverage.

Highlights

- The number of CAT scan procedures performed in short-stay hospitals during the period 1979 through 1982 has tripled (from 194,000 to 600,000).
- Approximately 40 percent of all CAT scans performed in short-stay hospitals during the period 1979 through 1982 were performed on patients 65 years of age and over.
- Of the patients who had CAT scans performed, approximately 42 percent expected medicare to pay for them and approximately 39 percent expected private insurance to pay for them.
- Over 25 percent of all CAT scans performed during the period were in the Middle Atlantic Division. However, the West North Central Division had a higher rate of procedures per 10,000 population than the Middle Atlantic Division did.
- Over 40 percent of all CAT scans performed in short-stay hospitals during the period 1979–1982 were performed in hospitals having 500 beds or more.
- About 75 percent of all CAT scans done in short-stay hospitals in the period 1979 through 1982 were done in nonprofit hospitals.
- About 60 percent of all CAT scans performed in short-stay hospitals during the period 1979 through 1982 were performed on the head.

Sex and age of patient

The estimated number of CAT scans performed on inpatients in short-stay non-Federal hospitals has risen from approximately 194,000 in 1979 to 600,000 in 1982: an increase of about 200 percent (table 1). It should be emphasized that these scans are for inpatients only; there are a considerable number of CAT scans performed in outpatient departments, medical clinics, and mobile units. Outpatient departments have the use of in-house scanners if time is available. In addition, 19 percent of all CAT scanners in use have been purchased by hospital outpatient departments and doctor's offices.¹⁹

The rate of CAT scans per 10,000 population ranged from 8.6 to 26.0 for males during this period while the rate for females ranged from 8.8 to 26.1 for the same period. Although the rates increased over time for each sex, the rates between the sexes showed no significant differences. The number and rate of procedures per 10,000 population by age is smallest for those under 15 years of age and largest for those 65 years of age and over. Rates per 10,000 population for those under 15 years of age ranged from 3.5 to 8.5 during the period 1979–1982, while for those 65 years and over they ranged from 26.5 to 92.5. Approximately 40 percent of the CAT scans performed on patients were performed on those 65 years of age and over, while only 8 percent were performed on those under 15 years of age. Varia-

Table 1. Number, rate, and percent distribution of CAT scans for patients discharged from short-stay non-Federal hospitals by sex and age: United States, 1979-82

Sex and age	1979	1980	1981	1982	1979	1980	1981	1982	1979	1980	1981	1982
	Number in thousands				Rate per 10,000 population				Percent			
Total	194	306	424	600	8.7	13.6	18.6	26.1	100.0	100.0	100.0	100.0
Sex												
Male	93	152	205	289	8.6	13.9	18.7	26.0	47.9	49.5	48.4	48.2
Female	101	154	219	311	8.8	13.2	18.6	26.1	52.1	50.5	51.6	51.8
Age												
Less than 15 years	18	27	34	44	3.5	5.3	6.6	8.5	9.2	8.9	8.0	7.3
15-44 years	54	74	103	150	5.3	7.1	9.8	14.0	28.1	24.1	24.3	25.0
45-65 years	55	85	114	158	12.4	19.0	25.6	35.6	28.3	27.7	26.8	26.4
65 years and over	67	120	173	248	26.5	46.7	66.0	92.5	34.4	39.3	40.9	41.4

tions in the percent distribution by age showed no significant difference from year to year.

Source of payment

Medicare, which is primarily for those 65 years of age and over, was the expected source of payment for approximately 42 percent of all CAT scans performed in short-stay non-Federal hospitals between the years 1979 and 1982, while private insurance was the expected source of payment for about 39 percent (table 2). Medicaid was the expected source of payment for about 7 percent of the CAT scans, while other payments and self-pay accounted for about 5 percent each.

Workmen's compensation accounted for the remaining 2 percent. There was no significant difference in expected source of payment from year to year.

Geographic division

The Middle Atlantic Division recorded the largest number of CAT scan procedures (433,000) performed on patients during the period 1979-82, while the Mountain Division recorded the smallest number of CAT scans about 30,000 (table 3). For most years rates per 10,000 population were highest in the West North Central Division and lowest in the West South Central and Mountain Divisions. In 1982 the rates ranged from

Table 2. Number and percent distribution of CAT scans for patients discharged from short-stay non-Federal hospitals by expected source of payment: United States, 1979-82

Expected source of payment	1979	1980	1981	1982	1979	1980	1981	1982
	Number in thousands				Percent			
All sources	194	306	424	600	100.0	100.0	100.0	100.0
Blue Cross and other private insurance	76	124	161	239	39.1	40.4	38.1	39.9
Medicare	69	129	184	261	35.5	42.0	43.4	43.5
Medicaid	13	21	29	37	6.6	6.8	6.9	6.1
Self-pay	11	17	21	29	5.9	5.6	5.0	4.8
Workmen's compensation	*	*	11	16	*	*	2.5	2.7
Other payments	24	13	17	17	12.2	4.1	4.0	2.9

Table 3. Number, rate, and percent distribution of CAT scans for patients discharged from short-stay non-Federal hospitals by geographic divisions: United States, 1979-82

Geographic division	1979	1980	1981	1982	1979	1980	1981	1982	1979	1980	1981	1982
	Number in thousands				Rate per 10,000 population				Percent			
All divisions	194	306	424	600	8.7	13.6	18.6	26.1	100.0	100.0	100.0	100.0
New England	*5	11	17	27	*4.3	8.7	13.7	21.7	*2.8	3.5	4.0	4.5
Middle Atlantic	50	78	117	188	13.5	21.3	31.8	51.1	26.0	25.6	27.6	31.4
East North Central	20	29	45	39	4.7	7.0	10.8	9.5	10.2	9.5	10.6	6.6
West North Central	27	57	71	100	15.7	33.1	41.6	57.8	14.0	18.5	16.8	16.6
South Atlantic	19	34	67	95	5.4	9.2	18.1	25.2	9.8	11.1	15.9	15.8
East South Central	*7	17	17	17	*4.7	11.4	11.8	11.5	*3.5	5.5	4.1	2.8
West South Central	*7	*8	16	20	*3.1	*3.6	6.5	8.0	*3.6	*2.8	3.7	3.3
Mountain	*	*	*8	17	*	*	*6.5	6.6	*	*	*1.8	2.8
Pacific	55	70	66	97	17.8	22.1	20.6	29.8	28.2	22.8	15.5	16.2

6.6 per 10,000 population for the Mountain Division to 57.8 per 10,000 population for the West North Central Division. The differences in the CAT scan rates could not be attributed to the age differences in the population.

Size of hospital

The number and percent of CAT scans performed during the period 1979–82 were lowest in hospitals with less than 100 beds (3 percent in 1982) and largest in hospitals with more than 500 beds (39 percent in 1982) (table 4). In comparison, for all procedures, 11 percent were performed in hospitals with less than 100 beds and 29 percent in hospitals with more than 500 beds. One possible reason for the small number of CAT scan procedures performed in the smallest hospitals may be that CAT scanners are quite expensive and require trained personnel to operate them. Small hospitals often do not have the resources in personnel or finances to purchase and operate them. The standards in the "National guidelines for health planning," which were in effect until November 1982,^{15,16} also tended to discourage smaller hospitals from purchasing this equipment. The target of 2,500 patient procedures per year for efficient utilization requires a larger patient population than is available in many smaller hospitals.

Hospital ownership

During the period 1979–82, 1,141,000 CAT scans (75 percent) were performed in nonprofit hospitals; 321,000 (21 percent) were performed in State or local government hospitals; the remaining 4 percent were performed in proprietary hospitals (table 5). Within the 4 years there was no significant shift by hospital ownership in the percent of CAT scans performed.

Anatomical site

Of the 1,524,000 CAT scans performed during the period 1979–82, 921,000 (60 percent) were scans of the head (table 6). This is not surprising because head scanners were the first scanners introduced, and the head is the area of the body where this type of noninvasive procedure is most useful. Head scans are used to determine the extent of brain tumors and whether they are operable, and the extent of stroke damage to ascertain the feasibility of cleaning up the stroke debris. The other area of the body where CAT scanning is quite common is the abdomen. There were 180,000 (12 percent) performed on the abdomen.

Of the 600,000 CAT scans performed during 1982, 359,000 were scans of the head (table 7). Of these 359,000

Table 4. Number and percent distribution of CAT scans for patients discharged from short-stay non-Federal hospitals by bed size: United States, 1979–82

Bed size	1979	1980	1981	1982	1979	1980	1981	1982
	Number in thousands				Percent			
All sizes	194	306	424	600	100.0	100.0	100.0	100.0
6–99 beds	*	*7	18	16	*	*2.2	4.4	2.7
100–199 beds	32	53	63	93	16.6	17.2	14.8	15.5
200–299 beds	20	30	51	98	10.3	9.9	12.0	16.4
300–499 beds	51	73	107	158	26.4	23.7	25.2	26.4
500 or more beds	90	144	185	234	46.2	47.0	43.6	39.0

Table 5. Number and percent distribution of CAT scans for patients discharged from short-stay non-Federal hospitals by type of ownership: United States, 1979–82

Type of ownership	1979	1980	1981	1982	1979	1980	1981	1982
	Number in thousands				Percent			
All hospitals	194	306	424	600	100.0	100.0	100.0	100.0
Nonprofit	140	228	306	467	72.2	74.5	72.0	77.8
Proprietary	10	15	16	21	5.0	4.9	3.8	3.6
State and local government	44	63	102	112	22.8	20.7	24.1	18.6

Table 6. Number, rate, and percent distribution of CAT scans by site of scan for patients discharged from short-stay non-Federal hospitals: United States, 1979–82

Site of CAT scan	1979	1980	1981	1982	1979	1980	1981	1982	1979	1980	1981	1982
	Number in thousands				Rate per 10,000 population				Percent distribution			
All CAT scans	194	306	424	600	8.7	13.6	18.6	26.1	100.0	100.0	100.0	100.0
Head	106	190	266	359	4.7	8.4	11.7	15.6	54.6	62.1	62.7	59.8
Abdomen	15	32	56	77	0.7	1.4	2.4	3.4	7.7	10.5	13.2	12.8
Other specified	*	*8	11	23	*	*0.3	0.5	1.0	*	*2.6	2.6	3.8
Other unspecified	69	75	91	141	3.1	3.3	4.0	6.1	35.6	24.5	21.5	23.5

Table 7. Number and percent of CAT scans, by sites of scans and principal diagnoses for patients discharged from short-stay non-Federal hospitals: United States, 1982

Site of CAT scan and diagnosis and ICD-9-CM code ¹	Number in thousands	Percent
All head scans	359	100.0
Cerebrovascular disease 400-438	82	22.9
Malignant neoplasm 140-208	29	8.1
Concussion and intracranial injury . . . 850-854	23	6.5
Heart disease 391-392, 393-398, 402, 404, 410, 416, 420-429	20	5.6
All abdomen scans	77	100.0
Malignant neoplasm 140-208	20	26.2

¹U.S. Public Health Service and Health Care Financing Administration: *International Classification of Diseases, 9th Revision, Clinical Modification*. DHHS Pub. No. (PHS) 80-1260. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1980.

head scans, 82,000 were for cerebrovascular disease, 29,000 were for malignant neoplasm, 23,000 were for concussion and intracranial injury, and 20,000 were for heart disease. The other anatomical site where there were significant numbers of scans was the abdomen. There were 77,000 scans of the abdomen during 1982, and, of these, 20,000 were for suspected neoplasm.

Diagnosis

The two leading diagnostic groups for which CAT scans were performed were circulatory diseases (150,000 or 25 percent) and neoplasms (82,000 or 14 percent) (table 8).

Of the 150,000 CAT scans performed on the circulatory system, 96,000, or 64 percent, were performed for cerebrovascular disease; of the 82,000 CAT scans performed because of suspected neoplasms, 71,000 or 86 percent were for suspected malignancy. Other leading diagnoses were injury and poisoning (68,000) and diseases of the nervous system and sense organs (60,000).

Table 8. Number and percent distribution of CAT scans by all-listed diagnoses and ICD-9-CM codes for patients discharged from short-stay non-Federal hospitals: United States, 1982

Diagnosis and ICD-9-CM code ¹	Number in thousands	Percent distribution
All CAT scans	600	100.0
Infectious and parasitic diseases 001-139	12	2.1
Neoplasms 140-239	82	13.7
Endocrine, nutritional, and metabolic diseases and immunity disorders 240-279	22	3.7
Diseases of the blood and blood-forming organs 280-289	*5	*0.9
Mental disorders 290-319	40	6.7
Diseases of the nervous system and sense organs 320-389	60	10.0
Diseases of the circulatory system 390-459	150	24.9
Diseases of the respiratory system 460-519	19	3.1
Diseases of the digestive system 520-579	39	6.5
Diseases of the genitourinary system 580-629	16	2.7
Complications of pregnancy, childbirth, and the puerperium 630-676	*	*
Diseases of the skin and subcutaneous tissue 680-709	*	*
Diseases of the musculoskeletal system 710-739	50	8.4
Congenital anomalies 740-759	*7	*1.1
Certain conditions originating in the perinatal period 760-779	*	*
Symptoms, signs, and ill-defined conditions 780-799	20	3.3
Injury and poisoning 800-899	68	11.3
Supplementary classifications . . . V01-V82	*5	*0.9

¹U.S. Public Health Service and Health Care Financing Administration: *International Classification of Diseases, 9th Revision, Clinical Modification*. DHHS Pub. No. (PHS) 80-1260. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1980.

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
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- # Figure suppressed to comply with confidentiality requirements

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Technical notes

Source of data

The National Hospital Discharge Survey (NHDS) encompasses patients discharged from short-stay hospitals, exclusive of military and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only hospitals with six or more beds and an average length of stay of less than 30 days for all patients are included in the survey. Discharges of newborn infants are excluded from this report.

The universe of the survey consisted of 6,965 short-stay hospitals contained in the 1963 Master Facility Inventory of Hospitals and Institutions. New hospitals were sampled for inclusion in the survey in 1972, 1975, 1977, 1979, and 1981. In all, 550 hospitals were sampled in 1982. Of these hospitals, 71 refused to participate, and 53 were out of scope. The 426 participating hospitals provided approximately 214,000 abstracts of medical records.

Sample design

All hospitals with 1,000 or more beds in the universe of short-stay hospitals were selected with certainty in the sample. All hospitals with fewer than 1,000 beds were stratified, the primary strata being 24 size-by-region classes. Within each of these 24 primary strata, the allocation of the hospitals was made through a controlled selection technique so that hospitals in the sample would be properly distributed with regard to type of ownership and geographic division. Sample hospitals were drawn with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals.

Sample discharges were selected within the hospitals using the daily listing sheet of discharges as the sampling frame. These discharges were selected by a random technique, usually on the basis of the terminal digit or digits of the patient's medical record number, a number assigned when the patient was admitted to the hospital. The within-hospital sampling ratio for selecting sample discharges varied inversely with the probability of selection of the hospital.

Data collection and estimation

The sample selection and the transcription of information from the hospital records for abstract forms were performed by the hospital staff or by representatives of the National Center for Health Statistics or by both. The data were abstracted from the face sheets of the medical records. All discharge diagnoses and procedures were listed on the abstract in the order of the principal one, or the first-listed one if the principal one was not identified, followed by the order in which all other diagnoses or procedures were entered on the face sheet of the medical record.

Statistics produced by the NHDS are derived by a complex estimating procedure. The basic unit of estimation is the sample inpatient discharge abstract. The estimating procedure used to produce essentially unbiased national estimates in the NHDS has three principal components: inflation by reciprocals of the probabilities of sample selection, adjustment for nonresponse,

and ratio adjustment to fixed totals. These components of estimation are described in appendix I of two earlier publications.^{20,21}

Sampling errors and rounding of numbers

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than an 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. Relative standard errors for procedures are shown in table I.

Estimates have been rounded to the nearest thousand. For this reason detailed 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, the determination of statistical inference is based on the two-tailed Bonferroni test for multiple comparisons. Terms relating to differences such as "higher" and "less" indicate that the 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 be not significant.

Definition of terms

Hospitals and hospital characteristics

Hospitals—Short-stay special and general hospitals have six or more beds for inpatient use and an average length of stay of less than 30 days. Federal hospitals and hospital units of institutions are not included.

Table I. Approximate relative standard errors of estimated numbers of all-listed procedures: United States, 1982

<i>Size of estimate</i>	<i>Relative standard error</i>
5,000	15.4
10,000	13.7
25,000	11.5
50,000	10.2
100,000	9.2
500,000	7.4
1,000,000	6.8
3,000,000	6.1
5,000,000	5.8
10,000,000	5.4
15,000,000	5.2
20,000,000	5.1
25,000,000	5.0

NOTE: A list of references follows the text.

Bed size of hospital—Measured by the number of beds, cribs, and pediatric bassinets regularly maintained (set up and staffed for use) for patients; bassinets for newborn infants are not included. In this report the classification of hospitals by bed size reported by the hospitals is based on the number of beds at or near midyear.

Type of ownership of hospital—Determined by the organization that controls and operates the hospital. Hospitals are grouped as follows:

- *Voluntary nonprofit*—Hospitals operated by a church or another nonprofit organization.
- *Government*—Hospitals operated by a State or local government.
- *Proprietary*—Hospitals operated by individuals, partnerships, or corporations for profit.

Procedure—One or more surgical or nonsurgical operations, procedures, or special treatments assigned by the physician to patients discharged from the inpatient service of short-stay hospitals. In the NHDS all terms listed on the face sheet (summary sheet) of the medical record under the captions “operation,” “operative procedures,” “operations and/or special treatment,” and the like are transcribed in the order listed. A maximum of four procedures are coded.

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

Demographic terms

Age—Refers to the age of the patient on the birthday prior to admission to the hospital inpatient service.

Census division—One of the nine geographic divisions of the United States corresponding to those used by the Bureau of the Census:

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

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