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<u>Advance</u> Data



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1988 Summary: National Hospital Discharge Survey

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Introduction

During 1988, an estimated 31.1 million inpatients, excluding newborn infants, were discharged from shortstay non-Federal hospitals in the United States. These patients used 203.7 million days of inpatient hospital care. The discharge rate was 128 discharges per 1,000 civilian population and the average length of stay was 6.5 days.

These and other statistics presented in this report are based on data collected by means of the National Hospital Discharge Survey (NHDS), a continuous survey that has been conducted by the National Center for Health Statistics (NCHS) since 1965. In 1988, data were abstracted from the medical records of approximately 250,000 patients discharged from 422 short-stay non-Federal hospitals. Beginning in 1988, a new three-stage stratified sample design was put in operation. A brief description of the new design, data collection procedures, and estimation process and definitions of terms used in this report can be found in the

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

Medical data for hospitalized patients are coded according to the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (2). 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 in 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 their 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 NHDS data are published in Series 13 of the NCHS *Vital and Health Statistics* reports.

Starting in 1985, some hospitals have submitted machine-readable data tapes through commercial abstracting services. In 1988, approximately 37 percent of the hospitals used this method to submit data. Analysis indicates that a greater number of nonsurgical procedures per patient are recorded from these hospitals than from hospitals submitting data in the traditional manual mode (see "Technical notes"). A portion of the increases from 1984 to 1988 in the estimates for miscellaneous diagnostic and therapeutic procedures and, therefore, for total procedures may be due to this change in data collection methods.



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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 31.1 million patients discharged from short-stay hospitals during 1988 comprised an estimated 12.6 million males and 18.5 million females. The rate per 1,000 population for females

Table 1. Number of inpatients discharged from short-stay hospitals by selected characteristics: United States, 1988

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

Selected characteristic	Both sexes	Male	Female
	Number of	patients discharged li	n thousands
All patients	31,146	12,642	18,504
Age			
Under 15 years	2,610 11,934 6,4560 10,146	1,486 3,485 3,221 4,450	1,125 8,448 3,235 5,696
Region			
Northeast Midwest South West	7,078 7,832 10,845 5,391	2,975 3,268 4,244 2,155	4,104 4,564 6,601 3,236

Table 2. Rate of inpatients discharged from short-stay hospitals by selected characteristics: United States, 1988

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

Selected characteristic	Both sexes	Male	Female
	Rate of patie	nts discharged per 1,0	000 population
All patients	127.6	106.9	147.0
Age			
Under 15 years	49.2	54.6	43.4
15–44 years	104.0	61.5	145.6
45-64 years	140.5	146.4	135.1
65 years and over	334.1	360.3	316.2
Region			
Northeast	140.2	123.3	155.8
Midwest	131.1	112.6	148.6
South	129.4	105.1	152.1
West	107.6	87.3	127.3

Table 3. Average length of stay for inpatients discharged from short-stay hospitals by selected characteristics: United States, 1988

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

Selected characteristic	Both sexes	Male	Female
	Ave	erage length of stay in	days
All patients	6.5	7.1	6.2
Age			
Under 15 years	5.0	5.0	4.9
15-44 years	4.7	6.3	4.1
45~64 years	6.8	6.8	6.8
65 years and over	8.9	8.6	9.1
Region			
Northeast	7.7	8.1	7.4
Midwest	6.4	6.7	6.2
South	6.2	6.8	5.9
West	5.8	6.8	5.2

was 147, which was 37 percent higher than the rate of 107 for males. The number and rate of discharges are 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 pregnancy-related conditions.

The average length of stay was 7.1 days for males and 6.2 days for females during 1988. The average length of stay of the 3.8 million women who were hospitalized for deliveries was 2.9 days. The average length of stay was 5.0 days for patients under 15 years of age, 4.7 days for patients 15–44 years of age, 6.8 days for patients 45–64 years of age, and 8.9 days for patients 65 years of age and over.

The number of discharges from short-stay hospitals by geographic region during 1988 ranged from 10.8 million in the South to 5.4 million in the West. Regional differences in the number of discharges are accounted for in part by variations in the population sizes. The rates per 1,000 population ranged from 140 in the Northeast region to 108 in the West. Average lengths of stay by geographic region were 5.8 days in the West, 6.2 days in the South, 6.4 days in the Midwest, and 7.7 days in the Northeast.

Utilization by diagnosis

Diseases of the circulatory system ranked first in 1988 of the ICD-9-CM diagnostic chapters as a principal or first-listed diagnosis for patients discharged from non-Federal shortstay hospitals. These conditions accounted for an estimated 5.3 million discharges. Other leading ICD-9-CM diagnostic chapters were supplementary classifications (including females with deliveries) (4.3 million discharges) and diseases of the digestive system (3.3 million discharges). About 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

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either because they appear as principal or first-listed diagnoses with great frequency or because the conditions are of special interest. Many of these categories (such as malignant neoplasms, psychoses, and fractures) are groupings of more detailed diagnoses.

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 categories for all patients were deliveries and heart disease. Other leading diagnostic categories were malignant neoplasms and fractures. Excluding deliveries, these last three diagnostic categories were the most common first-listed diagnoses for both males and females. Some of the more common diagnoses for patients under 15 years of age were pneumonia, acute respiratory infections, asthma, and chronic diseases of tonsils and adenoids. For patients 15-44 years of age, frequent diagnoses were deliveries, psychosis, fractures, and abortions and ectopic pregnancies. For patients 45-64 years of age and 65 years of age and over, heart disease and malignant neoplasms were major causes of hospital use. The average length of stay for all patients ranged from 1.2 days for chronic disease of tonsils and adenoids to 15.1 days for psychoses.

Utilization by procedures

One or more surgical or nonsurgical procedures were performed for an estimated 19.9 million of the 31.1 million inpatients discharged from short-stay hospitals during 1988. A total of 39.2 million procedures, or an average of 2.0 per patient who underwent at least one procedure, were recorded in 1988.

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 and hysterectomy) are presented as single categories even though they are divided into more precise subgroups in ICD-9-CM.

Three-fourths of all the surgical and nonsurgical procedures performed during 1988 are listed in just five of the 16 procedure chapters. These were diagnostic and therapeutic procedures (10.8 million), obstetrical procedures (6.0 million), operations on the digestive system (5.3 million), operations on the cardiovascular system (3.6 million), and operations on the musculoskeletal system (3.1 million).

The number and rate of all-listed procedures in 1988 for each ICD-9-CM procedure chapter and selected procedure categories are shown by sex and age in tables 7 and 8. Of the 39.2 million procedures performed during 1988, 15.7 million were for males and 23.5 million were for females. The corresponding rates per 100,000 population were 16,054.0 for both sexes, 13,309.3 for males, and 18,631.2 for females. Frequent procedures for males were arteriography and angiocardiography and computerized axial tomography. Procedures commonly performed on females were episiotomy, diagnostic ultrasound, cesarean section, and computerized axial tomography.

The rate of procedures per 100,000 population ranged from 3,860.0 for patients under 15 years of age to 41,761.8 for patients 65 years of age and over. Commonly performed procedures for patients under 15 years of age were spinal tap and tonsillectomy with or without adenoidectomy; for patients 15-44 years of age, episiotomy and cesarean section; for patients 45-64 years of age and 65 years of age and over, computerized axial tomography, arteriography and angiocardiography, diagnostic ultrasound, and circulatory monitoring.

References

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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 (see Technical notes)
- # Figure suppressed to comply with confidentiality requirements

Table 4. Number of inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)]

		<u> </u>	Sex	<u> </u>	Age			
Category of first-listed diagnosis and ICD-9-CM code	Total	Male	Female	Under 15 years	15-44 years	45-64 уөагs	65 years and over	
			Number of patk	ents discharged i	n thousands			
All conditions	31,146	12,642	18,504	2,610	11,934	6,456	10,146	
Infectious and parasitic diseases	693	333	359	191	211	104	187	
Neoplasms	2.098	851	1,247	53	378	708	958	
Malignant neoplasms	1,670	772	898	37	187	566	880	
rectum	165 236	77 136	87 100	*	*5	41 102	118 125	
lung	177	*	176	-	20	81	76	
behavior and unspecified nature210229, 235239	428	78	350	16	191	142	79	
Endocrine, nutritional and metabolic diseases, and immunity disorders	1,038 454	414 209	623 245	102 28	229 125	250 134	456 166	
	295	209 140	155	47	86	52	110	
Diseases of the blood and blood-forming organs280-289			-					
Mental disorders	1,559 781	765 341	793 440	58 21	962 429	288 157	251 174	
Alcohol dependence syndrome	237	179	58	*	158	63	14	
Diseases of the nervous system and sense organs .320-389	922	430	492	194	222	190	317	
Diseases of the central nervous system .320-336,340-349	348	169	179	57	119	69	103	
Cataract	92	33	59	*	*	17	72	
Diseases of the ear and mastoid process	200	99	102	106	37	26	32	
Diseases of the circulatory system	5,296	2,722	2,574	25	419	1,628	3,224	
410-416,420-429 Acute myocardial infarction	3,641 716	1,955 451	1,686 265	14 *	243 45	1,162 241	2,223 430	
Atherosclerotic heart disease	411	278	134	*	24	191	197	
Other ischemic heart disease411-412,414.1-414.9	921	491	431	*	53	366	502	
Cardiac dysrhythmias	491	228	263	*5	36	131	320	
Congestive heart failure	634 784	277 336	357 448	*	14 32	107 171	510 578	
Diseases of the respiratory system	2,937	1,464	1,473	699	540	525	1,172	
Acute respiratory infections, except influenza 460-466	445	224	221	168	60	70	148	
Chronic disease of tonsils and adenoids	197	87	110	125	70	*	*	
Pneumonia, all forms	924 479	472 210	452 270	184 164	111 110	139 93	490	
							112	
Diseases of the digestive system	3,268 256	1,515 137	1,753 118	274	992 52	831 66	1,171 136	
Gastritis and duodenitis	146	57	88	*6	45	41	54	
Appendicitis	242	141	101	52	145	24	20	
Inguinal hernia	257	232	25	30	65	78	84	
Noninfectious enteritis and colitis	333	122	211	96 *	115	52	70	
Cholelithiasis	484	132	352	*	183	146	154	
Diseases of the genitourinary system	2,204	828	1,376	71	922	512	700	
Calculus of kidney and ureter	287 247	183 247	104 	-	137 *	106 56	41 191	
Complications of pregnancy, childbirth, and the puerperium ¹ 630–676	837		837	*3	000	*		
Abortions and ectopic and molar pregnancies630–639	266	•••	266	*	833 264	*		
Diseases of the skin and subcutaneous tissue680-709	460	234	226	46	154	108	152	
Diseases of the musculoskeletal system and connective								
tissue	1,647	774	872	54	621	495	477	
Arthropathies and related disorders	459	191	267	18	129	116	196	
	417	247	170		223	142	51	
Congenital anomalies	227	128	98	150	45	24	*8	
Certain conditions originating in the perinatal period	158	92	66	158	*	*	*	
Symptoms, signs, and ill-defined conditions	398	200	198	50	175	105	69	
Injury and poisoning	2,817	1,535	1,281	348	1,216	498	755	
Fractures, all sites	1,014	506	508	107	356	154	398	
Fracture of neck of femur	254	68	186	*	10	24	217	
Sprains and strains of back (including neck)846–847 Intracranial injuries (excluding those with skull	97	48	49	*	61	22	12	
fracture)	201	124	78	46	103	26	16	
Lacerations and open wounds	232	176	56	34	155	27	17	
Supplementary classifications	4,295 3,781	217	4,078 3,781	88 10	3,929 3,768	138 *	139 	

¹First-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, 1988 [Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)]

			Sex		Age			
Category of first-listed diagnosis and ICD-9-CM code	Total	Male	Female	Under 15 years	15–44 years	45–64 years	65 years and over	
		 R	ate of inpatients of	lischarged per 1	0,000 populat	ion		
All conditions	1.275.8	1,069.3	1,469.7	491.5	1,040.5	1,404.9	3,341.2	
Infectious and parasitic diseases	28.4	28.2	28.6	35.9	18.4	22.6	61.6	
Neoplasms	85.9	72.0	99.1	10.0	33.0	154.1	315.6	
Malignant neoplasms	68.4	65.3	71.3	6.9	16.3 *0.5	123.3	289.7	
rectum	6.7 9.7	6.6 11.5	6.9 7.9	*	0.5	8.9 22.2	41.2	
Malignant neoplasm of breast	7.2	*	14.0	-	1.7	17.6	25.0	
behavior and unspecified nature210-229,235-239 Endocrine, nutritional and metabolic diseases, and immunity	17.5	6.6	27.8	3.0	16.7	30.8	25.9	
disorders	42.5	35.0	49.5	19.2	20.0	54.4	150.3	
Diabetes mellitus	18.6	17.7	19.5	5.2	10.9	29.3	54.8	
Diseases of the blood and blood-forming organs280-289	12.1	11.8	12.3	8.9	7.5	11.3	36.2	
Mental disorders	63.8	64.7	63.0	10.9	83.9	62.7	82.5	
Psychoses	32.0 9.7	28.8 15.1	35.0 4.6	4.0 *	37.4 13.8	34.1 13.8	57.5 4.8	
	9.7 37.8	36.4	4.0 39.1	36.5	19.3	41.3	4.8 104.3	
Diseases of the nervous system and sense organs .320-389 Diseases of the central nervous system .320-336,340-349	37.8 14.3	30.4 14.3	39.1 14.2	36.5 10.8	19.3	41.3	33.8	
Cataract	3.8	2.8	4.7	*	*	3,8	23.8	
Diseases of the ear and mastoid process	8.2	8.3	8.1	20.0	3.2	5.6	10.5	
Diseases of the circulatory system	216.9	230.2	204.5	4.7	36.5	354.4	1,061.6	
410-416,420-429	149.2	165.4	133.9	2.6	21.2	252.8	731.9	
Acute myocardial infraction	29.3 16.9	38.1 23.5	21.1 10.6	*	3.9 2.0	52.4 41.5	141.6 64,8	
Other ischemic heart disease411-413,414.1-414.9	37.7	41.5	34.2	*	4.6	79.7	165.4	
Cardiac dysrhythmias	20.1	19.3	20.9	*1.0	3.1	28.4	105.4	
Congestive heart failure	26.0 32.1	23.5 28.4	28.3 35.6	*	1.3 2.8	23.2 37.2	168.1 190.4	
Diseases of the respiratory system	120.3 18.2	123.8 18.9	117.0 17.6	131.7 31.6	47.1 5.2	114.2 15.2	386.0 48.7	
Chronic disease of tonsils and adenoids	8.0	7.4	8.7	23.5	6.1	*	*	
Pneumonia, all forms	37.9	40.0	35.9	34.7	9.7	30.3	161.3	
Asthma	19.6	17.7	21.4	31.0	9.6	20.3	36.8	
Diseases of the digestive system	133.9	128.1	139.3	51.5	86.5	180.8	385.7	
Ulcers of the stomach and small intestine531-534	10.5	11.6	9.4	* *1.1	4.6	14.3 9.0	44.9 17.7	
Gastritis and duodenitis	6.0 9.9	4.8 11.9	7.0 8.0	- 1. I 9.9	3.9 12.7	9.0 5.2	6.7	
Inguinal hernia	10.5	19.6	2.0	5.6	5.7	17.0	27.6	
Noninfectious enteritis and colitis	13.6	10.3	16.7	18.1	10.0	11.4	23.0	
Cholelithiasis	19.8	11.2	28.0	*	16.0	31.7	50.8	
Diseases of the genitourinary system	90.3	70.1	109.3	13.3	80.3	111.4	230.5	
Calculus of kidney and ureter	11.8	15.5	8.3	*	11.9	23.0	13.6	
Hyperplasia of prostate	10.1	20.9	•••	-	-	12.1	62.8	
Complications of pregnancy, childbirth, and the	34.3		66.5	*0.6	72.6	*		
puerperium ¹	10.9	• • •	21.1	~0.6	23.0	*	•••	
Diseases of the skin and subcutaneous tissue680–709	18.8	19.8	17.9	8.6	13.5	23.4	50.1	
Diseases of the musculoskeletal system and connective	10.0	10.0	17.0	0.0	10.0	20.4	55.1	
tissue	67.4	65.5	69.3	10.1	54.1	107.8	156.9	
Arthropathies and related disorders	18.8	16.2	21.2	3.4	11.3	25.2	64.4	
Intervertebrat disc disorders	17.1	20.9	13.5	*	19.5	30.9	16.7	
Congenital anomalies	9.3	10.9	7.8	28.2	3.9	5.2	*2.5	
Certain conditions originating in the perinatal period	6.5	7.8	5.3	29.8	*	*	*	
Symptoms, signs, and ill-defined conditions	16.3	16.9	15.7	9.3	15.2	22.8	22.7	
Injury and poisoning	115.4	129.9	101.8	65.6	106.0	108.3	248.6	
Fractures, all sites	41.5	42.8	40.4	20.1	31.0	33.4	131.1	
Fracture of neck of femur	10.4	5.7	14.8	*	0.9	5.2	71.4	
Sprains and strains of back (including neck)846–847	4.0	4.1	3.9	*	5.3	4.8	3.9	
Intracranial injuries (excluding those with skuli fracture)	8.2	10.4	6.2	8.7	9.0	5.7	8.4	
Lacerations and open wounds	9.5	14.9	4.5	6.3	13.5	5.9	5.7	
	475.0	40.0		40.0	040 F	66 4	45.0	
Supplementary classifications	175.9	18.3	323.9	16.6	342.5	30.1	45.9	

¹First-listed diagnosis for females with deliveries is coded V27, shown under "supplementary classifications."

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Table 6. Average length of stay for inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1988

[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)]

			Sex	<u> </u>	A	<i>үө</i>	
Category of first-listed diagnosis and ICD-9-CM code	Total	Male	Female	Under 15 years	15–44 years	45–64 уөагs	65 years and over
			Avera	ge length of stay	in days		
All conditions	6.5	7.1	6.2	5.0	4.7	6.8	8.9
Infectious and parasitic diseases	8.1	8.2	8.0	4.1	7.5	10.9	11.3
Neoplasms	8.5	9.0	8.1	6.5	5.8	8.1	9.9
Malignant neoplasms	9.4	9.4	9.4	7.9	7.3 *12.4	8.9 11.5	10.2 13.6
rectum	13.1 9.5	12.6 9.1	13.4 10.0	*	11.3	9.4	9.5
lung	5.6	*	5.6	-	5.0	5.3	6.0
behavior and unspecified nature210-229, 235-239	4.9	5.0	4.9	3.1	4.3	5.0	6.6
Endocrine, nutritional and metabolic diseases, and immunity			- <i>r</i>		5.4	70	
disorders	7.5 8,2	7.5 7.8	7,5 8.6	4.6 5.2	5.4 5.7	7.2 8.3	9.4 10.5
	6,2	6.2	6.2	4.2	5.5	6.5	7.4
Diseases of the blood and blood-forming organs280–289	13.0	0.2 12.4	13.7	25.0	12.6	11.9	13.3
Mental disorders	15.1	14.3	15.8	28.0	14.7	14.1	15.5
Alcohol dependence syndrome	11.2	11.1	11.4	*	11.9	8,9	8.5
Diseases of the nervous system and sense organs .320-389	5.4	6.0	4.9	3.7	5.4	5.5	6.4
Diseases of the central nervous system .320-336,340-349	9.4	10.5	8.4	6.5 *	7.2	10.5	12.9
Cataract	1.4 2.5	1.5 2.3	1.3 2.7	2.1	2.2	1.3 2.5	1.4 4.0
•	7,5	7.4	7.7	6.8	5.7	6.4	8.4
Diseases of the circulatory system							
410-416,420-429	7.1 9.0	6.9 8.8	7.4 9.3	6.6 *	5.7 6.8	6.2 8.1	7.8 9.7
Acute myocardial infarction	6.1	5.7	6.9	*	5.0	5.1	7.1
Other ischemic heart disease411-413,414.1-414.9	5.3	5.1	5.5	*	3.8	4.6	5.9
Cardiac dysrhythmias	5.6	5.6	5.7	*4.6	3.2	4.7	6.3
Congestive heart failure	8.8 9.7	8.6 9.8	8.9 9.6	*	6.8 7.9	9.3 8.7	8.7 10.1
Diseases of the respiratory system	6.6	6.6	6.7	3.2	4.5	7.1	9.4
Acute respiratory infections, except influenza460–466	5.1	4.8	5.4	3.3	3,9	5.7	7.5
Chronic disease of tonsils and adenoids	1.2	1.4	1.1	1.2	1.2	*	*
Pneumonia, all forms	8.4	8.3	8.6	4.6	7.3	8.4 5.7	10.2 7.6
Asthma	4.8	4.4	5.0	2.8	4.0		
Diseases of the digestive system	6.2 7.2	5.8 6.8	6.5 7.7	3.6 *	4.6 5.5	6.3 6.7	8.0 8.2
Gastritis and duodenitis	4.4	4.1	4.6	*2.8	3.6	4.5	5.3
Appendicitis	5.2	5.4	4.9	4.9	3.9	7.1	12.8
Inguinal hernia	2.5 4.7	2.5 4.6	2.3 4.8	1.6 2.9	2.0 4.5	2.3 5.8	3.3 6.7
Cholelithiasis	6.5	7.4	6.2	*	5.1	6.2	8.6
Diseases of the genitourinary system	5.3	5.5	5.1	3.9	4.0	5.1	7.2
Calculus of kidney and ureter	3.1	2.8	3.6	*	2.5	3,2	4.6
Hyperplasia of prostate	6.3	6.3	•••	-	*	7.2	6.0
Complications of pregnancy, childbirth, and the	07		07	*0.4	0.7	*	
puerperium ¹	2.7 2.3	• • • • • •	2.7 2.3	*2.4	2.7 2.3	*	• • • •
Diseases of the skin and subcutaneous tissue680-709	8.1	7,9	8.3	4.0	5.6	8.2	11.8
Diseases of the musculoskeletal system and connective							
tissue	6.3	5.8	6.8	4.8	4.6	5.9	9.2
Arthropathies and related disorders	7.4	6.1	8.4	3.8	4.1	6.8	10.4
Intervertebral disc disorders	5.9	5.5	6.5	*	5.4	6.0	8.3
Congenital anomalies	5.9	5.8	6.2	5.9	4.5	8.6	*7.2
Certain conditions originating in the perinatal period	12.4	12.1	13.0	12.4	*	*	*
Symptoms, signs, and ill-defined conditions	3.3	2.8	3.8	2.7	2.9	3.5	4.7
Injury and poisoning	6.8	6.4	7.3	4.1	5.3	7.1	10.2
Fractures, all sites	8.4	7.2	9.7	5.0	6.0	8.2	11.6
Fracture of neck of femur	13.4 4.8	13.0 4.6	13.6 5.0	*	14.2 4.6	12.5 4.6	13.5 6.6
Intracropiol injurios (ovoluding those with skull		<u>.</u>		0.5			
Intracranial injuries (excluding those with skull							
fracture)	5.5 4 1	6.4 4 3	4.1 3.7	2.5	5.9 4 0	6.9 45	8.0 6.8
	5.5 4.1 3.3	6.6 6.6	4.1 3.7 3.1	2.5 3.0 6.1	5.9 4.0 2.9	6.9 4.5 4.7	8.0 6.8 9.5

¹First-listed diagnosis for females with deliveries is coded V27, shown under "supplementary classifications."

1

Table 7. Number of all-listed procedures for inpatients discharged from short-stay hospitals, by procedure category, sex, and age: United States, 1988 [Discharges from non-Federal hospitals. Excludes newborn infants. Procedure groupings and code number inclusions are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)]

			Sex	Age			
Procedure category and ICD-9-CM code	Total	Male	Female	Under 15 years	15–44 years	45–64 years	65 years and over
			Number of all-lis	ted procedures	in thousands		
All procedures	39,192	15,735	23,457	2,050	15,520	8.939	12,682
Operations on the nervous system	896	467	429	216	279	200	201
Spinal tap	353	183	171	154	79	48	72
Operations on the endocrine system	111	31	79	*	43	39	26
Operations on the eye	547	243	304	33	80	126	308
Extraction of lens	113	40	73	*	*	22	85
Insertion of prosthetic lens (pseudophakos)	106	35	71	*	*	18	87
Operations on the ear	198	109	88	107	46	25	19
Operations on the nose, mouth, and pharynx	820	436	385	220	372	135	94
Rhinoplasiy and repair of nose	97	58	39	*6	68	18	*6
Tonsillectomy with or without adenoidectomy	213	94	119	135	75	*	*
Operations on the respiratory system	991	561	430	69	190	291	441
Bronchoscopy	145	84	61	22	28	38	57
Operations on the cardiovascular system	3,626	2,220	1,406	169	422	1,358	1,676
Removal of coronary artery obstruction	227	160	67	~	18	117	92
Direct heart revascularization	353	270	83	*	15	167	170
Cardiac catheterization	930 291	598 165	332 125	20	93 8	432 58	385 223
Derations on the hemic and lymphatic system	392	192	200	24			
					91	106	172
Operations on the digestive system	5,257 127	2,277 68	2,981 59	233 8	1,544 23	1,335 36	2,145 60
Intestine	292	123	170	*7	36	81	169
Endoscopy of large intestine (natural orifice)	202	83	119	*	26	50	124
Appendectomy, excluding incidental	273	147	126	58	162	29	24
Hemorrholdectomy	74	42	32	*	28	31	15
Cholecystectomy	497 290	132 261	365 29	36	191 70	150	155
Division of peritoneal adhesions	290	51	29	*4	146	86 66	98 79
	1,706	1.018	688	48	398		
Derations on the urinary system	588	424	164	48 9	398 98	426 139	833 343
Departions on the male genital organs	633	633		50	54	128	400
Prostatectomy	358	358		•••	*	67	290
Operations on the female genital organs	2,501		2,501	10	1,773	516	202
Oophorectomy and salpingo-oophorectomy	451	•••	451	*	246	165	39
Bilateral destruction or occlusion of fallopian tubes66.2-66.3	406	•••	406	*	404	*	
Hysterectomy	578 279	•••	578 279	*	340 222	188 40	50 16
Repair of cystocele and rectocele	136		136	_	34	40 54	49
Obstetrical procedures	6,042		6,042	16	6,024	*	
Episiotomy with or without forceps or vacuum	·	•••			-		•••
extraction	1,680	•••	1,680	*6	1,674	*	• • •
Cesarean section	933	•••	933	*	931	*	•••
Repair of current obstetric laceration	690		690	-	688		
Derations on the musculoskeletal system	3,143 456	1,648 235	1,496 221	203 32	1,325 185	747 82	868 157
Other reduction of fracture except							
Jaw	183	101	82	44	62	24	53
fusion	340 204	206 95	134 109	*4 *	178 78	110 34	48 90
Arthropiasty and replacement of hip	206	66	140	*	10	38	158
bursa	305	181	124	36	140	81	48
perations on the integumentary system.	1,475	639	836	105	537	393	440
Mastectomy	124	*	123	*	14	51	58
subcutaneous tissue	531 148	291 91	241 56	37 21	194 51	124 31	177 44
Iscellaneous diagnostic and therapeutic procedures	10,854 1,613	5,262 775	5,593 838	544 80	2,342 374	3,112 388	4,856 771
Pyelogram	324	191	133	9	122	90	102
Arterlography and anglocardiography using contrast			*		_		
material	1,624	995	629	20	189	734	680
Diagnostic ultrasound	1,562	599	963	97	476	348	641
Circulatory monitoring	846	430	415	32	127	217	469
Radioisotope scan	704	315	390	17	124	215	348

8 Advance Data

Table 8. Rate of all-listed procedures for inpatients discharged from short-stay hospitals, by procedure category, sex, and age: United States, 1988

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

			Sex		A	дө 	
Procedure calegory and ICD-9-CM code	Total	Male	Female	Under 15 years	15–44 years	45-64 уөars	65 years and over
			ate of all-listed pro	ocedures per 10	0,000 popula	ation	
All procedures	16,054.0	13,309.3	18,631.2	3,860.0	13,532.0	19,453.4	41,761.8
Derations on the nervous system	367.0	395.4	340.4	407.4	243.0	435.6	661.2
Spinal tap	144.8	154.6	135.6	290.8	69.2	104.0	236.8
Dperations on the endocrine system	45.3	26.5	63.0	*	37.4	85.9	84.2
Derations on the eye	224.0	205.4	241.4	61.3	70.0	274.0	1,014.4
Extractions of lens	46.4	34.0	58.0	*	*	47.4	279.3
Insertion of prosthetic lens (pseudophakos)	43.5	29.7	56.6	*	*	40.0	285.9
Dperations on the ear	80.9	92.3	70.2	201.2	40.4	54.8	63.2
Derations on the nose, mouth, and pharynx	336.0	368.4	305.7	413.5	324.5	293.5	308.4
Rhinoplasty and repair of nose	39.7	49.1	30,8	*11.2	58.9	38.1	*19.0
Tonsillectomy with or without adenoidectomy	87.3	79.3	94.8	254.4	65.8	*	*
Dperations on the respiratory system	406.0	474.5	341.6	130.3	165.5	632.5	1,453.8
Bronchoscopy	59.3	70.8	48.4	41.2	24.2	81.7	189.2
Dperations on the cardiovascular system	1,485.2	1,877.8	1,116.6	319.0	367.9	2,956.0	5,519.6
Removal of coronary artery obstruction	92.8	135.3	52.9	*	15.4	255.0	302.0
Direct heart revascularization	144.6	228.1	66.2		13.2	362.7	558.6
Cardiac catheterization	380.9	505.6	263.8	37.0	81.5	940.5	1,266.3
Pacemaker insertion, replacement, removal, repair	119.2	139.9	99.6		7.4	127.2	733.1
Operations on the hemic and lymphatic system	160.7	162.7	158.8	45.5	79.1	229.6	565.9
Derations on the digestive system	2,153.5 52.2	1,925.6 57.7	2,367.5 47.1	437.8 15.8	1,346.3 20.3	2,905.5 78.1	7,065.1 197.1
intestine	119.7	103.7	134.7	*12.4	31.0	176.6	555.8
Endoscopy of large intestine (natural orifice)	82.7	69.9	94.7	*	23.1	109.1	409.0
Appendectomy, excluding incidental	111.9	124.0	100.4	109.1	141.4	63.3	78,2
Hemorrholdectomy	30.5	35.7	25.6	*	24.4	68.2	49,7
Cholecystectomy	203.6	111.4	290.1	*	166.2	326.5	509.5
Repair of inguinal hernia	118.7	220.4	23.2	68.2	61.3	186.5	321.3
Division of peritoneal adhesions	121.2	43.1	194.5	*7.1	127.6	144.2	261.6
Derations on the urinary system	698.7 240.8	861.0 358.5	546.3 130.4	91.1 16.2	346.9 85.2	928.0 301.8	2,743.3 1,129.4
perations on the male genital organs	259.2	535.2		94.9	47.4	278.5	1,316.9
Prostatectomy	146.5	302.4	•••	•••	*	146.7	953.9
Operations on the female genital organs	1,024.6	•••	1,986.7	18.5	1,546.2	1,122.6	665.8
Oophorectomy and salpingo-cophorectomy	184.7	•••	358.1	*	214.2	359.3	128.3
Bilateral destruction or occlusion of fallopian tubes66.2–66.3 Hysterectomy	166.3 236.9	•••	322.5 459.4		352.1		1647
Dilation and curettage of uterus	114.4	•••	221.8		296.4 193.2	410.0 87.6	164.7 53.9
Repair of cystocele and rectocele	55.7	• • •	108.0	-	29.3	116.8	160.1
Obstetrical procedures	2,474.9	•••	4,798.8	29.5	5,252.3	*	
Episiotomy with or without forceps or vacuum extraction	688.3		1,334.7	*10.4	1,459.5	*	
Cesarean section	382.3	•••	741.4	*	811.7	*	··· ···
Repair of current obstetric laceration	282.8	-	548.3	*	599.6	*	
Operations on the musculoskeletal system	1,287.6	1,393.7	1,187.9	382.9	1,155.0	1,625.8	2,858.8
jaw	186.7	199.0	175.2	60.0	161.0	177.9	518.6
Jaw	74.9	85.8	64.8	83.0	54.3	52.2	173.3
fusion	139.1	173.8	106.5	*7.3	155,3	239.5	156.7
Arthroplasty and replacement of knee	83.5	80.3	86.6	*	68.2	74.0	295.5
Arthroplasty and replacement of hip	84.6	55,9	111.5	*	8.6	82.9	519.2
bursa	124.9	153.1	98.3	68.5	121.8	176.2	157.3
perations on the integumentary system	604.1	540.2	664.1	197.1	468.0	854.9	1,450.2
Mastectomy	50.8	*	97.3	*	12.3	112.0	192.1
subcutaneous tissue	217.6	245.8	191.1	69.5	168.8	269.5	582.4
Skin graft (except lip or mouth)	60.5	77.3	44.8	38.8	44.8	68.1	146.4
Aliscellaneous diagnostic and therapeutic procedures	4,446.2	4,450.6	4,442.1	1,024.8	2,042.0	6,772.0	15,991.1
Computerized axial tomography .87.03,87.41,87.71,88.01,88.38	660.6	655.5	665.3	151.4	325.7	843.8	2,538.6
Pyelogram	132.7	161.6	105.5	17.5	106.8	195.8	336.6
material	665.2	841.3	499.7	38.4	165.0	1,597.9	2,238.8
Diagnostic ultrasound	639.8	506.5	764.9	181.8	415.0	758.3	2,110.3
Circulatory monitoring	346.3	363.8	329.9	61.0 20.6	110.7	471.7	1,545.8
Radioisotope scan	288.5	266.2	309.4	32.6	108.1	468.6	1,144.6

Technical Notes

Survey methodology

Source of data

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

Beginning with 1988, the NHDS sampling frame consists of hospitals

Table I. Approximate relative standard errors of estimated numbers of discharges and diagnoses: United States, 1988

Size of estimate	Under 15 years of age	All other ages
5,000	30.2	28.7
10,000	22.8	20.5
50,000	14.3	9.8
100,000	12.8	7.5
500,000	11.5	4.9
1,000,000	11.4	4.5
3,000,000	11.3	4.2
5,000,000		4.1
10,000,000		4.0
20,000,000		4.0
30,000,000		4.0
40,000,000		4.0

Table II. Approximate relative standard errors of estimated numbers of all listed procedures: United States, 1988

Size of estimate	Under 15 years of age	All other ages
5,000	33.0	30.4
10,000	24.7	21.8
50,000	14.9	10.9
100,000	13.2	8.6
500,000	11.7	6.2
1,000,000	11.5	5.8
3,000,000	11.3	5.6
5,000,000	•••	5.5
10,000,000	•••	5.5
20,000,000		5.5
30,000,000.		5.5
40,000,000		5.5

that were listed in the April 1987 SMG Hospital Market Tape (3), met the above criteria, and began accepting patients by August 1987. For 1988, the sample consisted of 542 hospitals. Of the 542 hospitals, 11 were found to be out of scope (ineligible) because they went out of business or otherwise failed to meet the criteria for the NHDS universe. Of the 531 in-scope (eligible) hospitals, 422 responded to the survey.

Sample design and data collection

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

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

Two data collection procedures were used for the survey. The first was a manual system of sample selection and data abstraction. The second was an automated method, used for approximately 37 percent of the respondent hospitals in 1988, that involved the purchase of data tapes from abstracting service organizations.

In the manual system, the sample selection and the transcription of information from the hospital records to abstract forms were performed at the hospitals. The completed forms, along with sample selection control sheets, were forwarded to NCHS for coding, editing, and weighting. A few of these hospitals submitted their data via computer printout or tape. Of the hospitals using the manual system in 1988, about two-thirds had the work performed by their own medical records staff. In the remaining hospitals using the manual system, personnel of the U.S. Bureau of the Census did the work on behalf of NCHS.

For the automated system, NCHS purchased tapes containing machinereadable medical record data from abstracting service organizations. Records were systematically sampled by NCHS.

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

Presentation of estimates

The selection of estimates for publication is based on the relative standard error of the estimate and the number of sample records on which the estimate is based (referred to as the sample size). Based on consideration of the complex sample design of the NHDS, the following guidelines are used for presenting the NHDS estimates:

- If the sample size is less than 30, the value of the estimate is not reported. Only an asterisk (*) is shown in the tables.
- If the sample size is 30-59, the value of the estimate is reported but should not be assumed to be reliable. The estimate is preceded by an asterisk (*) in the tables.
- If the sample size is 60 or more but the approximate relative standard error is over 30 percent, the estimate is reported but should not be assumed to be reliable. The estimate is preceded by an asterisk (*) in the tables.

Sampling errors and rounding of numbers

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

Estimates of sampling variability were calculated with SESUDAAN software, which computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and approach it uses has been published (4).

Table I provides the estimate of sampling variability for discharges and first-listed diagnoses for patients under 15 years of age and all other variables. Table II provides the estimates of sampling variability by all-listed procedures for patients under 15 years of age and all other variables.

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

Tests of significance

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

Definition of terms

Terms relating to hospitals and hospitalization

Hospital—All hospitals with an average length of stay for all patients

of less than 30 days or hospitals whose specialty is general (medical or surgical) or children's general are eligible for inclusion in NHDS, except Federal hospitals and hospital units of institutions. Hospitals must have six beds or more staffed for patient use.

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, 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 the 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.

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

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Terms relating to diagnoses and procedures

Discharge diagnoses—One or more diseases or injuries (or some factor that influences health status and contact with health services that is not itself a current illness or injury) listed by the attending physician on the medical record of a patient. In the NHDS, discharge (or final) diagnoses listed on the face sheet (summary sheet) of the medical record are transcribed in the order listed. Each sample discharge is assigned a maximum of seven five-digit codes according to ICD-9-CM (2).

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 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 listed by the

physician on the medical record. In the NHDS, all terms listed on the face sheet (summary sheet) of the medical record under the caption "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 determines the rate of procedures.

Demographic terms

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

Population-Civilian population is the resident population, excluding members of the Armed Forces.

Geographic region-Hospitals are classified by location in one of the four geographic regions of the United States corresponding 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,
	Pennsylvania

Midwest.....Michigan, Ohio, Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South......Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas

. .Montana, Idaho, West Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Hawaii, Alaska

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