

Utilization of Short-Stay Hospitals by Patients With AIDS: United States, 1984-86

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Introduction

The number of cases of acquired immunodeficiency syndrome (AIDS) reported to the Centers for Disease Control (CDC) has increased each year since 1984. In 1984, 4,445 cases of AIDS were reported to CDC; in 1985, 8,249 new cases were reported, an increase of 86 percent. In 1986, 12,932 new cases of AIDS were reported, an increase of 57 percent from 1985 (CDC, 1986).

During 1986 an estimated 37,000 patients with AIDS were discharged from short-stay non-Federal hospitals (table 1). These patients were hospitalized an average of 16.2 days per episode and used 606,000 days of inpatient hospital care. This is the third year that records have been available on AIDS patients, and each year has shown a substantial gain in the number of AIDS discharges. In 1984 there were about 10,000 AIDS discharges; in 1985 this figure rose to 23,000—an increase of about 122 percent. In 1986 the number of AIDS discharges rose to 37,000—an increase of 66 percent from 1985. Thus during the period 1984-86, 70,000 patients were discharged with a diagnosis of AIDS. These patients used more than 1 million days of hospital care.

The 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. The data for the survey are obtained from a sample of short-stay general and specialty hospitals located in the United States. Approximately 192,000 abstracts of medical records were obtained from 407 participating hospitals in 1984, and 195,000 abstracts were supplied by 414 hospitals in 1985. In 1986, 193,000 abstracts were supplied by 418 hospitals. A detailed report on the design of NHDS was published in 1970 (NCHS, 1977).

The NHDS diagnostic data were coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification*, or ICD-9-CM (Public Health Service and Health Care Financing Administration, 1980). Only the 433 records having a specific diagnosis of AIDS were included in this analysis. (See the Technical notes for specific ICD-9-CM codes used.) Unless the year is specified, data in this report are for the 3 years of data combined because of the relatively small number of cases in the sample. In addition, comparisons are made in this report with NHDS estimates of general hospital utilization for 1984-86. These estimates have been published elsewhere (NCHS, 1986, 1987, 1988). In NHDS, the unit of analysis is the hospital discharge, not the individual. Individuals may have one or more hospital episodes during a year. In this report, the terms "discharge" and "patient" are used interchangeably.

Table 1. Selected measures of hospital utilization for patients discharged from short-stay non-Federal hospitals with the diagnosis of acquired immunodeficiency syndrome (AIDS): United States, 1984-86

Measure of utilization	1984	1985	1986
Number of patients discharged in thousands	10	23	37
Rate of patient discharges per 10,000 population	0.4	1.0	1.6
Number of days of care in thousands	123	387	606
Rate of days of care per 10,000 population	5.2	16.3	25.3
Average length of stay in days	12.1	17.1	16.2

Highlights

- There were approximately 37,000 discharges for AIDS in 1986. This number is more than 200 percent greater than the 10,000 discharges recorded in 1984.
- About three-fourths of all discharges for AIDS were in the West and Northeast Regions.
- For about 23 percent of all patients with AIDS discharged from short-stay hospitals, Medicaid was the expected source of payment.
- About 18 percent of all patients with AIDS died in short-stay hospitals; however, less than 1 percent of all male patients 25-44 years of age died during a hospitalization.
- Of the 70,000 patients having at least one diagnosis for AIDS, 22,000 had pneumocystosis as one of their diagnoses.

Utilization

Patient and hospital characteristics

The number of discharges, days of care and average length of stay of patients with AIDS for 1984-86 are provided in table 2. Of the estimated 70,000 discharges, 95 percent were males and 79 percent were 25-44 years of age. Of the 56,000 AIDS patients 25-44 years of age, 20 percent were 25-29 years of age, 32 percent were 30-34 years, 27 percent were 35-39 years, and 21 percent were 40-44 years. Most of the remaining 14,000 patients were 45 years of age and over.

Approximately 77 percent of hospitalizations for AIDS were in the West and Northeast Regions (table 3). Forty-two percent were in the West and 35 percent in the Northeast. Among all patients, only about 40 percent were discharged from these two regions, 20 percent from the Northeast Region and 18 percent from the West Region.

The two most commonly mentioned principal expected sources of payment for AIDS patients were private insurance

and Medicaid. Approximately 54 percent of hospital patients with AIDS indicated private insurance as the principal source of payment, and 23 percent indicated Medicaid. These figures were significantly different from the distribution for all patients under 65 years of age. A higher proportion (64 percent) of the total discharges under 65 years of age indicated private insurance as the principal source of payment, and a lower proportion listed Medicaid (13 percent).

Patients hospitalized for AIDS and all patients discharged from short-stay hospitals were equally likely to have been discharged from nonprofit hospitals. Approximately 71 percent of those hospitalized for AIDS and 69 percent of all hospitalized patients were discharged from nonprofit hospitals. Of the remaining AIDS patients, 26 percent were discharged from government hospitals while 21 percent of all patients were discharged from government hospitals.

Persons with AIDS were more likely to be hospitalized in larger hospitals (300 beds or more) than in hospitals having less than 300 beds. About 82 percent of AIDS patients, but only 48 percent of all patients, were discharged from hospitals with 300 beds or more.

A larger proportion of AIDS discharges (25 percent) than of total discharges (15 percent) were for patients with race listed as other than white.

As expected, a large number of AIDS hospitalizations were terminated by the patient dying in the hospital. Approximately 18 percent of AIDS hospitalizations ended with the death of the patient. In comparison, less than 1 percent of all male hospitalizations in the age group 25-44 years ended in the patient's death.

Diagnosis

Approximately 70,000 of the 106 million patients discharged from short-stay non-Federal hospitals during the period 1984-86 had at least one diagnosis of AIDS. Of these discharges, AIDS was the first-listed or principal diagnosis for 26,000 (37 percent). The only significant

Table 2. Number and percent distribution of discharges and of days of care and average length of stay for patients 25-45 years and over discharged from non-Federal short-stay hospitals with the diagnosis of acquired immunodeficiency syndrome (AIDS) by sex and age: United States, 1984-86

Sex and age	Discharges		Days of care		Average length of stay in days
	Number in thousands	Percent distribution	Number in thousands	Percent distribution	
Total	70	100.0	1,116	100.0	15.9
Sex					
Male	66	94.5	1,051	94.1	15.8
Female	*	*	*	*	*
Age					
Under 25 years	*	*	*	*	*
25-29 years	11	16.0	169	15.1	15.0
30-34 years	18	25.4	312	28.0	17.5
35-39 years	15	21.2	258	23.1	17.4
40-44 years	12	16.7	155	13.9	13.3
45 years and over	11	15.8	174	15.6	15.7

Table 3. Number and percent distribution of discharges and days of care for patients with acquired immunodeficiency syndrome (AIDS), percent distribution of discharges and days of care for all patients, and average length of stay for AIDS patients by selected characteristics: United States, 1984-86

Characteristics	Discharges			Days of care			
	Patients with AIDS		Percent distribution for all patients	Patients with AIDS		Percent distribution for all patients	Average length of stay in days for AIDS patients
	Number in thousands	Percent distribution		Number in thousands	Percent distribution		
Total	70	100.0	100.0	1,116	100.0	100.0	15.9
Geographic region							
Northeast	25	35.1	20.2	505	45.3	23.9	20.5
Midwest	*7	*9.7	26.2	*114	*10.2	27.2	*16.8
South	*9	*12.7	35.3	*141	*12.7	33.2	*15.8
West	30	42.4	18.2	355	31.8	15.5	11.9
Principal expected source of payment ¹							
Private insurance	38	54.0	63.8	547	49.0	61.3	14.4
Medicare	*	*	5.6	*	*	8.6	*
Medicaid	16	22.8	13.1	269	24.1	13.4	16.8
All other	14	19.8	17.4	263	23.6	16.7	18.9
Ownership of hospital							
Nonprofit	50	71.0	68.7	760	68.0	70.9	15.2
Proprietary	*	*	9.9	*	*	9.5	*
Government	18	25.5	21.4	300	26.9	19.6	16.8
Bed size of hospital							
Less than 300 beds	12	17.6	52.4	200	18.0	47.8	16.2
300 beds or more	58	82.4	47.6	916	82.0	52.2	15.8
Discharge status							
Alive	57	81.3	96.0	824	73.8	93.6	14.4
Dead	13	17.9	2.7	279	25.0	5.0	22.2
Not stated	*	*	1.3	*	*	1.4	*
Race							
White	49	69.4	75.3	638	57.1	76.1	13.1
All other	17	24.9	14.6	364	32.6	15.1	20.8
Not stated	*	*	10.0	*	*	8.8	*

¹For patients under 65 years of age.

first-listed non-AIDS diagnosis for these patients was pneumocystis carinii pneumonia, also known as PCP, which had an estimated 11,000 first-listed diagnoses, or 16 percent of the principal diagnoses. The other principal diagnoses were divided into numerous diseases.

Approximately 258,000 additional diagnoses were listed for patients with at least one diagnosis of AIDS during the period 1984-86. Of these, pneumocystis carinii pneumonia, with 22,000 (8.5 percent), was the leading diagnosis. In fact almost one-third of all AIDS patients had a diagnosis of PCP. Other leading additional diagnoses for patients with AIDS were malignant neoplasms (17,000), anemias (16,000), and candidiasis (15,000).

Procedures

Approximately 46,000 of the AIDS discharges in 1984-86 (66 percent) had at least one procedure performed. For the same period, approximately 58 percent of all patients had at least one procedure performed. Approximately 99,000 procedures were performed on patients who had at least one diagnosis of AIDS. Of these procedures, five were performed at least 5,000 times. These were diagnostic procedures on the bronchus and lung (18,000); computerized axial tomography, or CAT scan (9,000); spinal tap (9,000); circulatory monitoring (6,000); and puncture of vessel (5,000).

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

Survey methodology

Source of data

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

The original universe of the survey consisted of 6,965 hospitals contained in the National Master Facility Inventory of Hospitals and Institutions. New hospitals were sampled for inclusion in the survey in 1972, 1975, 1977, 1979, 1981, and 1983. In all, 553 hospitals were sampled in 1984, and 558 were sampled in 1985 and 1986. In 1984 there were a total of 407 hospitals in the sample, with 86 refusals and 60 out of scope; in 1985 there were 414 hospitals in the sample, with 62 refusals and 62 out of scope; and in 1986 there were 418 in the sample, with 75 refusals and 65 out of scope. The number of records sampled was 192,000 in 1984, 195,000 in 1985, and 193,000 in 1986.

Sample design and data collection

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. The within-hospital sampling ratio for selecting discharges varied inversely with the probability of selection of the hospital.

In 1985, for the first time, two data collection procedures were used for the survey. The first was the traditional manual system of sample selection and data abstraction. The second involved the purchase of data tapes from commercial abstracting services. In 1986 this automated method was used in approximately 19 percent of the sample hospitals.

In hospitals for which the manual system was used, sample discharges were selected using the daily listing sheet of discharges as the sampling frame. These discharges were selected by a random technique, usually on the basis of the terminal digit or digits of the patient's medical record number. The sample selection and abstraction of data from the face sheet and discharge summary of the medical records were performed by the hospital staff or by representatives of the National Center for Health Statistics

(NCHS). The completed forms were forwarded to NCHS for coding, editing, and weighting procedures.

For hospitals for which the automated system is used, tapes containing machine-readable medical record data are purchased from commercial abstracting services. These tapes are subject to NCHS sampling, editing, and weighting procedures. A detailed description of the automated process will be published.

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 identification of a hospital, the medical record number, and patient ZIP Code are considered confidential information and are not available to the public.)

Presentation of estimates

NHDS statistics are derived by a complex estimating procedure. The estimating procedure used to produce essentially unbiased national estimates in NHDS has three principal components: Inflation by reciprocals of the probabilities of sample selection, adjustment for nonresponse, and ratio adjustment to fixed totals. These components of estimation are described in appendix I of two earlier publications (NCHS, 1967a and 1967b).

Based on the complex sample design of NHDS, the following guidelines are used for presenting NHDS estimates in this report:

- 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 be used with caution. The estimate is preceded by an asterisk (*) in the tables.

Sampling errors and rounding of numbers

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than an entire universe, is surveyed. The relative standard error of the estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. Relative standard errors for discharges are shown in table I. The relative standard errors for days of care are shown in table II.

NOTE: A list of references follows the text.

Table I. Approximate relative standard errors of estimated numbers of discharges for selected patient and hospital characteristics: United States, 1984-86

Size of estimate	Number of discharges		
	Region	Bed size 50 beds or more	All other characteristics
5,000	20.3	14.5	11.7
10,000	16.6	11.7	8.7
15,000	13.8	10.4	7.7
20,000	12.4	9.6	7.1
30,000	11.6	8.6	6.3
50,000	11.0	7.6	5.5
100,000	9.4	6.5	4.7

Table II. Approximate relative standard errors of estimated numbers of days of care for selected patient and hospital characteristics: United States, 1984-86

Size of estimate	Number of days of care	
	Region	All other characteristics
10,000	30.6	19.3
20,000	26.1	15.8
30,000	23.8	14.1
50,000	21.3	12.2
100,000	18.4	10.1
200,000	15.9	8.4
300,000	14.7	7.5
500,000	13.3	6.6
1,000,000	11.7	5.5
2,000,000	10.4	4.6

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

Tests of significance

The determination of statistical inference for this report was 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.

Definitions of terms

Terms relating to hospitals and hospital characteristics

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

Bed size of hospital—Bed size is measured by the number of beds, cribs, and pediatric bassinets regularly

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

Type of ownership of hospital—The type of ownership is determined by the organization that controls and operates the hospital. Hospitals are grouped as follows:

Voluntary nonprofit—Hospitals operated by a church or another nonprofit organization.

Government—Hospitals operated by State or local governments.

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

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

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

Days of care—The total number of patient days accumulated at time of discharge by patients discharged from short-stay hospitals during a year constitutes days of care. 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 average length of stay is the total number of patient days accumulated at time of discharge by patients discharged during the year divided by the number of patients discharged.

Discharge diagnosis—One or more diseases or injuries (or other factors that influence health status and contact with health services but are not themselves current illnesses or injuries) listed by the attending physician on the medical record of patients are discharge diagnoses. In NHDS all discharge (or final) diagnoses listed on the face sheet (summary sheet) of the medical record for patients discharged from the inpatient service of short-stay hospitals are transcribed in the order listed. Each sample discharge is assigned a maximum of seven 5-digit codes according to the ICD-9-CM. The number of principal or first-listed diagnoses is equivalent to the number of discharges.

The ICD-9-CM code used for coding the diagnosis AIDS was 279.19 for the period 1984-86. During 1986 the ICD-9-CM codes for AIDS were changed to 042.0, 042.1, 042.2, and 042.9 to provide expanded detail (American Medical Record Association, 1983).

NOTE: A list of references follows the text.

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

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

All-listed diagnoses—All-listed diagnoses are the discharge (or final) diagnoses, up to a maximum of seven, listed on the face sheet of the medical record for inpatients discharged from non-Federal short-stay hospitals during the year.

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

Demographic terms

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

Race—Patients are classified into two groups, "white" and "all other." The all other classification includes all categories other than white.

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

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

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