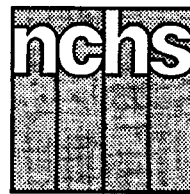


# Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

## Characteristics of Elderly Men and Women Discharged From Home Health Care Services: United States, 1991-92

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### Introduction

Today's modern medical technology allows health care professionals to deliver quality health care services at a much lower cost in the patient's home than in institutional settings. Services such as physical therapy, intravenous infusion of medications, speech therapy, and other "high-tech" services such as around-the-clock intravenous antibiotic therapy for difficult infections were mostly confined to hospitals. These services and others like them are now available at home through home health care agencies. Today, these agencies are referred to as "hospitals without walls." The enactment of the Medicare law in 1965 authorized payment for certain home health care services, thereby making them more available to the elderly. This has resulted in a rapid increase in the number of home health care agencies (1). Government programs such as Medicare, as well as private insurance plans, recognize that it is less expensive to provide care at home,

especially post-hospitalization care, than in an institution. The average home health care visit cost about \$66 in 1993, compared with about \$1,500 in Medicare charges for an average day in the hospital (2). Today, these agencies are the fastest growing segment of the U.S. health care system (3). Currently, there are an estimated 7,000 home health care agencies in the United States (1).

The changing age structure of the population, that is, the increasing number of elderly members in the total population, also influences the need for home health care service. Recent statistics indicate that 3 of every 4 home health care patients were 65 years and over (1). Older patients generally prefer recovering from an illness at home instead of in a hospital or a nursing home (4).

This report presents findings on service utilization, primary diagnosis at admission, types of aids used at the time of discharge or immediately prior to discharge, and disposition status of

elderly men and women home health care discharges. The advantage of using discharge data is that it will enable health care researchers to review the complete episode of care, that is, from admission to discharge. A discharge may be due to either an improvement or stabilization or a worsening of a condition that leads to admission to a hospital or nursing home or to death. Service utilization is discussed in terms of (a) services received to perform activities of daily living and instrumental activities of daily living at the time of discharge or immediately prior to discharge, (b) types of service received during the last billing period, and (c) the length of service in days from admission to discharge. Activities of daily living include bathing, dressing, eating, transferring from a bed or chair, walking, and using the toilet room. Instrumental activities of daily living include doing light housework, managing money, shopping for groceries or clothes, using the telephone, preparing meals, and taking medications.

### Acknowledgments

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The data in this report are from the 1992 National Home and Hospice Care Survey (NHHCS), a segment of the Long-Term Care Component of the National Health Care Survey (5). The 1992 NHHCS is the first annual survey of home health care agencies and hospices, their current patients, and discharges. The National Center for Health Statistics (NCHS) began this nationwide sample survey in response to the rapid growth in the number of these agencies in the United States (6). The 1,500 agencies included in the survey were selected from a universe of 8,859 agencies classified by the 1991 National Health Provider Inventory (NHPI) (7) as agencies providing home health or hospice care. Also included in the universe was a sample of potentially new agencies identified between November 1991 (when the 1991 NHPI was completed) and June 1992. Detailed information on sample design, selection methods, data collection procedures, and sampling errors is included in the Technical notes.

Estimates in this report are based on the discharged patient sample. Discharges are defined as patients who were removed from the rolls of the agency during a 12-month period ending on the last day of the month prior to the month of the survey. Discharges also include patients whose episode of care ended because of death. Discharges represent discharge events, not discharged patients. The same patient could be included more than once if that person had more than one episode of care that ended during the year. The extent of multiple episodes of care by a single person in the discharge sample is unknown.

Data were collected by interviewing the staff person most familiar with the medical records for the sample discharges. Although the survey included patients of all ages from hospices and home health care agencies, data presented in this report are limited to home health care patients aged 65 years and over. The estimates are based on responses for 3,654 discharges.

### Demographic characteristics

During 1991–92 there were an estimated 3.1 million discharges from an

estimated 7,000 home health care agencies in the United States (8). Of these discharges, about 2,278,300 or 74 percent were 65 years of age and over. The characteristics of these elderly home health care discharges, by sex, are shown in table 1. Elderly discharges 75–84 years comprised the largest group (46 percent), followed by those 65–74 years (34 percent) and 85 years and over (21 percent). There were more women discharges than men discharges. Women constituted 66 percent of all elderly discharges and, on an average, were 2 years older than elderly men (79 years vs. 77 years). Elderly white people constituted 71 percent of all discharges, elderly black people constituted 8 percent, and other and unknown races constituted the remaining 21 percent. (Other was 1 percent and Unknown was 20 percent.)

In 1991–92, there were 71 patients discharged from home health care out of every 1,000 civilian noninstitutionalized persons 65 years and older (table 2). The ratio of number of discharges from home health care services for elderly women was 78 per 1,000 population and for elderly men, 60 per 1,000. For both sexes, the use of services dramatically increased with advancing age. Among elderly men, the use of services increased from 36 per 1,000 of those aged 65–74 years to 146 per 1,000 of those 85 years and over—an increase of 306 percent. Among elderly women, the use of services increased from 45 per 1,000 of those aged 65–74 years to 144 per 1,000 of those 85 years and over—an increase of 220 percent.

Half of the elderly women discharges were widowed and only one-fourth were married at the time of discharge (table 1). For every 100 married women, there were 122 married men. However, there were only 20 widowers for every 100 widows. Moreover, elderly men were more likely to be living with their family than their female counterparts. In 1992, 72 percent of all discharged men lived with their family compared with 51 percent of women. The percent of elderly women living alone was almost double that of elderly men (41 percent vs. 22 percent). There is a similar distribution in the general population of elderly women

living alone compared with elderly men (9). In the 75–84 years age group, the percent of women who lived alone was more than two times higher than men and, in the 85 and over age group, the percent of women who lived alone was nearly three times higher than men (figure 1).

## Use of services

### Help with functional activities

A functional orientation to the health of elderly people is an important dimension of their health status. Any impairment of functional status reduces their ability to maintain an independent existence and affects their quality of life. Moreover, the inability to perform activities of daily living are also associated with a shortened life expectancy (10).

In this report, the ADL's, which reflect an individual's capacity for self care, refer to six sociobiological functions: bathing, dressing, eating, transferring, walking, and toileting. The IADL's, which involve more complex tasks that enable an individual to live independently in the community, are doing light housework, managing money, shopping for groceries or clothes, using the telephone, preparing meals, and taking medications. This report focuses on the ADL's and IADL's where the help was provided by home health care agencies. It does not include ADL's and IADL's where help was provided by other sources.

Table 3 shows the percent, by sex, of elderly home health care discharges who received help and the number of ADL's and IADL's for which help was received. A significantly greater percent of elderly women than elderly men were reported as receiving assistance in bathing or showering (49 percent and 40 percent, respectively). Of all elderly women discharges, 44 percent were reported as receiving help in dressing, and 40 percent reported as receiving help in walking. One-third of elderly women were reported as receiving help in transferring in or out of beds or chairs. Fifty-eight percent of elderly women were reported as receiving help in at least one ADL. Twenty-eight

**Table 1. Number and percent distribution of elderly discharges 65 years and over from home health care agencies by demographic characteristics, according to sex: United States, 1991-92**

Demographic characteristic	Both sexes		Female		Male	
	Number	Percent distribution	Number	Percent distribution	Number	Percent distribution
Total . . . . .	2,278,300	100.0	1,509,600	100.0	768,700	100.0
<b>Age</b>						
65-74 years . . . . .	762,900	33.5	468,700	31.0	294,200	38.3
75-84 years . . . . .	1,043,600	45.8	701,800	46.5	341,800	44.5
85 years and over . . . . .	471,800	20.7	339,100	22.5	132,600	17.3
<b>Race</b>						
White . . . . .	1,616,300	70.9	1,065,000	70.6	551,300	71.7
Black and other . . . . .	202,600	8.9	125,800	8.3	76,800	10.0
Black . . . . .	175,200	7.7	112,900	7.5	62,300	8.1
Unknown . . . . .	459,400	20.2	318,700	21.1	140,700	18.3
<b>Marital status at discharge</b>						
Married . . . . .	857,100	37.6	385,900	25.6	471,300	61.3
Widowed . . . . .	909,000	39.9	757,700	50.2	151,300	19.7
Divorced or separated . . . . .	82,400	3.6	60,500	4.0	21,800	2.8
Never married . . . . .	83,600	3.7	51,000	3.4	32,700	4.3
Unknown . . . . .	346,200	15.2	254,600	16.9	91,600	11.9
<b>Living arrangement</b>						
Family members . . . . .	1,319,600	57.9	768,000	50.9	551,600	71.7
Nonfamily members . . . . .	136,300	6.0	99,800	6.6	36,500	4.8
Both family and nonfamily members . . . . .	*	*	*	*	*	*
Alone . . . . .	783,700	34.4	618,000	40.9	165,700	21.6
Unknown . . . . .	33,000	1.4	22,200	1.5	*	*

**Table 2. Number of civilian noninstitutionalized people age 65 years and over and number of discharged home health care patients per 1,000 population 65 years of age and over by sex and age: United States, 1992**

Sex and age	1992 civilian noninstitutionalized population in thousands <sup>1</sup>	Number of 1992 home health care discharged patients per 1,000 population
Total 65 years and over . . . . .	32,283	70.6
<b>Both sexes</b>		
65-74 years . . . . .	18,460	41.3
75-84 years . . . . .	10,565	98.8
85 years and over . . . . .	3,258	144.8
<b>Male</b>		
65-74 years . . . . .	8,126	36.2
75-84 years . . . . .	4,010	85.2
85 years and over . . . . .	910	145.7
<b>Female</b>		
65-74 years . . . . .	10,336	45.3
75-84 years . . . . .	6,555	107.1
85 years and over . . . . .	2,349	144.4

<sup>1</sup>Source: U.S. Bureau of the Census, Current Population Reports, P25-1095 and P25-1104; and unpublished data.

percent of elderly women were reported as receiving help in 1-3 ADL's and 30 percent were reported as receiving help in 4 or more ADL's.

The most frequent help received by elderly men in ADL's were bathing or showering (40 percent), walking (37

percent), dressing (36 percent), transferring in or out of bed or chair (35 percent), using toilet room (24 percent), and eating (12 percent). Fifty-one percent of elderly men were reported as receiving help in at least one ADL. One-fourth of elderly men were

reported as receiving help in 1-3 ADL's and 26 percent received help in 4 or more ADL's (table 3).

A significantly greater percent of elderly women than men were receiving help doing light housework (38 percent vs. 30 percent). However, these differences may be the result of differences in social roles. Typically men perform fewer household chores than women do and therefore may have needed less frequent help. Of all elderly women, 30 percent were reported to have received help in taking medications, 29 percent received help in preparing meals, and 20 percent received help with shopping for groceries or clothes. Over one-fourth of elderly men received help in taking medications and less than one-fourth were reported as having received help in preparing meals. Every 1 of 5 elderly men was reported as having received help in shopping for groceries or clothes. Half of the elderly men and women did not receive help in IADL's. Thirty-five percent of elderly women received help in 1-3 IADL's and 15 percent received help in 4 or

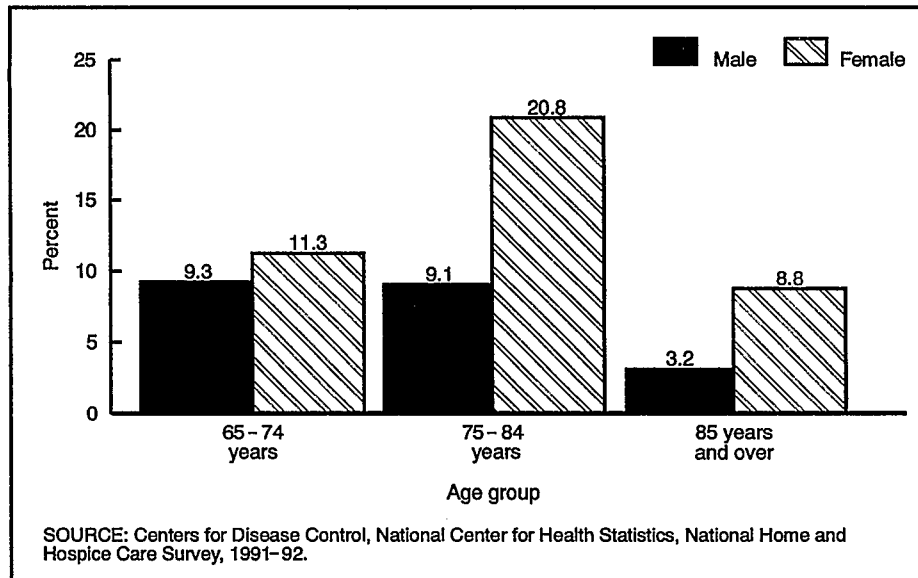


Figure 1. Percent of elderly men and women home health care discharges who live alone: United States, 1991-92

Table 3. Number and percent of elderly home health care discharges by activities of daily living and instrumental activities of daily living and percent distribution by number of functional activities for which help was received, according to sex: United States, 1991-92

Help with ADL's and IADL's	Both	Female	Male
Total . . . . .	2,278,300	1,509,600	768,700
Received personal help with the following ADL		Percent	
Bathing or showering . . . . .	45.9	48.8	40.0
Dressing <sup>1</sup> . . . . .	41.4	44.3	35.7
Eating <sup>1</sup> . . . . .	13.5	14.3	12.1
Transferring in or out of beds or chairs <sup>1</sup> . . . . .	35.0	34.8	35.4
Walking . . . . .	39.0	39.8	37.3
Using toilet room <sup>1</sup> . . . . .	26.8	27.9	24.5
Received personal help with the number of ADL		Percent distribution	
All dependencies . . . . .	100.0	100.0	100.0
None . . . . .	44.4	42.2	48.7
One . . . . .	5.6	6.0	4.8
Two . . . . .	12.6	12.5	12.8
Three . . . . .	9.1	9.8	7.6
Four . . . . .	7.5	8.0	6.5
Five . . . . .	11.3	11.2	11.4
Six . . . . .	9.5	10.3	8.1
Received personal help with the following IADL		Percent	
Doing light house work . . . . .	35.4	38.0	30.2
Managing money . . . . .	8.7	9.1	7.8
Shopping for groceries or clothes . . . . .	20.1	20.3	19.9
Using telephone . . . . .	7.1	7.9	5.6
Preparing meals . . . . .	27.6	29.4	24.1
Taking medications . . . . .	28.7	30.0	28.3
Received personal help with the number of IADL		Percent distribution	
All dependencies . . . . .	100.0	100.0	100.0
None . . . . .	51.1	50.0	53.3
One . . . . .	17.4	16.6	18.9
Two . . . . .	8.9	9.8	7.2
Three . . . . .	8.7	8.5	9.2
Four . . . . .	6.6	7.5	5.0
Five . . . . .	3.7	4.0	3.2
Six . . . . .	3.5	3.7	3.2

<sup>1</sup>Includes "unable to do/didn't do."

NOTE: ADL is activities of daily living. IADL is instrumental activities of daily living.

more IADL's. For elderly men, 35 percent received help in 1-3 IADL's and 11 percent received help in 4 or more IADL's (table 3).

Table 4 shows the percent of elderly men and women home health care discharges using aids regularly at the time of discharge or immediately prior to discharge. The aids most frequently used by elderly men and women, other than eyeglasses, were walkers (36 percent of men and 41 percent of women) and canes (21 percent of men and 24 percent of women). Even with aids, one-fourth of elderly men and women were reported as having difficulty in seeing, and one of five elderly men and women reportedly had difficulty in hearing.

### Types of service

In 1992, the most frequent home health care services used by elderly discharges (during the last billing period) were skilled nursing services. Eighty-five percent of women and 88 percent of men used this service (table 5). Personal care (41 percent of women and 35 percent of men), physical therapy (27 percent of women and 25 percent of men), and social services (12 percent for both sexes) were the next most frequently used services by elderly discharges. All other services, such as administering medications, homemaker and/or companion services, and occupational and/or vocational therapy, were less frequently used. There is a potential inconsistency between the percent of elderly men and women reported using personal care services and the percent receiving help with ADL's. A smaller percent of elderly people were reported to have used personal care services than received help in ADL's. The cause of this inconsistency is not known and should be investigated.

### Length of service

The length of service received by elderly men and women may reflect the severity of illness and the length of time needed to recover from these illnesses. Table 6 indicates that for episodes of care of 4 weeks or more, there were significantly more women than men

**Table 4. Number and percent of elderly discharges 65 years and over from home health care agencies by functional status and sex: United States, 1991-92**

Functional status <sup>1</sup>	Female		Male	
	Number	Percent	Number	Percent
Total . . . . .	1,509,600		768,700	
No aids used . . . . .	6.5		7.9	
Eyeglasses (including contact lenses) . . . . .	92.8		91.8	
Wheelchair . . . . .	14.9		17.3	
Cane . . . . .	23.5		21.1	
Walker . . . . .	41.1		36.0	
Crutches . . . . .	1.2		3.0	
Brace (any type) . . . . .	1.4		*	
Oxygen . . . . .	5.6		6.9	
Hospital bed . . . . .	8.3		12.2	
Commode . . . . .	15.0		11.2	
Other aids or devices . . . . .	12.6		16.7	
Difficulty in seeing . . . . .	24.5		23.8	
Difficulty in hearing . . . . .	19.3		23.2	

<sup>1</sup>Type of aids used at time of discharge or immediately prior to discharge.

**Table 5. Number and percent of elderly discharges 65 years and over from home health care agencies by services received during the last billing period and sex: United States, 1991-92**

Service received	Female		Male	
	Number	Percent	Number	Percent
Total . . . . .	1,509,600		768,700	
Skilled nursing services . . . . .	85.1		87.8	
Personal care . . . . .	41.2		35.2	
Social services . . . . .	11.9		12.4	
Counseling . . . . .	3.7		3.9	
Medications . . . . .	6.7		5.5	
Physical therapy . . . . .	27.2		24.8	
Homemaker/companion services . . . . .	5.5		2.6	
Respite care . . . . .	*		*	
Referral services . . . . .	1.8		2.4	
Dietary and nutritional services . . . . .	1.8		2.0	
Physician services . . . . .	1.6		2.6	
High tech care . . . . .	*		*	
Occupational therapy/vocational therapy . . . . .	4.4		6.9	
Speech therapy/audiology . . . . .	2.1		2.6	
Transportation . . . . .	*		*	
Enterostomal therapy . . . . .	*		*	
Meals on wheels . . . . .	*		*	
Other services . . . . .	1.4		*	

**Table 6. Number and percent of elderly discharges 65 years and over from home health care agencies by length of stay, according to sex and standard error: United States, 1991-92**

Length of stay	Female (standard error)		Male (standard error)	
	Number	Percent	Number	Percent
Total . . . . .	1,509,600		768,700	
Average length of stay (days) . . . . .	102 (6.6)		81 (5.8)	
Percent distribution . . . . .	100.0		100.0	
0-2 weeks . . . . .	17.4 (1.2)		18.9 (1.6)	
2-4 weeks . . . . .	15.6 (1.0)		20.0 (1.8)	
4-6 weeks . . . . .	16.6 (1.3)		15.8 (1.5)	
6-8 weeks . . . . .	13.0 (1.9)		10.5 (1.3)	
8 weeks and more . . . . .	37.4 (1.8)		34.9 (1.9)	

(67 percent vs. 61 percent). The average length of service for men was 81 days and for women it was 102, indicating

that men generally had 3 weeks of shorter episodes of care than women. However, these shorter episodes of care

for older men may be the consequences of their marital status or living arrangement. As shown earlier, a higher percent of older men were married or lived with others. Therefore, they may have received help from their spouses or from others and thus needed less help from the home health care agency.

**Primary diagnosis at admission**

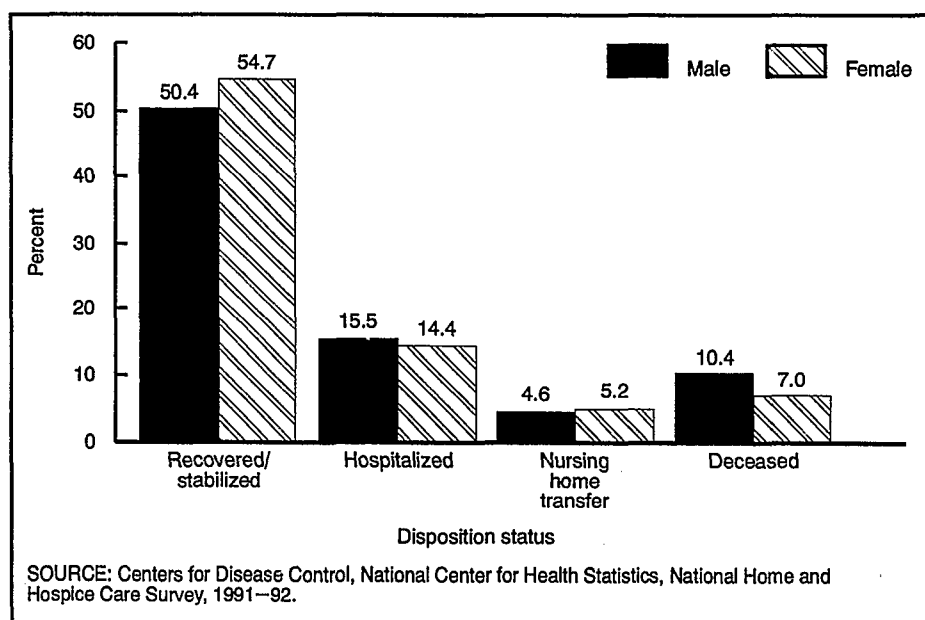
There were differences between elderly discharged men and women in the ranking of primary diagnosis at admission. Table 7 presents the six most frequent primary diagnoses at admission. For discharged women, they were diseases of the circulatory system (33 percent); injury and poisonings (14 percent); diseases of the musculoskeletal system and connective tissue (11 percent); malignant neoplasms (8 percent); endocrine, nutritional, and metabolic diseases and immunity disorders (8 percent); and diseases of the respiratory system (7 percent). For discharged men, they were diseases of the circulatory system (30 percent); diseases of the respiratory system (12 percent); malignant neoplasms (10 percent); injury and poisonings (10 percent); endocrine, nutritional, and metabolic diseases and immunity disorders (10 percent); and diseases of the musculoskeletal system and connective tissue (8 percent). A significantly higher percent of elderly men than women were diagnosed as having diseases of the respiratory system as the primary diagnosis at admission (12 percent vs. 7 percent).

**Disposition status**

In 1991-92, 93 percent of older women and 90 percent of older men were alive at the time of discharge. Fifty-five percent of the older women and 50 percent of the older men were discharged because they recovered and/or stabilized. Twenty percent of the elderly discharges were transferred to hospitals or nursing homes because of deterioration of their health status. The fatality rate among older men discharges was 3 percent higher than older women discharges (figure 2).

**Table 7. Number and percent distribution of elderly discharges 65 years and over from home health care agencies by primary diagnosis at admission, according to sex: United States, 1991–92**

ICD-9-CM procedure category and code	Female	Male
Total	1,509,600	768,700
Percent distribution	100.0	100.0
Infectious and parasitic diseases . . . . .001–139	*	*
Neoplasms . . . . .140–239	8.0	10.6
Malignant neoplasms . . . . .140–208, 230–234	7.8	10.2
Endocrine, nutritional, and metabolic diseases and immunity disorders. . . . .240–279	7.8	9.5
Diabetes mellitus . . . . .250	5.7	6.6
Diseases of the blood and blood-forming organs . . . . .280–289	*	*
Mental disorders . . . . .290–319	1.9	*
Diseases of the nervous system and sense organs. . . . .320–389	1.9	4.1
Diseases of the circulatory system . . . . .390–459	33.3	29.5
Essential hypertension . . . . .401	4.6	2.0
Heart disease . . . . .391–392.0, 393–398, 402, 404, 410–416, 420–429	18.2	17.2
Cerebrovascular disease. . . . .430–438	7.4	5.1
Diseases of the respiratory system . . . . .460–519	6.9	12.2
Chronic obstructive pulmonary disease. . . . .490–496	3.5	6.4
Diseases of the digestive system . . . . .520–579	5.6	3.5
Diseases of the genitourinary system . . . . .580–629	2.9	3.7
Diseases of the skin and subcutaneous tissue. . . . .680–709	2.6	3.0
Diseases of the musculoskeletal system and connective tissue . . . . .710–739	11.1	8.4
Congenital anomalies . . . . .740–759	*	*
Symptoms, signs, and ill-defined conditions . . . . .780–799	2.1	*
Injury and poisonings . . . . .800–999	13.5	10.1
Supplementary classification or unknown . . . . .	*	*

**Figure 2. Disposition of elderly men and women home health care discharges: United States, 1991–92**

## Conclusion

The overall results suggest that although there are more women discharges than men discharges in each group, the utilization rate for both sexes was about the same, particularly in the 85 years and over age group. In 1992, the average length of service for elderly women was significantly higher than for

their male counterparts. These longer episodes of care for elderly women may be partly related to their living arrangements. Because older women are more likely than older men to live alone, they may depend more on home health care agencies to provide services for a longer period of time following an illness. Consistent with previous research, this report also found that men

receive fewer services involving ADL and IADL activities. For example, fewer elderly men than women received help with bathing or showering from home health care agencies. However, this apparent advantage of elderly men may not be the result of true functional differences between gender; it may be the consequences of the type of living arrangements. Because more men were married, they may have received help from their spouses. Therefore, sex differences for discharges from home health care must always be evaluated in relation to other factors such as living arrangement and marital status.

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## Technical notes

### Source of data

The sampling frame consisted of 8,859 home health care agencies and

hospices that were identified in the 1991 National Health Provider Inventory (NHPI) and the agency reporting system (ARS). Those agencies that opened for business before 1991 were identified through the NHPI and those agencies that opened for business after the 1991 NHPI survey and before June 30, 1992, were identified through the ARS (11). The 1991 NHPI is a comprehensive census of nursing and related care homes, residential care homes, home health care agencies, and hospices conducted periodically by the National Center for Health Statistics (7).

The sample consisted of 1,500 home health and hospice care agencies. Of these agencies, 141 refused to participate, 3 could not be located, 68 were considered out of scope because they were not providing hospice or home health care services to patients at the time of the survey, and 42 were either duplicates of other sampled agencies or had merged with another hospice or home health care agency at the time of the survey. A total of 1,246 home health and hospice care agencies participated in the survey.

The sample design for the 1992 NHHCS is a stratified three-stage probability design. Primary sampling units (PSU's) are selected at the first stage, agencies are selected at the second stage, and current patients and discharges are selected at the third stage.

The first stage consists of the 198 PSU's that were used in the 1985-94 National Health Interview Survey (NHIS), a survey of the civilian noninstitutionalized population of the United States (12). The PSU's are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU's in New England).

The second stage involved the selection of agencies within six primary strata of agencies. These strata were formed in the 1992 sampling frame on the basis of type of agency (hospices versus home health care agencies and mixed agencies (providing both types of care or unknown)), and type of PSU (self-representing (SR) versus nonself-representing (NSR), and within NSR PSU's: metropolitan statistical area

(MSA) versus non-MSA). (MSA is a metropolitan statistical area defined by the U.S. Office of Management and Budget on the basis of the 1990 Census.) Within these sampling strata, agencies were arrayed by four regions, five types of ownership, two types of certification status, and the size of the patient population currently being served by the agency. The number of agencies selected from each sampling stratum was based primarily on results of research into the optimum sample design for the 1992 NHHCS. Hospices in the NSR PSU's and home health care agencies and mixed agencies in the NSR PSU's were selected with certainty. Hospices in the self-representing PSU's and home health care agencies and mixed agencies in the MSA, nonself-representing PSU's and the self-representing PSU's were selected with probability proportional to the current patient population size (as reported in the NHPI sampling frame). A total sample of 1,500 agencies was selected—384 were hospices and the balance were home health care agencies or mixed agencies (13).

The final stage is a systematic random selection of six patients currently served by the agency and six patients discharged from care during the last complete 12-month period.

### Data collection procedures

The data collection for the NHHCS began with a letter sent to all 1,500 sampled agencies informing the administrator of the authorizing legislation, purpose, and content of the survey. Within a week to 10 days after the letter was mailed, the interviewer assigned to conduct the survey for a particular agency made telephone contact to discuss the survey and to arrange an appointment with the administrator or person designated by the administrator.

Three questionnaires and two sampling lists were used to collect the data. First, the Agency Questionnaire was completed with the administrator or designee. Then, the interviewer completed the Current Patient Sampling List (CPSL) and Discharged Patient Sampling List (DPSL). With the CPSL,

the interviewer listed all patients on the register of the agency on the evening prior to the day of the survey. The DPSL was used to list all discharges from the agency during the 12 full months prior to the month of the survey. Sampling of current patients and discharges within agencies was done by using tables showing sets of sample line numbers for each possible count of current patients and discharges in the agency. The interviewer drew a sample of up to six current patients and up to six discharges.

After the samples had been selected, the Current Patient and Discharged Patient Questionnaires were completed for each sampled person by interviewing the staff member most familiar with the care provided to the patient. The respondent was requested to refer to the medical or other records whenever necessary. No patient was interviewed directly.

### Sampling variability

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The relative standard error of an estimate is obtained by dividing

the standard error by the estimate itself. The result is expressed as a percent of the estimate. Relative standard errors for estimated length of service used are shown in table 6. Relative standard errors for other aggregate estimates may be calculated using the following general formula, where  $X$  is the aggregate of interest in thousands, and  $A$  and  $B$  are the appropriate coefficients from table I:

$$RSE(X) = A + \frac{B}{X}$$

Similarly, relative standard errors for percents  $100p$  ( $0 < p < 1$ ) may be calculated using the following general formula, where  $100p$  is the percent of interest,  $X$  is the denominator of the percent, and  $B$  is the parameter  $B$  in the formula for approximating the  $RSE(X)$ . The values for  $B$  are given in table I.

$$RSE(p) = \frac{B(1-p)}{pX}$$

The tests of significance are based on the Bonferroni multiple comparisons using the  $Z$ -test with an overall 0.05 level of significance to test all comparisons mentioned in this report. The critical value of the  $Z$  for each test was determined by the number of

variables being compared. Not all observed differences were tested, so lack of comment in the text does not mean the difference was not statistically significant.

**Table I. Parameters used to compute relative standard errors by type of estimate**

Type of estimate	Parameters	
	A	B
Home health care agencies		
Discharge . . . . .	0.001190	1310.00

### 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

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