VITAL and HEALTH STATISTICS

DATA FROM THE HOSPITAL DISCHARGE SURVEY

Patients Discharged From

Short-Stay Hospitals

United States-October-December 1964

Statistics are presented on patients discharged from short-stay hospitals, based on data abstracted from a national sample of records of discharged patients. Hospital discharges are distributed by size, ownership, and geographic location of the hospital and by age, sex, marital status, color, and discharge status of the patient. Conditions diagnosed and operations performed are shown in broad groups. Data collected through the Hospital Discharge Survey.

Washington, D.C.   October 1966

COOPERATION OF THE BUREAU OF THE CENSUS

Under the legislation establishing the National Health Survey, the Public Health Service is authorized to use, insofar as possible, the services or facilities of other Federal, State, or private agencies.

In accordance with specifications established by the National Center for Health Statistics, the Bureau of the Census, under a contractual arrangement, participated in planning the survey and collecting the data.

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IN THIS REPORT data are presented on patients discharged from short-stay hospitals in the United States during the 3-month period October-December 1964. The statistics are based on information abstracted from the hospital records of a national sample of hospital discharges and are a by-product of a pilot study for the Hospital Discharge Survey.

The report analyzes data on inpatient hospital discharges, both with regard to the personal characteristics of the patient (age, sex, marital status, color, and discharge status) and in relation to the hospital (geographic region, size, and ownership). It also reviews the length of stay, the conditions diagnosed, and the operations and operative procedures performed.

The diagnosed conditions and the operations and operative procedures, which are classified into broad groups, refer to the frequency with which these events occurred and not to the number of persons experiencing these diagnoses and operations. Some of the difficulties involved in interpreting data on diagnoses and operations are discussed.

SYMBOLS

Data not available------------------------   ---

Category not applicable-------------------   . . .

Quantity zero----------------------------   -

Quantity more than 0 but less than 0.05----   0.0

Figure does not meet standards of
    reliability or precision------------------   *

PATIENTS DISCHARGED FROM SHORT-STAY HOSPITALS

Michael J. Witkin, *Division of Health Records Statistics*

This report presents some of the first statistical findings of the Hospital Discharge Survey. The objective of the survey is to produce, on a continuing basis, national hospital patient statistics which are representative of the experience of the civilian population in short-stay hospitals.[1]

SELECTED FINDINGS[a]

It is estimated that during the 3 months October–December 1964, 7,014,000 patients were discharged from short-stay hospitals in the United States. This represents an annual discharge rate of 148 patients per 1,000 noninstitutional population. Of these patients, approximately 97 percent were discharged alive.

One-fourth of the patients were discharged from hospitals having less than 100 beds; one-half were discharged from hospitals with less than 200 beds. Taken as a group, the very largest hospitals discharged a relatively small proportion of patients.

The annual rate of discharge per 1,000 population was highest in the South (166); it was next highest in the West, where the annual rate was 163 per 1,000 population.

Two-thirds of the patients were discharged from voluntary, nonprofit hospitals. One-fourth were discharged from governmental hospitals, and nearly one-tenth from proprietary hospitals.

Slightly over 60 percent of discharged patients were female—a ratio of 1.6 females to each male. Exclusive of hospitalization for deliveries the sex ratio was 1.2 to 1.

The median age of discharged patients was 37 years. About 15 percent of the patients were under 15 years of age, 44 percent were in the age group 15-44 years, and nearly 17 percent were aged 65 years and over.

At time of discharge, 60 percent of the patients had but a single diagnosis, 23 percent of the patients had two diagnoses, and slightly less than 4 percent had five or more diagnoses. As a cause of morbidity, diseases of the digestive system ranked first among final diagnoses recorded on the face sheet of the patient's medical record.

Of all the patients discharged, 54 percent emerged from their hospitalization episodes without surgery having been performed. One-third of the patients had had one operation, and 13 percent had had two or more.

The 7,014,000 discharges[b] generated 53,908,000 patient days of stay during the 3 months. On an annual basis this represents 1,145 patient days per 1,000 average civilian, noninstitutional population.

About one-half of the patients were discharged in 4 days or less, although the average length of stay was 7.7 days. A stay of more than 30 days was experienced by 3 percent of the patients.

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[a]The data in this report relate to discharges from short-stay hospitals exclusive of military and Veterans Administration hospitals and hospital departments of long-term and custodial institutions.

[b]"Patients discharged" and "discharges" are used synonymously in this report. Neither term, however, is entirely correct as used. A discharge is an action by the hospital, and it is not precise to say that a discharge possesses human characteristics such as age, sex, and marital status. Certain patients were discharged more than once during the 3-month period; consequently, the number of discharges exceeds the number of patients discharged.

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL CENTER FOR HEALTH STATISTICS

Form Approved
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PHS-4734-2
8-64

1. HOSPITAL NUMBER

ABSTRACT OF PATIENT RECORD- Hospital Discharge Survey

Item		0	1	2	3	4	5	6	7	8	9
2.	PATIENT NUMBER										
3.	MEDICAL RECORD NUMBER										

4.a. DATE OF BIRTH

MONTH — J F M A M J J A S O N D

Complete 4b and 4c if
date of birth is not given.

DAY — TENS 0 1 2 3 ; UNITS 0 1 2 3 4 5 6 7 8 9

YEAR — 1800 1900 ; TENS 0 1 2 3 4 5 6 7 8 9 ; UNITS 0 1 2 3 4 5 6 7 8 9

4.b. AGE — TENS 0 1 2 3 4 5 6 7 8 9 ; UNITS 0 1 2 3 4 5 6 7 8 9

4.c. AGE IS STATED IN — YEARS   MONTHS   DAYS

5. SEX — MALE   FEMALE

6. COLOR — WHITE   "NONWHITE" ; NEGRO   NOT STATED ; OTHER NONWHITE

7. MARITAL STATUS — MARRIED   DIVORCED ; SINGLE   SEPARATED ; WIDOWED   NOT STATED

8. DATE OF ADMISSION

MONTH — J F M A M J J A S O N D

DAY — TENS 0 1 2 3 ; UNITS 0 1 2 3 4 5 6 7 8 9

YEAR — 0 1 2 3 4 5 6 7 8 9

9. DATE OF DISCHARGE

MONTH — J F M A M J J A S O N D

DAY — TENS 0 1 2 3 ; UNITS 0 1 2 3 4 5 6 7 8 9

YEAR — 0 1 2 3 4 5 6 7 8 9

10. DISCHARGE STATUS — ALIVE   DEAD

IBM H91234

Figure I.   Optical mark page reader form.

Figure I. Optical mark page reader form—Con.

On an average day during the 3-month period, about 31 beds were occupied per 10,000 population. The percentage of occupancy (the ratio of the number of patient days to the number of bed days) was 74.3 percent.

SOURCE AND LIMITATIONS
OF THE DATA

This report covers discharges during the 3 months October through December 1964. During this period, a pilot study was undertaken to test and develop procedures for conducting the Hospital Discharge Survey. The substantive data reported here were secondary to other considerations in the pilot study and are a by-product of the pilot study.

The principal sources of information in the survey are existing hospital medical records from which statistical information on the characteristics of the patient and his hospitalization are recorded on abstract forms. A copy of the abstract form is shown in figure 1. The data presented in this report are limited to items of information about the discharged patient that are generally obtainable from the summary (face) sheet of the patient's medical record. The procedures used in sampling within a hospital and in collecting and processing the data are described in Appendix I. Appendix II may be consulted for definitions of terms used in the survey.

The scope of the Hospital Discharge Survey is limited to nonmilitary patients in short-stay noninstitutional hospitals having six beds or more and located in the 50 States and the District of Columbia. However, well-newborn infants are outside the scope of the survey.

The universe of hospitals from which the sample was selected was the section of the Master Facility Inventory (MFI)[2] containing the names, addresses, and other pertinent information for approximately 6,900 short-stay medical and osteopathic hospitals in the United States, exclusive of the Veterans Administration and military hospitals.

Since the estimates shown in this report are based on a sample of the population rather than on the entire population, they are subject to sampling error. Estimates of sampling error

Table A. Number and percent distribution of patients discharged from short-stay hospitals,[1] by discharge status: United States, October-December 1964

Discharge status	Number in thousands	Percent distribution
Total----------	7,014	100.0
Alive--------------	6,767	96.5
Dead----------------	210	3.0
Not stated----------	36	0.5

[1]Excludes discharges from military and VA hospitals.

are presented in the section "Reliability of Estimates" in Appendix I.

In addition to sampling error there are nonsampling errors and biases. These include, for example, hospital nonresponse, missing records, item nonresponse, and transcription and processing errors. The nonsampling errors of particular concern are those involved in the recording and coding of diagnoses and operations.

Table B. Number and percent distribution of patients discharged from short-stay hospitals,[1] by month of discharge: United States, October-December 1964

Month of discharge	Number in thousands	Percent distribution	Average number per day in thousands
October-December-	7,014	100.0	76.2
October-----	2,425	34.6	78.2
November----	2,284	32.6	76.1
December----	2,305	32.9	74.3

[1]Excludes discharges from VA and military hospitals.

The nonresponse errors, together with the adjustments and imputations that were used to compensate for them, are discussed at greater length in Appendix I.

HOSPITAL UTILIZATION

Discharge Status

The number and percent of patients discharged alive or by death are given in table A. There were 3 deaths among each 100 discharges.

Month of Discharge

The discharges, as shown in table B, were almost equally distributed over the 3 months, with slightly more discharges occurring in October than in either of the other months. The average daily number of discharges was also higher in October.

Length of Stay

Table C shows the patients distributed by days of care. The length of stay ranged from less than
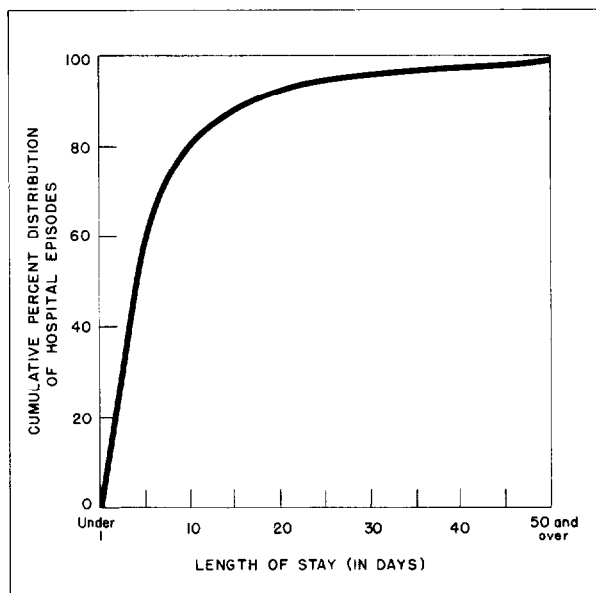
Figure 2. Cumulative percent distribution of hospital episodes, by length of stay among patients discharged from short-stay nonmilitary hospitals: October-December 1964.

Table C. Number and percent distribution of patients discharged from short-stay hospitals,[1] by length of stay: United States, October-December 1964

Length of stay	Number in thousands	Percent distribution
Total---------	7,014	100.0
Under 1 day----------	158	2.3
1 day----------------	582	8.3
2 days---------------	951	13.6
3 days---------------	968	13.8
4 days---------------	829	11.8
5 days---------------	618	8.8
6 days---------------	434	6.2
7 days---------------	393	5.6
8 days---------------	297	4.2
9 days---------------	221	3.2
10 days--------------	180	2.6
11 days--------------	149	2.1
12 days--------------	135	1.9
13 days--------------	100	1.4
14 days--------------	112	1.6
15 days--------------	87	1.2
16 days--------------	65	0.9
17 days--------------	64	0.9
18 days--------------	53	0.8
19 days--------------	42	0.6
20 days--------------	58	0.8
21 days--------------	50	0.7
22 days--------------	26	0.4
23 days--------------	17	0.2
24 days--------------	23	0.3
25 days--------------	24	0.3
26 days--------------	20	0.3
27 days--------------	17	0.2
28 days--------------	20	0.3
29 days--------------	11	0.2
30 days--------------	23	0.3
31 days and over----	226	3.2
Not stated----------	60	0.9

[1] Excludes discharges from military and VA hospitals.

1 day to 317 days. The modal and average (mean) lengths of stay were 3 and 7.7 days, respectively. About one-half of the patients were discharged in 4 days or less.

As shown in figure 2, the cumulative percent distribution of discharges by length of stay rose sharply until about 10 days, then gradually leveled off until a virtual plateau was reached from 30 days on. Approximately 11 percent of the patients were discharged in 1 day or less; about 70 per-

Table D. Number and percent distribution of patients discharged from short-stay hospitals,[1] by hospital size, by ownership, and by geographic region: United States, October-December 1964

Hospital size, ownership, and region	Number in thousands	Percent distribution
Total--------	7,014	100.0
Hospital size		
Less than 100 beds-	1,737	24.8
100-199 beds-------	1,795	25.6
200-299 beds-------	905	12.9
300-499 beds-------	1,593	22.7
500-999 beds-------	821	11.7
1,000 beds and over-	163	2.3
Ownership		
Voluntary----------	4,640	66.2
Church-----------	1,767	25.2
Other nonprofit--	2,872	41.0
Government--------	1,728	24.6
Proprietary--------	646	9.2
Region		
Northeast----------	1,437	20.5
North Central------	1,895	27.0
South--------------	2,416	34.4
West--------------	1,267	18.1

[1]Excludes discharges from military and VA hospitals.

Figure 3. Number of patients discharged from short-stay nonmilitary hospitals per 1,000 population per year, by geographic region: October-December 1964.

cent were discharged within a week; and 96 percent were discharged within 30 days.

Size of Hospital

The smallest hospitals, as a group, accounted for a greater number of discharges than did the largest hospitals. Hospitals with less than 100 beds accounted for about one-quarter of the discharges (table D), while hospitals with 1,000 beds or more yielded only 2.3 percent of the discharges. More than 85 percent of the discharges occurred in hospitals having less than 500 beds.

The daily number of discharges per 1,000 beds (discharge ratio) by hospital size and by ownership is given in table E. The discharge ratio is a crude measure of the turnover of patients and is a reflection of the average length of stay as well as the percentage of beds occupied. As is shown in table E, the discharge ratio varies inversely with the hospital size group.

Hospital Ownership

Voluntary nonprofit hospitals accounted for an estimated 4,640,000 discharges, or about two-thirds of the estimated total number of discharges during the 3-month period (table D). Approximately two-thirds of the discharges from voluntary

Table E. Daily discharge ratios in short-stay hospitals,[1] by hospital size and by ownership: United States, October-December 1964

Hospital size and ownership	Number of beds in thousands	Number of bed days in thousands[2]	Daily discharge ratio (per 1,000 beds)[3]
Total--------------------------	782	71,924	97.5
Hospital size			
Less than 200 beds----------------------	365	33,586	105.2
200-999 beds---------------------------	388	35,655	93.1
1,000 beds and over--------------------	29	2,683	60.6
Ownership			
Government----------------------------	190	17,519	98.7
Nongovernment-------------------------	591	54,406	97.2

[1]Excludes discharges from military and VA hospitals.

[2]Number of beds multiplied by number of days in quarter.

[3]$\frac{\text{Number of discharges}}{\text{Number of bed days}} \times 1,000$

nonprofit hospitals occurred in hospitals which were other than church owned or controlled. About one-quarter of the discharges were from government hospitals.

Geographic Region

About one-third of the patients were discharged from hospitals in the South, about one-quarter from hospitals in the North Central Region, and about one-fifth each from the Northeast and West (table D). The annual discharge rates per 1,000 population in the South and West were virtually the same but were markedly higher than the rates for the other two regions (fig. 3).

Characteristics of the Patient

The number and percent of patients discharged are shown by age, by sex, by marital status, and by color in table F. The discharge rates per 1,000 population per year, by age and by sex, are given in table G.

Age.—Patients aged 15-24 years and 65 years and over each accounted for nearly one-sixth of the total discharges. The median age of the patients discharged was 37 years.

The discharge rate per 1,000 population was highest among adults 65 years and over and lowest among children 1-14 years (fig. 4). The rate was also high for infants under 1 year of age. However, this rate would be much higher if well-newborn infants in addition to nonwell-newborn infants were included in the survey (see definition in Appendix II). There were an estimated 871,000 well-newborn infants as compared with approximately 87,000 nonwell-newborn infants.

The rates for the 15-24 and 25-34 age groups, respectively, were more than 2½ times the rate for the 1-14 age group. The high discharge rates among persons 15-34 years of age in some measure reflect the large number of women who were hospitalized for deliveries and conditions of pregnancy, childbirth, and the puerperium.

Sex, marital status, and color.—The ratio of females to males among discharges was 1.6 to 1.0. The annual discharge rate per 1,000 females in the population was about 1½ times the rate for males (fig. 5). Again, the major reason for the proportionately larger number of

females among discharged patients was the numerous hospitalizations for deliveries and conditions of pregnancy, childbirth, and the puerperium.

Married patients (including separated) accounted for an estimated 4,398,000 discharges, or more than three-fifths of all discharges. For approximately 3 percent of the patients discharged, marital status was not reported.

Table F. Number and percent distribution of patients discharged from short-stay hospitals,[1] by sex, by age, by color, and by marital status: United States, October-December 1964

Sex, age, color, and marital status	Number in thousands	Percent distri-bution
Total--------	7,014	100.0
Sex		
Male---------------	2,694	38.4
Female-------------	4,289	61.2
Not stated---------	31	0.4
Age		
Under 1 year-------	215	3.1
1-14 years---------	857	12.2
15-24 years--------	1,144	16.3
25-34 years--------	1,036	14.8
35-44 years--------	876	12.5
45-54 years--------	832	11.9
55-64 years--------	719	10.3
65 years and over--	1,154	16.5
Not stated---------	180	2.6
Color		
White--------------	5,895	84.1
Nonwhite-----------	513	7.3
Not stated---------	606	8.6
Marital status		
Married (including separated)--------	4,398	62.7
Not married--------	2,400	34.2
Single------------	1,706	24.3
Widowed-----------	569	8.1
Divorced---------	125	1.8
Not stated---------	216	3.1

[1]Excludes discharges from military and VA hospitals.

Table G. Population size and annual discharge rates from short-stay hospitals,[1] by sex, by age, and by geographic region: United States, October-December 1964

Sex, age, and region	Population in thousands[2]	Annual discharge rate[3]
Total-------	188,380	148.2
Sex		
Male--------------	91,288	118.0
Female-----------	97,092	176.6
Age		
Under 1 year------	4,084	215.0
1-14 years--------	55,374	63.2
15-24 years-------	28,129	166.2
25-34 years-------	21,399	197.7
35-44 years-------	23,929	149.5
45-54 years-------	21,592	157.5
55-64 years-------	16,582	177.2
65 years and over-	17,294	272.6
Region		
Northeast---------	46,448	123.1
North Central-----	52,995	142.3
South------------	58,071	165.6
West-------------	30,866	163.3

[1]Excludes discharges from military and VA hospitals.

[2]Provisional estimates for the civilian, noninstitutional population were obtained by averaging U.S. estimates provided by Bureau of the Census for November 1 and December 1, 1964.

[3]Expressed as annual number per 1,000 civilian, noninstitutional population.

Of the 7,014,000 patients discharged, 84.1 percent were reported as white and 7.3 percent as nonwhite.

MEDICAL CONDITIONS AND SURGERY

All final diagnoses, operations, and procedures listed on the summary face sheet of the discharged patient's medical record were coded according to the International Classification of Diseases, Adapted (ICDA),[3] which was further adapted for the Hospital Discharge Survey. For
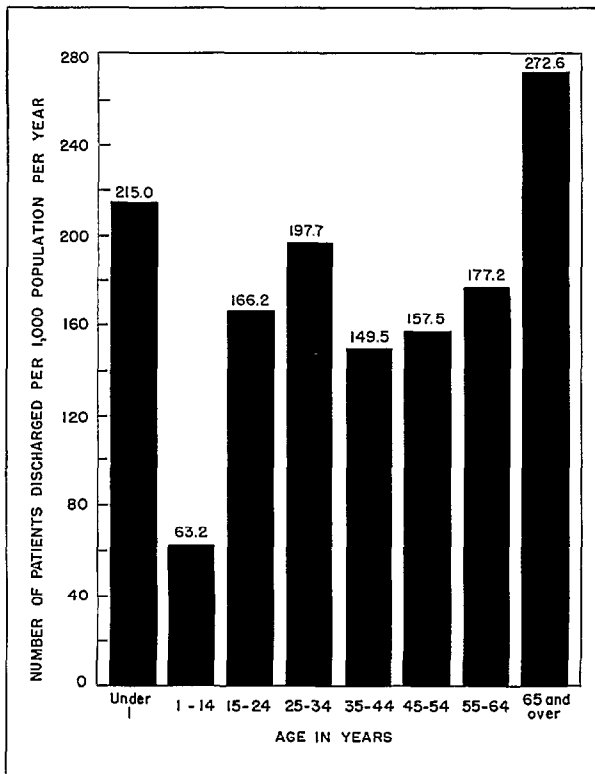
Figure 4. Number of patients discharged from short-stay nonmilitary hospitals per 1,000 population per year, by age: October-December 1964.
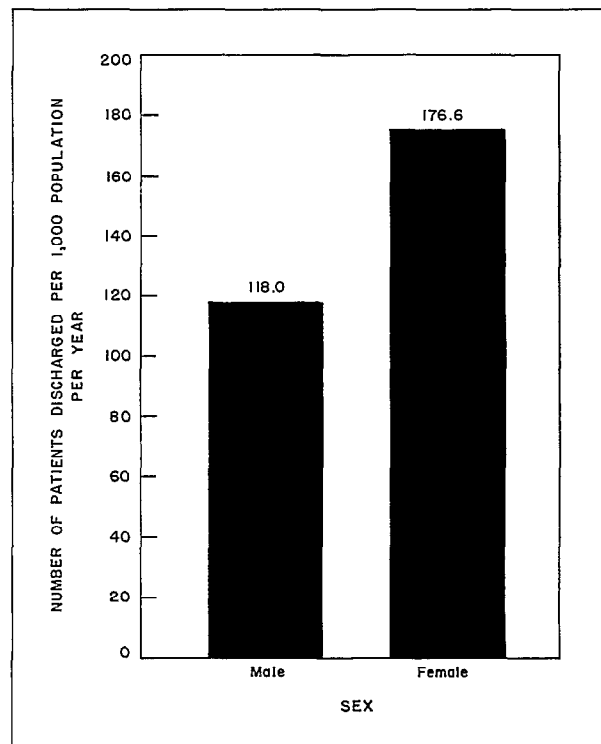
Figure 5. Number of patients discharged from short-stay nonmilitary hospitals per 1,000 population per year, by sex: October-December 1964.

discharges with multiple diagnoses and multiple operations, each diagnosis not to exceed five was assigned a four-digit code and each operation not to exceed three was assigned a three-digit code. All coded diagnoses and all coded operations are tabulated by broad groupings in tables H and J, respectively. Tabulations of the first listed diagnosis and the first listed operation are also presented in tables H and J.

In multiple-diagnosis cases the first listed diagnosis on the face sheet may have different meanings among hospitals and even among patient records within the same hospital. Some meanings that the first listed diagnosis may have are as follows:

1. The diagnosis most responsible for the patient's admission

2. The diagnosis which requires most of the treatment

3. The diagnosis which contributes most to the duration of stay

4. The diagnosis that is the most serious or dangerous or has the poorest prognosis

A study based on hospital records, which was conducted by the Bureau of Hospital Administration, University of Michigan, under contract with the National Center for Health Statistics, found that in 91.5 percent of the records studied, the first of the aforementioned meanings was attached to the first listed diagnosis.[4] However, for records of discharges with multiple diagnoses only, the first of these meanings was attached to the first listed diagnosis 80 percent of the time.

It thus appears reasonable to assume that, considering diagnoses in their entirety, in patients with multiple diagnoses the first listed diagnosis is quite likely to have been the diagnosis that led to the hospitalization of the patient. However, the first listed diagnosis can have other meanings.

Table H. Number, percent, rate, and rank order of diagnoses for patients discharged from short-stay hospitals,[1] by all listed[2] and first listed diagnoses: United States, October-December 1964

Diagnostic group[3]	Number in thousands		Percent		Rate per 1,000 population[4]		Rank order	
	All listed	First listed	All listed	First listed	All listed	First listed	All listed	First listed
Total--------------------	11,801	7,014	100.0	100.0	249.3	148.2	...	...
Infective and parasitic diseases-------------------------	139	83	1.2	1.2	2.9	1.8	18	17
Malignant neoplasms, all sites and types-----------------------	351	227	3.0	3.2	7.4	4.8	13	11
Benign and unspecified neoplasms-----------------------	368	231	3.1	3.3	7.8	4.9	11	10
Allergic, endocrine system, metabolic, and nutritional diseases-----------------------	485	175	4.1	2.5	10.2	3.7	9	13
Diseases of blood and blood-forming organs-----------------	182	49	1.5	0.7	3.9	1.0	17	19
Mental, psychoneurotic, and personality disorders----------	294	149	2.5	2.1	6.2	3.2	14	14
Diseases of nervous system and sense organs---------------	517	282	4.4	4.0	10.9	6.0	7	7
Diseases of circulatory system--	1,347	586	11.4	8.4	28.5	12.4	2	5
Diseases of respiratory system--	1,220	851	10.3	12.1	25.8	18.0	4	3
Diseases of digestive system----	1,553	1,024	13.2	14.6	32.8	21.6	1	2
Diseases of genitourinary system--------------------------	1,127	578	9.6	8.2	23.8	12.2	5	6
Delivery-----------------------	1,063	1,025	9.0	14.6	22.5	21.7	6	1
Conditions of pregnancy and puerperium--------------------	226	179	1.9	2.5	4.8	3.8	15	12
Diseases of skin and cellular tissue------------------------	195	109	1.7	1.6	4.1	2.3	16	16
Diseases of bones and organs of movement-------------------	452	241	3.8	3.4	9.5	5.1	10	9
Congenital malformations--------	86	44	0.7	0.6	1.8	0.9	20	20
Certain diseases of early infancy, including prematurity---	106	71	0.9	1.0	2.2	1.5	19	18
Injuries and adverse effects of chemical substances and other external causes-----------------	1,236	721	10.5	10.3	26.1	15.2	3	4
Symptoms, senility, and ill-defined conditions not elsewhere classified---------------	501	249	4.2	3.6	10.6	5.3	8	8
Disease undiagnosed-------------	355	140	3.0	2.0	7.5	3.0	12	15

[1]Excludes discharges from military and VA hospitals.

[2]The maximum number of diagnoses coded was limited to 5 per hospital episode.

[3]See Appendix II for diagnoses coded and grouped in each category.

[4]Expressed as annual number per 1,000 civilian, noninstitutional population.

Additional studies are needed before a more definitive interpretation of the first listed diagnosis can be made.

Among patients with multiple operations, the meaning of the first listed operation is obscure. Several possible meanings are as follows:

1. It is the major operation

2. It is the operation that corresponds with the first listed diagnosis in multiple diagnosis cases

3. It is the operation related to the most serious condition

Table J. Number, percent, rate, and rank order of surgical operations and procedures performed on patients discharged from short-stay hospitals,[1] by all listed[2] and first listed operations: United States, October-December 1964

Operation and procedure group[3]	Number in thousands		Percent		Rate per 1,000 population[4]		Rank order	
	All listed	First listed	All listed	First listed	All listed	First listed	All listed	First listed
Total-------------------	4,341	3,212	100.0	100.0	91.7	67.9	...	...
On nervous system---------------	87	66	2.0	2.0	1.8	1.4	17	17
On eye--------------------------	92	78	2.1	2.4	1.9	1.7	16	12
On ear, nose, and throat, not elsewhere classified-----------	116	63	2.7	2.0	2.4	1.3	14	18
Tonsillectomy, adenoidectomy----	300	296	6.9	9.2	6.3	6.3	5	4
Other operations on buccal cavity and esophagus-----------	129	71	3.0	2.2	2.7	1.5	11	14
On bronchi, lung, pleura, chest wall, and mediastinum----	30	18	0.7	0.6	0.6	0.4	21	21
On breast----------------------	81	71	1.9	2.2	1.7	1.5	18	15
Repair of hernia---------------	149	133	3.4	4.1	3.2	2.8	10	8
Appendectomy-------------------	155	80	3.6	2.5	3.3	1.7	9	11
Hemorrhoidectomy---------------	60	40	1.4	1.2	1.3	0.9	20	20
Cholecystectomy----------------	81	75	1.9	2.3	1.7	1.6	19	13
On other sites of gastrointestinal tract and related organs-	322	188	7.4	5.8	6.8	4.0	4	7
On urinary organs--------------	97	45	2.2	1.4	2.1	0.9	15	19
On male genital organs---------	116	71	2.7	2.2	2.5	1.5	13	16
On female genital organs, except obstetrical------------	586	325	13.5	10.1	12.4	6.9	2	3
Obstetrical procedures---------	702	646	16.2	20.1	14.8	13.7	1	1
On musculoskeletal system-------	410	338	9.4	10.5	8.7	7.1	3	2
On skin and subcutaneous tissue-	269	195	6.2	6.1	5.7	4.1	7	6
Endoscopy (cystoscopy, bronchoscopy, etc.)------------	274	233	6.3	7.3	5.8	4.9	6	5
Certain other nonsurgical procedures---------------------	165	82	3.8	2.6	3.5	1.7	8	10
All other operations, including ill-defined----------	120	99	2.8	3.1	2.5	2.1	12	9

[1]Excludes discharges from military and VA hospitals.

[2]The maximum number of operations coded was limited to 3 per hospital episode.

[3]See Appendix II for operations and procedures coded and grouped in each category.

[4]Expressed as annual number per 1,000 civilian, noninstitutional population.

Conditions for Which Hospitalized

Based on the tabulations of the first listed diagnoses in table H, delivery ranked first as the cause of hospitalization. Diseases of the digestive system ranked as a close second. Each of these diagnostic classes accounted for almost 15 percent of all discharges. Diseases of the respiratory system and injuries accounted for about 12 percent and 10 percent, respectively. Each of the other diagnostic classes accounted for less than 10 percent of the discharges.

Two or more diagnoses were coded for two-fifths of the discharges (table K). Nearly 12 million diagnoses were coded for the 7 million discharges during the 3-month period of the survey—an average of 1.7 diagnoses per discharge. Based upon tabulation of all listed diagnoses, diseases of the digestive, circulatory, and respiratory systems ranked first, second, and fourth, respectively, as the most prevailing conditions; injuries ranked third. Each of these accounted for between 10 and 13 percent of all listed diagnoses.

Table K. Number and percent of patients discharged from short-stay hospitals,[1] by number of coded diagnoses and operations: United States, October-December 1964

Diagnoses and operations	Number in thousands	Percent
Total-------------	7,014	100.0
Number of diagnoses		
1-----------------------	4,216	60.1
2-----------------------	1,596	22.8
3-----------------------	668	9.5
4-----------------------	282	4.0
5 or more---------------	252	3.6
Operations and procedures		
0-----------------------	3,802	54.2
1-----------------------	2,330	33.2
2-----------------------	636	9.1
3 or more---------------	246	3.5

[1]Excludes discharges from military and VA hospitals.

Surgical Treatment

An estimated 3.2 million patients, or 45 percent of 7 million discharges during the 3-month period, had surgery during hospitalization. About one-third of the discharged patients had a single operation, and about 13 percent had two or more operations. Thus the 3.2 million patients receiving surgical treatment had about 4.3 million operations.

Based on the tabulation of the first coded operation, obstetrical procedures ranked first and accounted for about one-fifth of all discharges with surgery (table J). This was true despite the evidence that such a common obstetrical procedure as "episiotomy without low forceps" was not abstracted about 10 percent of the time it appeared on the face sheet.

Operations on the musculoskeletal system, operations on female genital organs (except obstetrical), and tonsillectomy-adenoidectomy ranked second, third, and fourth, respectively, each accounting for about 10 percent of the patients who had been treated surgically. The rankings of the most prevalent operations based on the first coded operations were quite similar to those based on all the coded operations. The four highest ranking operations according to the first listed operations were ranked 1, 3, 2, and 5 when consideration was given to all listed operations.

Certain types of operations accounted for a larger proportion of the first coded operations than of all coded operations, since they had a tendency not to appear in combination with other operations or operative procedures. Thus, obstetrical procedures accounted for 20 and 16 percent, respectively, of first coded and all coded diagnoses. Also, tonsillectomy and adenoidectomy accounted for 9 percent of first coded but less than 7 percent of all coded diagnoses.

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[2]National Center for Health Statistics: Development and maintenance of a national inventory of hospitals and institutions. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 1-No. 3. Public Health Service. Washington. U.S. Government Printing Office, Feb. 1965.

[3]*International Classification of Diseases Adapted for Indexing Hospital Records by Diseases and Operations*, 2 vols., rev. ed. PHS Pub. No. 719. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1962.

[4]Grenholm, G. G.: *The 1962-1963 Changing Patterns of Hospital Study, Methodological Considerations*. Unpublished report prepared by Bureau of Hospital Administration, Graduate School of Business Administration, The University of Michigan, under contract with the National Center for Health Statistics, Oct. 1965.

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APPENDIX I

TECHNICAL NOTES ON METHODS

Background of This Report

This report, prepared in the Division of Health Records Statistics, is the first in this series of statistical reports on the Hospital Discharge Survey. It is based on information collected for a subsample of discharges occurring in the 3-month period October-December 1964 in a pilot study of the Hospital Discharge Survey. The main purpose of the pilot study was to test alternative procedures for collecting information from the patients' medical records for a national sample of discharged patients. Knowledge gained from the pilot study resulted in the development of the procedures and forms for the survey.

The substantive data presented in this report are a by-product of the pilot study.

Statistical Design of the Hospital Discharge Survey

Scope of the survey.—The scope of the Hospital Discharge Survey encompasses nonmilitary patients discharged from noninstitutional hospitals having six beds or more for inpatient use, located within the 50 States and the District of Columbia, and having an average length of stay of less than 30 days.

Well-newborn infants are out of scope of the survey. Newborn infants are considered in scope only if at least one of the following conditions has been specified in the medical record:

1. Immaturity or prematurity

2. Any disease, condition, syndrome, disorder, injury, malformation, or birth defect

3. Any operation or surgical procedure other than routine circumcision

4. Birth occurred under nonsterile conditions

Sampling frame and size of sample.—The sampling frame for hospitals in the Hospital Discharge Survey is contained in the Master Facility Inventory (MFI). A detailed description of how the MFI was developed, its content, maintenance plans, and a procedure for assessing the completeness of its coverage has been published.[2]

The sampling frame for the pilot study consisted of 6,957 hospitals, including Veterans Administration

(VA) hospitals. About 95 percent of these hospitals were classified as general hospitals. The distribution of short-stay hospitals in the universe (MFI) and in the Hospital Discharge Survey pilot study sample are shown in table I. The VA hospitals were originally in the frame from which the certainty panel, comprised of hospitals of 1,000 beds or more, and the first non-certainty panel, comprised of hospitals of less than 1,000 beds, were drawn. These two panels constituted the pilot study sample. The VA hospitals that were selected in the pretest sample were dropped because of problems of scope. Adjustments on the data necessitated by their removal are mentioned later in this appendix. The estimates in this report do not include VA hospitals.

The sample for the pretest as originally drawn consisted of 95 hospitals; 72 had less than 1,000 beds, while 23 had 1,000 beds or more as reported in the MFI. Included among the 95 selected hospitals were 9 VA hospitals, 5 of which were in the bed-size class of 1,000 or more. The latter, having been selected in the sample with certainty, could be dropped from the survey without affecting the design.

Of the 86 non-VA hospitals, 2 were ruled out of scope, 2 hospitals failed to participate, and 1 hospital did not submit usable data for the 3-month period covered by this report. In all, 81 of the 84 in-scope hospitals submitted abstracts for the months of October, November, and December 1964.

Sample design.—The survey utilized a highly stratified two-stage sample design, the first stage being a selection of hospitals and the second stage involving a systematic selection of discharges within these hospitals. An abstract was prepared for each in-scope sample discharge, which served as the basic unit of analysis.

All hospitals of 1,000 beds or more in the universe (exclusive of VA and military hospitals) were selected with certainty. All hospitals having less than 1,000 beds were stratified, with the primary strata being the 24 bed-size-by-region classes, as shown in table I. Within each of these 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 ownership and geographic division within each of the 24 classes. The sample hospitals were drawn with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals.

Table I. Distribution of short-stay hospitals in the universe (MFI) and in the Hospital Discharge Survey pilot study sample,[1] by bed-size class and geographic region

Bed-size class	Region				
	All regions	North-east	North Central	South	West
All sizes					
Sample	95	30	26	25	14
Universe	6,957	1,120	1,977	2,580	1,280
6-49 beds					
Sample	9	2	2	3	2
Universe	3,073	202	818	1,398	655
50-99 beds					
Sample	11	2	3	4	2
Universe	1,602	289	438	573	302
100-199 beds					
Sample	15	4	5	4	2
Universe	1,139	277	375	325	162
200-299 beds					
Sample	13	4	4	3	2
Universe	564	180	160	138	86
300-499 beds					
Sample	14	4	4	4	2
Universe	414	115	132	112	55
500-999 beds					
Sample	10	3	3	2	2
Universe	142	46	49	29	18
1,000 beds and over					
Sample	23	11	5	5	2
Universe	23	11	5	5	2

[1]Includes VA hospitals; excludes military hospitals.

The within-hospital sampling ratio varied inversely with the probability of selection of the hospital. The smallest fraction for sampling discharges was applied to the largest hospitals, and the largest sampling fraction was applied to the smallest hospitals. Each discharge in the noncertainty panel of hospitals had a probability of selection of approximately 1 in 1,000; each discharge in the certainty panel of hospitals had a probability of selection of 1 in 100. (It is planned that the overall sampling fraction will be approximately 1 in 100 in all strata when the full sample design is in operation.)

Data collection.—In nearly all hospitals, the daily listing of discharges was the frame from which the samples of discharges were selected. The latter were se-

lected in a systematic manner, usually on the basis of the terminal digit(s) of the patient's medical record number. If the sampling frame at the hospital contained no medical record number, the sample was selected by starting with a predetermined number and taking as specified a certain proportion of the records thereafter.

Depending upon the study procedure agreed upon with the hospital, the selecting of the sample and the abstracting of the records were done either by the hospital staff, by representatives of the National Center for Health Statistics, or by both.

Two versions of the abstract forms were being tested: an optical mark page reader form (PHS 4734-2, fig.1) and a conventional form (PHS 4734-1). Both contained identical information, but their formats differed

and they were processed somewhat differently. The preparation of a punchcard was not required for the mark page abstract form because the coded information was converted directly to computer tape by an Optical Mark Page Reader. The coded information on the conventional abstract form was reproduced on a punchcard, which was then converted to computer tape.

Data processing.—Shipments of completed abstract forms for each sample hospital were transmitted to the Center for processing. Every shipment of abstracts was reviewed; each abstract form was edited; and, as necessary, problems were referred to the hospitals for correction. Up to five diagnoses and up to three operations recorded on the abstract forms were coded in accordance with the ICDA,[3] as modified by the *Medical Coding Manual* prepared by the Hospital Discharge Survey. This number includes, however, virtually all diagnoses and operations recorded on the patient's summary sheet.

Estimation.—Estimation, or conversion of the sample data into statistics for the Nation, is accomplished in four phases: (1) Inflation of sample data by the reciprocals of their probabilities of selection—separately for the two stages of selection; (2) a set of three adjustments identified in the following paragraph; (3) a within-hospital ratio control to total number of discharges reported by the hospital; and (4) a first-stage ratio control to total number of beds in each of the primary size-class strata in the MFI frame. Thus final statistics are the product of two-stage ratio estimators utilizing edited data.

After the abstracts for each hospital were inflated by their overall weights, three types of adjustments were made. The functions of these three adjustments were (1) to adjust for out-of-scope hospitals that were dropped from the sample, (2) to adjust for nonresponding in-scope hospitals, and (3) to correct for missing abstracts for in-scope sample discharges.

In this report no imputations were made for individual items on the abstract form for which information was lacking. Instead, missing individual items were labeled "not stated."

General Qualifications

Factors affecting interpretation of rates.— The detailed tables (frequency and percent) show the extent to which certain characteristics were not reported. However, in computing rates per 1,000 population, these "not stated" cases were distributed proportionately among the stated categories on the assumption that the characteristics of discharges for which information was not available were distributed in the same manner as those for which it was available. This may not be an entirely valid assumption. However, it should not alter the rates appreciably, since for rates of all characteristics shown, the number of not stated cases was less than 3 percent of the total discharges. For color, 8.6

percent of the cases were not stated. This was due in part to the fact that some hospitals did not routinely record this item. No rates were computed by color. No rates were computed for marital status either, since over 3 percent of the cases were not stated.

The rates shown for the October-December 1964 period are annual rates expressed as a number per year per 1,000 nonmilitary, noninstitutional population. In effect, this is a way of expressing rates in terms of a standard time period—namely, a year—irrespective of the period of time to which the absolute numbers apply. However, the absolute numbers for the 3-month period, e.g., 7,014,000 discharges, should not be multiplied by 4 in order to show an absolute number for an entire year.

Population figures.—The base populations used in computing the rates are provisional estimates for the civilian, noninstitutional population obtained by averaging estimates for the United States and provided by the Bureau of the Census for November 1 and December 1, 1964. These estimates are solely for the purpose of providing denominators for rate computations and are not to be considered as official population estimates.

Rounding of numbers.— The subsets of the totals in the tables may not add to the totals, since the subsets have been rounded independently of the totals.

Reliability of Estimates

Since the estimates are based on a sample, they may differ somewhat from a complete enumeration, which would consist of every discharge in every short-stay hospital. As in all surveys, in addition to sampling

Table II. Estimated frequencies and corresponding relative standard errors for selected statistics shown in this report

Characteristic	Estimated discharges	Relative standard error
	Number in thousands	Percent
Length of stay:		
7 days or less--------	4,976	3.6
8 days or more--------	2,038	3.4
Number of operations:		
No operations---------	3,802	3.4
1 or more-------------	3,212	4.7
Number of diagnoses:		
1 diagnosis-----------	4,216	3.4
2 or more-------------	2,798	5.0
Age:		
Under 65 years--------	5,829	3.1
65 years and over-----	1,185	6.8

errors, the results are also subject to measurement errors.

The standard error is a measure of sampling variability, that is, the variations that might occur by chance because only a sample of the universe is surveyed. As calculated for this report, the standard error also reflects part of the measurement error, but it does not include any biases in the data. The chances are about 68 out of 100 that an estimate from the sample would differ from the value obtained from a complete census by less than the standard error. The chances are about 95 out of 100 that the difference would be less than twice the standard error and about 99 out of 100 that it would be less than 2½ times the standard error.

The relative standard error of an estimate is obtained by dividing the standard error of the estimate by the estimate itself and is expressed as a percentage of the estimate. The relative standard errors given in table II are for selected statistics shown in this report. The relative standard errors of these statistics are shown since they represent sampling errors for a wide range of estimated frequencies.

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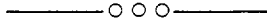
APPENDIX II

DEFINITIONS OF CERTAIN TERMS USED IN THIS REPORT

Terms Relating to Hospitalization

Hospital.—In this survey an establishment is a hospital if it meets all of the following conditions:

1. It maintains at least six beds for use by inpatients

2. It is licensed as a hospital by the State in which it is located if the State has a hospital licensure law

3. It provides inpatient medical care under the supervision of a duly licensed doctor of medicine or doctor of osteopathy

4. It provides nursing service 24 hours a day under the supervision of a registered nurse

5. It maintains medical records for each patient admitted and for newborn infants

Short-stay hospital.—A short-stay hospital is one in which the average stay is under 30 days.

Bed.—A bed is one set up and staffed for continuous (24 hour) use by inpatients. Beds in emergency rooms, labor rooms, postanesthesia or postoperative recovery rooms, or other such facilities, which are regularly maintained and utilized for only a portion of the patient's stay and are primarily for special procedures and not for lodging, are *not* termed (inpatient) beds. Cribs and bassinets maintained for use by other than newborn infants are considered beds.

Patient and inpatient.—A patient is a person admitted to a hospital who occupies a hospital bed for observation, care, diagnosis, or treatment. "Patient" and "inpatient" are used synonymously.

Discharge.—A discharge is the formal release of an inpatient by a hospital.

Well-newborn infants.—Well-newborn infants are those who satisfy *all* of the following criteria:

1. The birth was at term or was not otherwise specified and there was *no* mention of immaturity or prematurity

2. No diagnosis of any disease, condition, disorder, syndrome, injury, malformation, or

defect was made by the physician attending the birth

3. No operation (other than a routine circumcision) was performed

4. The birth was under sterile conditions

Final (discharge) diagnosis.—Final diagnoses are those which take into account revisions of the working diagnoses and represent a final statement of opinion after tests and medical examinations have been performed.

First listed diagnosis.—The first listed diagnosis is the final diagnosis that is listed first on the face sheet of the patient's record.

Length of stay.—The length of stay is, in general, the number of days of hospitalization exclusive of the day of discharge. In the case of patients admitted and discharged the same day, the duration of stay is shown in the tables as less than 1 day.

Average length of stay.—The average length of stay is the aggregate number of days of stay divided by the total number of discharges. In computing the average length of stay, a stay of less than 1 day is counted as 1 day.

Surgical operation.—No formal definition was established during the pilot study period. From the hospital point of view, operations include all items that the physician entered as such on the face sheet of the patient's record. For coding purposes the Hospital Discharge Survey defines operations as entries on the abstract form that are classifiable to ICDA categories 01.0–99.9.

Demographic Terms

Age.—Age refers to the age at last birthday at time of admission to hospital. Whenever possible, information is obtained on date of birth.

Color.—In this report, the population has been divided into white and nonwhite. Mexicans and Puerto Ricans are considered white unless specifically identified as a member of a nonwhite race. The nonwhite group includes the Negro, American Indian, Asian Indian, Chinese, Japanese, Aleut, Eskimo, Hawaiian, Filipino, Korean, and Malayan races.

Geographic region.—The regions of the United States are divided as follows:

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

Codes for Diagnostic Groups Shown in Table H

Diagnostic Group	*ICDA Code Numbers*[1]
Infective and parasitic diseases---------------------	002-138, Y03.0-Y03.2
Malignant neoplasms, all sites and types-------------	140-205
Benign and unspecified neoplasms-------------------	210-239, Y03.3
Allergic, endocrine system, metabolic, and nutritional diseases------------------------------	240-289
Diseases of blood and blood-forming organs---------	290-299
Mental, psychoneurotic, and personality disorders----	300-329
Diseases of nervous system and sense organs--------	330-398
Diseases of circulatory system---------------------	400-468
Diseases of respiratory system---------------------	470-527
Diseases of digestive system-----------------------	530-587
Diseases of genitourinary system-------------------	590-637
Delivery --	660-678
Conditions of pregnancy and puerperium-------------	640-652, 680-689, Y06-Y07
Diseases of skin and cellular tissue----------------	690-716
Diseases of bones and organs of movement----------	720-749
Congenital malformations --------------------------	750-759
Certain diseases of early infancy, including prematurity -----------------------------------	760-776, Y21, Y24, Y25, Y28, Y29
Injuries and adverse effects of chemical substances and other external causes -----------------------	800-999, Y10.0
Symptoms, senility, and ill-defined conditions not elsewhere classified ------------------------	780-795.3, 795.8, Y00-Y02, Y03.9, Y04, Y05, Y08, Y09, Y10.1-Y18
Disease undiagnosed------------------------------	795.4, 795.5, 795.9

[1]Diagnoses are coded and grouped according to the *International Classification of Diseases, Adapted for Indexing Hospital Records by Diseases and Operations* with certain modifications by the Hospital Discharge Survey.

Codes for Operation and Procedure Groups Shown in Table J

Operation and Procedure Group	*ICDA Code Numbers*[1]
On nervous system	01.0-06.9
On eye	10.0-18.9
On ear, nose, and throat, not elsewhere classified	20.0-22.9
Tonsillectomy, adenoidectomy	27.1-27.3
Other operations on buccal cavity and esophagus	24.0-27.0, 27.4-28.9
On bronchi, lung, pleura, chest wall, and mediastinum	33.0-35.9
On breast	38.0-38.9
Repair of hernia	40.0-40.9
Appendectomy	45.1
Hemorrhoidectomy	49.3
Cholecystectomy	53.5
On other sites of gastrointestinal tract and related organs	41.0-45.0, 45.3-49.2, 49.4-53.4, 53.6-57.9
On urinary organs	60.0-64.9
On male genital organs	66.0-69.9
On female genital organs, except obstetrical	70.0-75.9
Obstetrical procedures	76.0-78.9
On musculoskeletal system	80.0-87.9
On skin and subcutaneous tissue	89.0-89.9
Endoscopy (cystoscopy, bronchoscopy, etc.)	90.0-90.9
Certain other nonsurgical procedures	92.0-99.9
All other operations, including ill-defined	00.0, 08.0-9.7, 30.0-32.1, 88.0-88.9

[1]Operations and procedures are coded and grouped according to the *International Classification of Diseases, Adapted for Indexing Hospital Records by Diseases and Operations* with certain modifications by the Hospital Discharge Survey.

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