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

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Introduction

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

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

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

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

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

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

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

Highlights

Highlights of hospital utilization among adolescents are shown below.

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

Utilization

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Diagnosis and ICD-9-CM code ¹	Total	Male	Female	Total	Male	Female	Total	Male	Female
	Number of discharges in thousands			Rate per 10,000 population			Average length of stay		
All conditions	2,837	1,008	1,829	894.6	628.3	1,167.3	4.7	5.4	4.4
Infectious and parasitic diseases 001-139	74	32	42	23.3	19.9	26.8	4.3	4.3	4.3
Viral diseases 045-079, 138, 139.0-139.1	41	18	24	13.0	11.0	15.1	4.3	4.1	4.4
Other infectious and parasitic diseases 001-041, 080-137, 139.8	32	14	18	10.2	8.9	11.6	4.3	4.5	4.1
Neoplasms 140-239	46	17	29	14.6	10.8	18.5	4.8	6.6	3.7
Malignant neoplasms 140-208	18	9	9	5.7	5.6	5.7	7.5	9.6	5.4
Benign neoplasms, carcinoma in situ and neoplasms of uncertain behavior 210-239	28	8	20	8.9	5.1	12.8	3.1	3.3	3.0
Endocrine, nutritional and metabolic diseases and immunity disorders 240-279	54	21	33	17.0	13.3	20.8	6.1	5.7	6.5
Diabetes mellitus 250	32	13	18	10.0	8.3	11.8	6.2	5.3	6.9
Diseases of the blood and blood forming organs 280-289	41	21	20	13.0	13.2	12.7	3.5	3.3	3.7
Mental disorders 290-319	122	57	65	38.5	35.8	41.3	16.4	17.1	15.7
Psychosis 290-299	24	13	11	7.6	8.4	6.8	24.0	20.6	28.2
Disease of the nervous system and sense organs 320-389	82	44	38	25.8	27.3	24.3	5.4	6.1	4.7
Diseases of the circulatory system 390-459	28	14	14	8.9	8.7	9.2	6.7	6.8	6.6
Diseases of the respiratory system 460-519	258	107	151	81.3	66.7	96.3	3.5	4.0	3.1
Chronic disease of the tonsils and adnoids 474	105	29	76	33.1	17.8	48.7	2.0	2.1	2.0
Pneumonia, all forms 480-486	26	15	11	8.1	9.0	7.0	5.7	5.9	5.5
Asthma 493	32	17	15	10.2	10.7	9.7	4.7	5.0	4.3
Diseases of the digestive system 520-579	320	147	173	100.8	91.6	110.2	3.9	4.0	3.7
Disturbance of tooth eruption 520.6	49	17	32	15.6	10.8	20.5	1.9	2.0	1.8
Appendicitis and other diseases of the appendix 540-543	92	46	46	29.0	28.7	29.2	4.5	4.6	4.4
Inguinal hernia 550	21	18	2	6.5	11.4	1.5	3.3	3.4	2.6
Non-infectious enteritis and colitis 555-558	54	25	29	16.9	15.3	18.6	3.7	3.5	3.8
Diseases of the genitourinary system 580-629	196	43	153	61.7	26.8	97.4	4.1	3.8	4.2
Inflammatory disease of female pelvic organs 614-616	46	...	46	14.6	...	29.6	4.8	...	4.8
Disorders of menstruation 619-629	56	...	56	17.6	...	35.7	3.3	...	3.3
Complications of pregnancy, childbirth, and the puerperium 630-676	188	...	188	59.2	...	119.9	2.5	...	2.5
Abortion 630-639	91	...	91	28.6	...	57.9	1.8	...	1.8
Complications mainly related to pregnancy 640-648	83	...	83	26.2	...	53.1	3.1	...	3.1
Diseases of the skin and subcutaneous tissue 680-709	63	35	28	19.8	21.9	17.7	4.8	5.6	3.9
Diseases of the musculoskeletal system and connective tissue 710-739	143	72	71	45.1	44.8	45.4	5.2	4.8	5.5
Disorders of bone and cartilage 730-733	29	20	9	9.2	12.7	5.6	6.6	6.2	7.6
Congenital anomalies 740-759	35	17	18	11.1	10.6	11.5	6.8	6.9	6.7
Certain conditions originating in the perinatal period 760-779	*0	*0	...	*0.1	*0.2	...	*9.0	*9.0	...
Symptoms, signs and ill-defined conditions 780-799	65	28	37	20.4	17.4	23.6	3.5	3.3	3.7
Injury and poisoning 800-999	490	331	159	154.6	206.6	101.4	5.2	5.1	5.6
Fractures 800-829	145	105	41	45.9	65.1	26.1	7.0	6.4	8.4
Dislocation without fracture 830-839	47	31	16	14.7	19.0	10.2	4.7	4.5	5.0
Concussion (excluding those with skull fracture) 850	42	27	15	13.1	16.8	9.4	3.6	2.9	4.7
Laceration and open wound 870-904	59	47	12	18.5	29.1	7.7	4.7	4.8	4.1
Sprains and strains of joints and adjacent muscles 840-848	41	28	13	13.0	17.7	8.1	4.0	3.7	4.6
Supplementary classification V01-V82	632	20	612	199.3	12.6	390.5	3.7	3.7	3.7
Females with deliveries V27	582	...	582	183.5	...	371.5	3.7	...	3.7

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

Technical Notes

Survey methodology

Source of data

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

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

Sample design

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

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

Sampling errors

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

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

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

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

Tests of significance

In this report, the determination of statistical inference is based on the two-tailed Bonferroni test for multiple comparisons. Terms relating to differences such as "higher" and "less" indicate that the differences are statistically significant. Terms such as "similar" or "no difference" mean that no statistically significant difference exists between the estimates being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found to be not significant.

Definition of Terms

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

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

Days of care—The total number of patient days accumulated at the time of discharge by patients discharged from short-stay hospitals during a year. A stay of less than 1 day (patient admitted and discharged on the same day) is counted as 1 day in the summation of total days of care. For patients admitted and discharged on different days, the number of days of care is computed by counting all days from (and including) the date of admission to (but not including) the date of discharge.

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

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

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

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

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

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

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

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

Symbols

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