

Trends in Medicare use of post-hospital care

by Marian Gornick and Margaret Jean Hall

The introduction of Medicare's hospital prospective payment system has raised concerns about availability of and access to needed health care services after beneficiaries are discharged from the hospital. In this article, Medicare coverage of skilled nursing facility, home health agency, and inpatient hospital

rehabilitation services is discussed and recent trends in the use of these services are explored. In addition, an overview is provided of two major studies currently sponsored by the Federal Government to examine availability and other issues related to post-hospital care.

Introduction

This article contains a discussion of skilled nursing facility (SNF), home health agency (HHA), and inpatient hospital rehabilitation benefits under Medicare. The primary focus is on coverage and use of these benefits after discharge from an acute care hospital stay.

The introduction in October 1983 of the hospital prospective payment system, or PPS (Public Law 98-21), was one of the most fundamental changes in Medicare reimbursement policy. The implementation of PPS, using diagnosis-related groups (DRG's) to pay hospitals on a predetermined rate per case rather than by costs, was followed by a drop in average length of stay, although the trend in length of stay had been downward for several years.

Unexpectedly, the hospital admission rate also declined with the introduction of the DRG system. It is likely that the trend toward the increased provision of health care on an outpatient basis, including care delivered in physicians' offices and independent centers for surgery and emergency services, as well as more stringent utilization and quality-control review programs contributed to the decrease in hospital admissions.

The continuing decline in average length of stay turned attention toward assuring that the DRG system would not have a detrimental impact on quality of care or on the health status of the Medicare population. The Health Care Financing Administration (HCFA) initiated a broad program of intramural studies as well as support for extramural grants and contracts in order to analyze the trends in access to and quality of hospital care (Health Care Financing Administration, 1988). According to study results to date, the DRG payment system has not had a detrimental impact on the quality of care received by beneficiaries in the hospital (Guterman et al., 1988; Health Care Financing Administration, 1987a).

A number of other major studies were initiated to determine patterns of use as well as availability of needed post-hospital (alternatively called "aftercare") services (Health Care Financing Administration,

1988). The practice of discharging hospital patients "quicker" is a trend that is evident particularly for the Medicare population; in the general population under age 65, the decline in length of stay was much less (Guterman et al., 1988). Although shorter hospital stays are seen as beneficial for lessening the risk of nosocomial infections and hastening recovery—even if some patients are "sicker" at time of discharge—assuring that there is access to appropriate aftercare services is vital to maintaining quality of care for Medicare beneficiaries.

Coverage and utilization patterns of SNF, HHA, and inpatient hospital rehabilitation (IHR) services under Medicare's Part A program have not been as frequently reported on as acute care hospital services have been. Although Medicare is often referred to as an acute care program, the legislative intent of SNF and HHA coverage apparently has not been generally well understood. Surveys of the aged indicate that a high proportion think that Medicare covers nursing home care (McCall, Rice, and Sangl, 1986). Additionally, the volume of complaints, up to this time, about denial of coverage seems to underscore the difficulty of understanding and interpreting Medicare coverage of SNF and HHA services.

This article contains a description of Medicare's coverage of SNF, HHA, and IHR services. A brief description of the supply of these services is also provided. The article's next focus is on identifying the kinds of hospitalized patients who subsequently use these benefits and the recent trends in post-hospital care. No attempt is made to evaluate the impact of PPS. Such an analysis can be found in Guterman et al. (1988).

The Medicare Catastrophic Coverage Act of 1988 (Public Law 100-360), which amended the Social Security Act, includes substantive changes to the SNF and HHA benefits under Medicare. The data presented in this article pertain to the experience under Medicare before the 1988 Amendments to the Social Security Act became law. The discussion on coverage and cost sharing reflects the provisions of the law that were in effect through December 31, 1988. In the final section of this article, we review the major legislative changes relevant to SNF and HHA services that will be brought about by this legislation.

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Coverage

Skilled nursing facility services

Nursing homes provide an array of nursing and rehabilitation services for patients after an acute illness as well as nursing and other care services for persons with long-term chronic conditions. Medicare's SNF benefit was specifically designed to provide only for relatively short-term subacute care needs. Until implementation of the 1988 Amendments to the Social Security Act, SNF benefits were available only to persons who were previously hospitalized for at least 3 days. The patient's condition must require daily skilled nursing or rehabilitation (physical, occupational, or speech therapy) services that, as a practical matter, can be provided only in an SNF.

Medicare coverage in an SNF is not allowed if the patient needs skilled nursing or rehabilitation services only once or twice a week or if the person does not need to be in an SNF to receive those services. Until the 1988 Amendments to the Social Security Act, Medicare covered up to 100 SNF days for qualified persons during each spell of illness. Twenty SNF days were without any cost sharing; the 21st-100th days required a cost-sharing amount per day that was one-eighth of the hospital deductible. In 1988, the inpatient hospital deductible was set at \$540. Thus, the SNF coinsurance was \$67.50 per day, an amount that was sometimes equal to, or even greater than, the full SNF charge per day.

Skilled nursing services are highly technical. Examples of patients discharged from the hospital who require technical nursing services include those who need nasogastric feedings, those who require medication by injection (other than self-administered injections for diabetes), those with new colostomies in the presence of associated complications, or those with serious decubitus ulcers. Daily rehabilitation services might be needed for a period of time by hip fracture patients who need to relearn weight bearing to ambulate or severe stroke patients with paralysis or aphasia (loss of language).

As noted earlier, Medicare's nursing home benefit is limited by the number of days of care covered and by the requirement of the need for highly skilled services. Thus, Medicare's share of total annual nursing home expenditures has constituted only about 2 percent of the total outlay for nursing home care (Waldo, Levit, and Lazenby, 1986).

Home health agency services

HHA services are covered for Medicare beneficiaries who are homebound and who require intermittent skilled nursing care or physical or speech therapy. Medicare does not pay for HHA services for patients who need daily skilled nursing care for a long and indefinite period of time.

If intermittent skilled nursing care or physical or speech therapy is needed, Medicare can also pay for

occupational therapy, part-time services of home health aides for patients who need assistance in the activities of daily living (which include walking, transferring, dressing, bathing and oral hygiene, toileting, and eating), medical social services, medical supplies, and durable medical equipment. The regulations stipulate that, when skilled nursing care or physical or speech therapy is no longer needed, Medicare can continue to pay for home health visits if occupational therapy is needed.

Medicare does not cover general household services, meal preparation, meals delivered, shopping, or other homemaker services furnished mainly to assist people in meeting personal or domestic needs. Until the 1988 Amendments to the Social Security Act take effect, Medicare does not cover drugs and biologicals.

For persons who qualify for HHA services, no prior hospitalization is required. There is no limit to the number of visits covered, nor is there any cost sharing. Patients who receive covered SNF services might qualify for HHA coverage after discharge from the nursing home. The patient's physician determines the need for home health care and must set up a plan of home health care.

Typically, patients who qualify for covered HHA benefits require professional nursing services and/or physical, occupational, or speech therapy a few times a week. A newly diagnosed diabetic might qualify for HHA services after hospitalization in order to be monitored by a nurse for proper injections of insulin and instructions in diet changes, or a patient with a heart condition may need to be monitored for blood pressure.

In a study of the national health expenditures for 1985, it was reported that an estimated 85-90 percent of all home health care furnished was for the population 65 years of age or over. The authors also noted that an analysis of annual home health agency cost reports indicates that about 50 percent of all agency costs were for services, medical equipment, and supplies provided to Medicare patients (Waldo, Levit, and Lazenby, 1986).

Inpatient hospital rehabilitation services

Rehabilitation services are designed to treat functional limitations and disability. These services are provided to restore individuals who are incapacitated by illness, congenital defects, or accident to their highest level of functional ability. The goal of comprehensive medical rehabilitation is to promote maximum levels of physical independence as well as psychological, social, economic, and personal adjustment. The rehabilitative process generally begins after the acute care phase of treatment, when the patient's medical condition has stabilized.

Rehabilitation services can be delivered in a variety of settings, depending on the needs of the patient, referral practices, and availability of services. Patients needing rehabilitation services may receive them in acute care settings during their hospital stays, in skilled nursing facilities, in long-term hospitals, from

home health agencies, or in outpatient rehabilitation departments.

Intensive rehabilitation care is also available from specialized inpatient hospital rehabilitation facilities, which can be divided into two categories: rehabilitation hospitals and "distinct-part" rehabilitation units. Rehabilitation hospitals are independent entities either within or outside of a larger medical center. Rehabilitation units are defined, distinct units within general hospitals. In this discussion, both categories will be referred to as IHR facilities.

IHR services are covered by Medicare if they are reasonable and necessary with respect to efficacy, duration, frequency, and amount. Medicare requires that it must be reasonable and necessary to furnish the care on an inpatient hospital basis rather than in a less care-intensive facility (e.g., a skilled nursing facility) or on an outpatient basis. To qualify, a Medicare patient must require an intensive multidisciplinary program of care that is not available outside a hospital. The patient must also require the following:

- Twenty-four hour availability of a physician with special training or experience in rehabilitation and frequent (every 2-3 days), direct, and medically necessary physician involvement.
- Twenty-four hour availability of a registered nurse with special training or experience in rehabilitation.
- At least 3 hours per day of physical and/or occupational therapy in addition to other required therapies or services (speech therapy, social services, psychological services, or prosthetic-orthotic services).
- Care from a multidisciplinary team, minimally including a physician, rehabilitation nurse, and therapist.
- A coordinated program of care, including team conferences held at least once every 2 weeks to determine the appropriateness of continuing care.

In a 1983 survey, it was found that about one-half of all IHR admissions were paid for by Medicare (National Association of Rehabilitation Facilities, 1985). Rehabilitation facilities (along with long-term, psychiatric, and children's hospitals) are excluded from Medicare's hospital prospective payment system. Instead of being reimbursed using the DRG system, rehabilitation and other excluded hospitals are currently reimbursed using a cost-based system of limits similar to those included in the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982 (Public Law 97-248). TEFRA essentially established a limit on operating costs per discharge, and PPS legislation mandated that the rehabilitation hospitals and units be reimbursed using 1982 costs, with an update factor equivalent to the hospital services market basket and including some limits. For a rehabilitation facility established after 1982, the base period used is the first 12-month cost-reporting period following its designation as a PPS-excluded facility.

A hospital specializing in rehabilitation must officially apply for exclusion from the PPS system as

a rehabilitation hospital. To qualify, the hospital must be primarily engaged in furnishing intensive rehabilitation services during its most recent cost-reporting period for an inpatient population of which at least 75 percent require treatment for a set of specified conditions (stroke, spinal cord injury, congenital deformity, amputation, major multiple trauma, fracture of femur, brain injury, polyarthrititis, neurological disorders, and burns). These hospitals also must have a full-time director of rehabilitation who is a physician with at least 2 years of training or experience in treating patients requiring inpatient rehabilitation services.

For each patient admitted, Medicare requires a preadmission screening. A plan of treatment must be established, reviewed, and revised as needed by a physician in consultation with other professional personnel. Medicare fiscal intermediaries and peer review organizations are responsible for approving patients' rehabilitation treatment.

Requirements for qualifying as a rehabilitation unit are the same as those for freestanding rehabilitation facilities, with the following changes and additions: The director can be half time; written admission criteria must be applied uniformly to Medicare and non-Medicare patients to discourage patient shifting between acute care and the rehabilitation unit; the unit must be a separate cost entity with separate medical and financial records; and rehabilitation beds cannot be used for acute care patients.

In a study by the American Hospital Association (AHA) reported by Sonik (1987), it was found that the vast majority of patients admitted to inpatient rehabilitation facilities come from acute care hospitals. Of patients who entered freestanding rehabilitation hospitals, 72 percent came directly from a hospital. Of patients who entered rehabilitation units, 81 percent came from hospitals, 49 percent from within the same hospital and 32 percent from other hospitals. According to other research, 80-85 percent of rehabilitation patients were admitted from acute care hospitals (Hosek et al., 1986).

According to Sonik (1987), approximately 72 percent of rehabilitation patients were discharged from inpatient rehabilitation facilities to their homes, about 12 percent to acute care hospitals, about 11 percent to nursing homes, and about 4 percent to other facilities (e.g., domiciliary care facilities); about 1 percent were discharged deceased or to an unknown destination. Hosek et al. (1987) found that 70 percent of IHR patients were discharged home, 8 percent to acute care hospitals, 17 percent to nursing homes, and 4 percent to other settings; 2 percent died.

It is not uncommon for rehabilitation care to be interrupted by a readmission to an acute care hospital with either a recurrence of the problem for which the patient originally received acute care or a new problem or complication. Little information is available about the overall course of treatment for rehabilitation patients or the extent to which it includes transfers among various sites of care.

Supply

Skilled nursing facilities

The number of SNF's certified by Medicare increased from 5,197 facilities in May 1981 to 6,972 in November 1986. In 1986, 820,199 beds were certified by Medicare, Medicaid, or both.

The availability of nursing home facilities certified as Medicare SNF, Medicaid intermediate care facility, Medicaid SNF, or both Medicare and Medicaid SNF varies substantially by geographic area. In 1985, Iowa, Kansas, Minnesota, Nebraska, South Dakota, and Wisconsin all had certified nursing beds per 1,000 aged Medicare enrollees in the range of 80-100; in contrast, Arizona, Florida, Hawaii, and Nevada had fewer than 30 certified beds per 1,000 (Health Care Financing Administration, 1987b).

Home health agencies

The number of Medicare-certified HHA's increased from 2,212 in 1972 to 5,953 in 1986. During this time period, the distribution of HHA's by type of ownership changed significantly, reflecting, in part, the fact that proprietary HHA's in States that do not have licensure laws could be reimbursed under Medicare after the enactment of the Omnibus Reconciliation Act of 1980. In 1972, the three predominant types of HHA sponsorship were government (57 percent), Visiting Nurse Association (24 percent), and hospital (10 percent). In 1986, hospital-based HHA's increased to 23 percent of the total, proprietary HHA's accounted for 32 percent, government-sponsored HHA's fell to 20 percent, and Visiting Nurse Association HHA's fell to 9 percent (Health Care Financing Administration, 1987c).

Inpatient hospital rehabilitation facilities

Total

According to AHA annual survey data for 1981-86 (American Hospital Association, 1982-87), the number of beds identified by AHA respondent hospitals as devoted to rehabilitation has grown considerably. The respondent hospitals include facilities designated as excluded under Medicare from the prospective payment system as well as those not so designated. In 1981, AHA found that there were 395 rehabilitation facilities with a total of 15,699 beds. Of these facilities, 68 were freestanding hospitals, with 37 percent of the beds, and 327 were rehabilitation units, with 63 percent of the beds. In 1981, about 5 percent of all responding AHA hospitals had a rehabilitation unit.

In 1986, AHA found that the number of rehabilitation facilities had increased to 665 and the total number of beds to 22,367. Of this total, 77 were freestanding hospitals, with 29 percent of the beds, and 588 were rehabilitation units, with 71 percent of

the beds. By this later date, 9 percent of the hospitals had established rehabilitation units. (In the next section, data are presented on the number of facilities that were officially categorized as excluded from PPS.)

The number of rehabilitation facilities varies considerably by geographic area. They tend to be concentrated in the Middle and South Atlantic, East North Central, and Pacific census divisions, where almost two-thirds of the rehabilitation units and hospitals are located (Sonik, 1987). Some areas of the country have no rehabilitation facilities (Wallace, 1988).

Prospective payment system-excluded facilities

The growth in PPS-excluded rehabilitation facilities from fiscal year 1984 to fiscal year 1987 is shown in Table 1. In 1984, after the conditions were formulated for PPS exclusion as rehabilitation hospitals, 49 rehabilitation hospitals and 308 units were classified as excluded. Since that time, the number has been growing, reaching 87 rehabilitation hospitals and 525 units by 1987. From 1984 to 1987, there was a 77.6-percent increase in the number of rehabilitation hospitals and a 70.5-percent increase in the number of units.

The increase in the number of excluded IHR facilities from fiscal year 1984 to fiscal year 1987 most likely reflects several factors. These factors include delays in applying for exclusion as an IHR facility because of uncertainty of the financial impact, delays in the Medicare certification process because of backlogs, and changes in treatment patterns after the implementation of PPS.

Later in the article, data are provided on recent trends in the use of SNF, HHA, and IHR services following an acute care hospitalization. Data are presented on the types of patients who use these services as well as changes in service use with the introduction of PPS.

Table 1
Number of PPS-excluded inpatient hospital rehabilitation facilities¹ and percent change, by type of facility: United States, fiscal years 1984-87

Type of facility	1984	1985	1986	1987	Percent change 1984-87
	Number of facilities				
Total	357	454	552	612	71.4
Rehabilitation hospital	49	68	79	87	77.6
Rehabilitation unit	308	386	473	525	70.5

¹Under the prospective payment system (PPS), the Medicare program generally pays hospitals on the basis of a prospectively determined price for each type of case or diagnosis-related group. At present, four classes of specialty hospitals—children's, psychiatric, rehabilitation, and long term—and two types of distinct-part units in general hospitals—psychiatric and rehabilitation—are eligible for exclusion from PPS.

SOURCE: Health Care Financing Administration, Health Standards and Quality Bureau: Data from the Medicare/Medicaid Automated Certification System.

Sources of data

Both the Rand Corporation and Abt Associates were funded by HCFA to use Medicare claims data for periods before and after the introduction of the DRG payment system to generate files for a variety of tabulations and analyses related to post-hospital use. The files that were developed differ in sample size, time period, and data elements included.

The Abt files were created for the 5-year period 1981-85. A random sample of 8,000 hospital discharges per year were linked to all other Medicare-paid services for the period 60 days before and 60 days following the hospital stay. Persons who died in the hospital were excluded from analyses of post-hospital use. Using these linked files, Abt created tabulations to provide detailed data year by year on the trends in post-hospital care (Schmitz, 1987).

The Rand files are based on a 20-percent sample of Medicare beneficiaries' hospital discharges for two distinct time periods, calendar year 1981 and the period beginning July 1, 1984, and ending June 30, 1985, 12 months shortly after the DRG system was implemented. The sample consisted of approximately 1.7 million hospital discharges for each time period. Hospital records were merged with subsequent SNF, HHA, and IHR records to form episodes of care. Only Part A records were merged. The Rand tabulations contain detailed data on the use of post-hospital services according to the DRG for which the patient was hospitalized. Before PPS was implemented, IHR admissions to rehabilitation facilities that were part of an acute care hospital could not be distinguished in the Medicare data system from other admissions; thus, Rand tabulations contain information on the use of IHR hospital benefits in the latter time period only (Neu and Harrison, 1988).

Data from these projects and from HCFA files are used in the discussion of recent trends in the use of SNF, HHA, and IHR services after discharge from acute care hospitals. (Tabulations developed by Abt and Rand differ somewhat because of sample size and other factors, although the results are consistent and show the same trends.) Data are also presented on mean covered charges per user for each of these types of post-hospital treatment.

The data for 1985 were affected by changes in the record format used in the Medicare Administrative System. Consequently, some unknown portion of the 1985 data are not included in the files used for this report.

Use of services

To understand the trends in the use of post-hospital SNF and HHA services, it is necessary to consider first the trends in short-stay hospital use. As shown in Table 2, the hospital admission rate for persons 65 years of age or over in 1981 was 377 admissions per 1,000 Medicare enrollees; by 1983, the admission rate had reached 393. However, in 1984, the hospital admission rate declined for the first time since the beginning of Medicare, falling to 381 admissions per 1,000; in 1985, the rate declined again to 352. Despite these declines, the hospital admission rate for persons 65 years of age or over in 1985 (352 per 1,000) was more than one-third higher than the rate of 260 per 1,000 in 1967, the first full year of Medicare.

The mean length of stay for hospitalized patients 65 years of age or over declined each year throughout the period 1981-85, falling from 10.4 days in 1981 to 8.6 days in 1985. The downward trend in mean length of stay has been a steady phenomenon since 1967, the first full year of Medicare, when hospitalizations

Table 2
Trends in short-stay hospital, skilled nursing facility (SNF), and home health agency (HHA) use by Medicare beneficiaries: United States, 1981-85

Type of facility and measure	1981	1982	1983	1984	1985	Percent change 1981-83	Percent change 1983-85
Short-stay hospital							
Admissions per 1,000 aged enrollees ¹	377	386	393	381	352	4.2	-10.4
Mean length of stay ²	10.4	10.2	9.8	8.9	8.6	-5.7	-12.2
Skilled nursing facility							
Percent hospitalized using SNF services within 60 days of discharge ³	3.2	3.0	3.2	4.2	4.6	1.0	44.2
Mean covered days per user ³	27.4	26.1	24.1	23.5	21.7	-9.8	-12.2
SNF users per 1,000 enrollees ¹	9	9	9	10	10	0	11.1
Home health agency							
Percent hospitalized using HHA services within 60 days of discharge ³	9.1	10.9	14.1	16.6	17.9	55.0	27.0
Mean covered visits per user within 60 days of discharge ³	11.6	13.3	13.4	14.5	14.2	15.5	6.0
HHA users per 1,000 enrollees ¹	35	40	45	50	51	28.6	13.3

¹Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Office of Statistics and Data Management.

²Health Care Financing Administration, Office of Research and Demonstrations: Data from the Division of Program Studies.

³(Schmitz, 1987).

averaged nearly 14 days. The decline in the mean length of stay in 1984, however, was substantially greater than that in previous years.

Skilled nursing facility services

According to data developed by Abt Associates, in 1981, 3.2 percent of hospitalized Medicare enrollees used covered SNF services within 60 days of discharge. From 1983 to 1985, the proportion increased from 3.2 percent to 4.6 percent. Some of the increase reflects the fact that the hospital admission rate declined selectively. For example, at the same time that the DRG system was implemented, in-hospital cataract surgeries declined. Cataract patients rarely use covered SNF care. Thus, the hospitalized population after the implementation of the DRG system most likely had a higher concentration of patients who would qualify for Medicare-covered SNF services.

Another measure of SNF utilization—SNF users per 1,000 Medicare enrollees—is useful to consider when the hospitalized population has changed. Although the number of SNF users per 1,000 Medicare enrollees increased during this period, the increase was only about 11 percent, rising from 9 SNF users per 1,000 enrollees in 1981 to 10 per 1,000 in 1985. More insight into the change in the use of SNF services is provided later in tables containing data on SNF use according to the DRG of the prior hospitalization.

The mean number of covered SNF days per user declined during this period, from 27.4 days in 1981 to 21.7 days in 1985 (Table 2). The decline in mean number of covered SNF days per user reflects both an increase in short covered SNF stays and a decline in relatively long covered SNF stays. According to unpublished tabulations of Medicare administrative data, from 1983 to 1985, SNF stays with 7 or fewer covered days increased more than 56 percent and SNF stays with 31 or more covered days decreased 18 percent.

Home health agency services

The percent of hospitalized patients who used covered HHA services within 60 days of hospital discharge rose substantially during the period 1981-85. In 1981, 9.1 percent of the hospitalized population used HHA services within 60 days of discharge from the hospital; the corresponding figure for 1985 was 17.9 percent. The increase of 55.0 percent in the period 1981-83 (before the introduction of the hospital DRG system) was substantially greater than the increase of 27.0 percent in the period 1983-85.

Medicare administrative data, which include all HHA users whether or not they were hospitalized, also indicate that overall HHA use increased during this period, rising from 35 users per 1,000 enrollees in 1981 to 51 users per 1,000 in 1985. The increase was again greater in the period 1981-83 than in the period 1983-85, indicating that the trend of increased use of

HHA services does not reflect solely the introduction of the DRG system.

The relatively high use of HHA services per 1,000 enrollees compared with SNF use is shown in Figure 1. The relatively small change in the rate of SNF use compared with the rate of HHA use during the period 1981-86 is also shown.

The trends in Figure 1 are reflected, in part, in Table 3, in which are shown Medicare inpatient hospital, SNF, and HHA payments for fiscal years 1981 and 1986. Total Medicare benefit payments increased from \$41.2 billion to \$74.0 billion, or nearly 80 percent. The increase in inpatient hospital benefits was 65.9 percent. SNF benefit payments rose at a much slower rate, 32.7 percent, and HHA payments

Figure 1
Home health agency and skilled nursing facility use by Medicare enrollees: United States, 1981-86

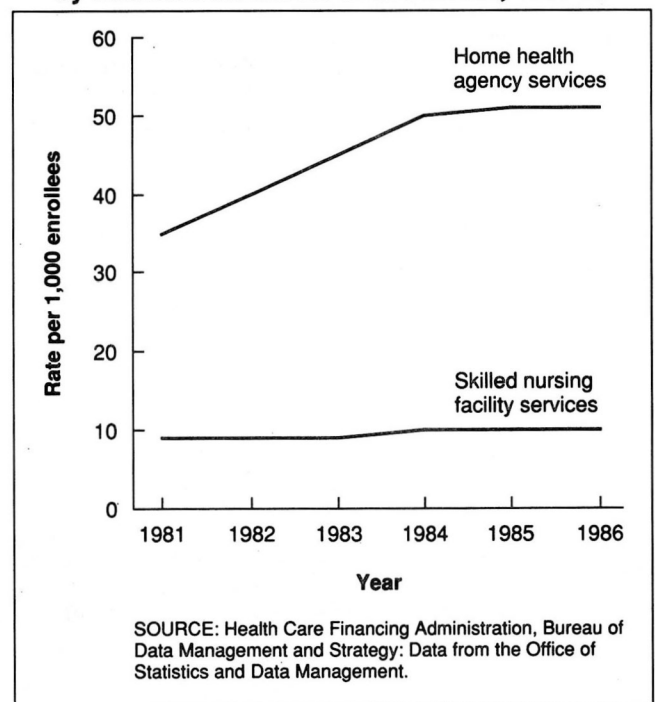


Table 3
Total Medicare benefit payments and payments for Part A services, by type of service: United States, fiscal years 1981 and 1986

Type of service	Medicare benefit payments		Percent change 1981-86
	1981	1986	
	Amount in millions		
Total Medicare benefit payments	\$41,239	\$74,036	79.5
Part A services:			
Inpatient hospital	27,751	46,042	65.9
Skilled nursing facility	429	568	32.7
Home health agency	914	2,266	147.9

SOURCE: Health Care Financing Administration, Office of the Actuary; Data from the Office of Medicare Cost Estimates.

increased 147.9 percent. The relatively small increase in benefit payments for SNF services reflects, in part, the high cost sharing required by beneficiaries for the 21st-100th SNF days in a benefit period.

Types of patients

From the linked file developed at Rand, hospital DRG's were ranked according to the percentage of total charges for SNF care. In 1984-85, three DRG's accounted for nearly 40 percent of total covered SNF charges. These were DRG 14 (stroke), accounting for 16.6 percent of total covered SNF charges; DRG 210 (hip and femur procedures), accounting for 13.5 percent of SNF charges; and DRG 209 (major joint and limb reattachment procedures), accounting for 8.4 percent of SNF charges (Neu and Harrison, 1988).

When hospital DRG's were ranked according to the percentage of total HHA charges within 60 days of hospital discharge, DRG 14 (stroke) and DRG 209 (major joint and limb reattachment procedures) ranked first and third; these DRG's accounted for 6.7 percent and 4.5 percent of total covered HHA charges, respectively. The second leading condition

was DRG 127 (heart failure and shock), which accounted for 5.8 percent of total covered HHA charges.

In Table 4 are shown 19 DRG's that were among those DRG's with the highest fraction of hospitalized patients who subsequently used SNF or HHA services. DRG 210 (hip and femur procedures) was the most likely to result in SNF utilization; in 1984-85, nearly one-third of hospitalizations for this DRG resulted in SNF admissions. DRG 209 (major joint and limb reattachment procedures) and DRG 236 (fractures of hip and pelvis) were the next most important DRG's with regard to subsequent SNF use. These same three DRG's were also likely to be followed by HHA care after discharge from the hospital. Because some of the same patients use both SNF and HHA services after discharge from the hospital, the percents shown for SNF's and HHA's are not additive. (Neu and Harrison, 1988, found that 17.4 percent of SNF patients in 1984-85 subsequently used home health services.) As might be expected from the data in Tables 2 and 3, the increase in the percent using post-hospital care from 1981 to 1984-85 was greater for HHA services than for SNF services.

Table 4

Percent of hospital discharges using covered skilled nursing facility (SNF) and home health agency (HHA) services within 60 days of hospital discharge for selected diagnosis-related groups: United States, 1981 and 1984-85

Diagnosis-related group	Description	Percent using SNF services		Change in percent 1981 to 1984-85	Percent using HHA services		Change in percent 1981 to 1984-85
		1981	1984-85		1981	1984-85	
14	Specific cerebrovascular disorders except transient ischemic attack	11.9	13.3	1.4	16.4	21.7	5.3
82	Respiratory neoplasms	2.5	3.6	1.1	11.0	15.5	4.5
87	Pulmonary edema and respiratory failure	2.1	2.9	0.8	10.2	16.2	6.0
88	Chronic obstructive pulmonary disease	1.4	1.5	0.1	10.1	16.1	6.0
89	Simple pneumonia and pleurisy, age 70 and over and/or complications	2.9	3.5	0.6	7.6	12.1	4.5
127	Heart failure and shock	2.2	2.1	-0.1	11.9	17.8	5.9
130	Peripheral vascular disorders, age 70 and over and/or complications	2.7	2.7	0.0	10.1	14.8	4.7
148	Major large and small bowel procedures, age 70 and over and/or complications	4.1	4.2	0.1	17.6	22.0	4.4
174	Gastrointestinal hemorrhage, age 70 and over and/or complications	2.1	2.2	0.1	7.1	10.8	3.7
182	Esophagitis, gastroenteritis, and miscellaneous digestive disorders, age 70 and over and/or complications	0.8	1.0	0.2	5.4	9.8	4.4
209	Major joint and limb reattachment procedures	14.0	15.7	1.7	21.7	32.0	10.3
210	Hip and femur procedures, except major joint, age 70 and over and/or complications	28.4	31.1	2.7	21.1	31.5	10.4
236	Fractures of hip and pelvis	14.9	14.8	-0.1	17.6	25.2	7.6
239	Pathological fractures and musculoskeletal and connective tissue malignancy	4.5	5.8	1.3	15.4	23.7	8.3
243	Medical back problems	1.8	2.1	0.3	7.3	12.3	5.0
294	Diabetes, age 36 and over	2.0	2.2	0.2	14.5	21.7	7.2
296	Nutritional and miscellaneous metabolic disorders, age 70 and over and/or complications	4.4	4.7	0.3	12.9	18.3	5.4
320	Kidney and urinary tract infections, age 70 and over and/or complications	3.3	4.6	1.3	12.2	17.7	5.5
468	Unrelated operating room procedures	3.6	4.6	1.0	10.7	16.6	5.9

SOURCE: (Neu and Harrison, 1988).

Table 4 and subsequent tables in which patterns of post-hospital utilization categorized by DRG's are compared require a cautionary note. The recording of diagnoses (which determines the DRG) is known to have changed with the implementation of the hospital prospective payment system. Thus, changes over time in the use of post-hospital care by DRG may reflect, in part, coding changes.

Seven additional DRG's that resulted in substantial fractions of hospitalized patients who subsequently used covered SNF services are shown in Table 5, and five additional DRG's that resulted in substantial fractions of hospitalized patients who subsequently used HHA services are shown in Table 6. Evidently, the kinds of patients who, if they require post-hospital care, are likely to need skilled nursing or rehabilitation services on a daily basis are reflected in Table 5, and the kinds of patients who are more likely to be ambulatory and more likely to require part-time skilled nursing or monitoring are shown in Table 6. The increase over time in the percent of patients using post-hospital care tended to be greater for HHA services than for SNF services, a finding similar to the results shown in Table 4.

Geographic variation

The number of Medicare-covered SNF admissions and the average number of covered days vary widely by geographic area. In 1985, Medicare-covered SNF admissions were lowest in the Northeast (9 SNF admissions per 1,000 enrollees) and South (also 9 per 1,000) and highest in the North Central region (14 per 1,000) and the West (17 per 1,000). Across States, Medicare-covered SNF admissions ranged from a low of 4 admissions per 1,000 enrollees (averaging 28 covered days per stay) in Massachusetts to a high of 25 admissions per 1,000 (averaging 13 covered days per stay) in Iowa (Health Care Financing Administration, 1986).

Similarly, the number of persons who use HHA services and the average number of visits per year vary considerably by geographic area. In contrast to SNF use, HHA use in 1985 was highest in the Northeast (61 persons served per 1,000 enrollees) and South (52 per 1,000) and lowest in the North Central region (45 per 1,000) and West (48 per 1,000). Across States, Medicare use of HHA services ranged from a low of 26 persons served per 1,000 enrollees

Table 5
Percent of hospital discharges using covered skilled nursing facility (SNF) services within 60 days of hospital discharge for selected diagnosis-related groups: United States, 1981 and 1984-85

Diagnosis-related group	Description	Percent using SNF services		Change in percent 1981 to 1984-85
		1981	1984-85	
1	Craniotomy age 18 and over except for trauma	9.5	9.5	0.0
79	Respiratory infections and inflammations, age 70 and over and/or complications	5.4	8.4	3.0
113	Amputation for circulatory disorders except upper limb and toe	16.7	16.0	-0.7
253	Fractures, sprains, strains, and dislocations of upper arm, lower leg except foot, age 70 and over and/or complications	6.5	7.3	0.8
263	Skin grafts for skin ulcer or cellulitis, age 70 and over	11.3	15.6	4.3
271	Skin ulcers	9.6	10.8	1.2
416	Septicemia, age 18 and over	5.3	6.2	0.9

SOURCE: (Neu and Harrison, 1988).

Table 6
Percent of hospital discharges using covered home health agency (HHA) services within 60 days of hospital discharge for selected diagnosis-related groups: United States, 1981 and 1984-85

Diagnosis-related group	Description	Percent using HHA services		Change in percent 1981 to 1984-85
		1981	1984-85	
15	Transient ischemic attack and precerebral occlusions	8.0	12.0	4.0
96	Bronchitis and asthma, age 70 and over and/or complications	7.3	11.8	4.5
121	Circulatory disorders with acute myocardial infarction and cardiovascular complications, discharged alive	—	17.6	—
138	Cardiac arrhythmia and conduction disorders, age 70 and over and/or complications	6.9	10.3	3.4
140	Angina pectoris	5.3	8.3	3.0

SOURCE: (Neu and Harrison, 1988).

(averaging 16 visits per user) in South Dakota to a high of 87 persons served per 1,000 enrollees (averaging 43 visits per user) in Mississippi (Health Care Financing Administration, 1987d).

Inpatient hospital rehabilitation services

Information on the number of Medicare discharges from inpatient rehabilitation hospitals and units and Medicare reimbursements for 1985 and 1986 is provided in Table 7. The number of discharges rose from 68,920 to 89,020, a 29-percent increase. Total Medicare reimbursements for these services were \$479.4 million in 1985 and \$657.2 million in 1986. These increases most likely reflect, in large part, the inclusion of Medicare discharges from rehabilitation facilities for beneficiaries in Massachusetts and New York. These two States became subject to the hospital prospective payment system in late 1985 and 1986; previously, their rehabilitation patients would have been counted among the discharges from other facilities, e.g., acute care hospitals or chronic care hospitals.

According to data tabulated by the Rand Corporation, stroke is an especially important condition for IHR care, accounting for 43.6 percent of all Medicare-covered IHR charges. The most important DRG's, based on the fraction of Medicare hospitalized patients who received IHR services within 60 days of discharge from the hospital, are listed in Table 8. Although the list differs from the SNF and HHA data presented earlier, it is notable that DRG 14 (stroke), DRG 209 (major joint and limb reattachment procedures), and DRG 210 (hip and femur procedures) are important DRG's in all three modes of care.

Differences in post-hospital care use

In the data for 1984-85 from the Rand tabulations (Table 9), a contrast can be seen in the use of covered

post-hospital IHR, SNF, and HHA services. Of all Medicare acute care hospital discharges, 0.6 percent used IHR care within 60 days of their hospitalization. The average Medicare-covered stay in an IHR facility was 23.2 days, and the average charge per user was \$10,489, or \$452 per day. In comparison, the average

Table 8

Percent of hospital discharges using inpatient hospital rehabilitation (IHR) services within 60 days of hospital discharge for selected diagnosis-related groups: United States, 1984-85

Diagnosis-related group	Description	Percent using IHR services
1	Craniotomy, age 18 and over except for trauma	8.0
5	Extracranial vascular procedures	1.3
12	Degenerative nervous system disorders	2.4
14	Specific cerebrovascular disorders except transient ischemic attack	6.8
15	Transient ischemic attack and precerebral occlusions	0.4
110	Major reconstructive vascular procedures, age 70 and over and/or complications	0.9
113	Amputation for circulatory disorders except upper limb and toe	4.3
209	Major joint and limb reattachment procedures	2.4
210	Hip and femur procedures, except major joint, age 70 and over and/or complications	2.9
214	Back and neck procedures, age 70 and over and/or complications	3.4
285	Amputations for endocrine, nutritional, and metabolic disorders	5.5

SOURCE: (Neu and Harrison, 1988).

Table 7

Number of Medicare discharges and reimbursements for services in inpatient rehabilitation hospitals and units: United States, 1985 and 1986

Type of facility	1985	1986	1985	1986
	Number of discharges		Reimbursements in millions	
Total	68,920	89,020	\$479.4	\$657.2
Rehabilitation hospital	21,300	29,800	130.0	211.7
Rehabilitation unit	47,620	59,220	349.4	445.5

NOTE: Much of the increase from 1985 to 1986 in discharges and reimbursements most likely reflects the inclusion of Massachusetts and New York in the hospital prospective payment system for the first time during this period.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations: Data from the Division of Program Studies.

Table 9

Post-hospital use of inpatient hospital rehabilitation (IHR), skilled nursing facility (SNF), and home health agency (HHA) services by Medicare beneficiaries: United States, 1984-85

Measure	IHR services	SNF services	HHA services
Percent hospitalized using services within 60 days of discharge	0.6	3.1	13.3
Mean covered days or visits per user within 60 days of discharge	23.2 days	25.1 days	14.1 visits
Mean covered charge per day or visit	\$452 per day	\$114 per day	\$54 per visit
Mean covered charge per user	\$10,489	\$2,873	\$756

SOURCE: (Neu and Harrison, 1988).

Medicare-covered hospital stay for all discharges was 7.8 days, and the hospital charge per user was \$4,902, or \$627 per day. Thus, IHR stays tend to be much longer and costlier than the average acute care stay.

Compared with IHR care, about five times as many Medicare hospital discharges used SNF care (3.1 percent), with an average of 25.1 covered days of care per user. The average covered charge per SNF stay was \$2,873, or \$114 per day. About 13.3 percent of Medicare hospital discharges used home health care during this period. The average number of home health visits covered under Medicare was 14.1; the average covered charge per user was \$756, or \$54 per visit.

The large differences in mean covered charge per user across these three sites of post-acute care no doubt reflect, in part, differences in case mix. To date, no in-depth study has been completed in which the characteristics (other than broad diagnostic categories) of patients treated in each of these sites and the outcomes of their care are compared. In the final section of this article, a major study is described that was designed to address these issues.

Discussion and future directions

Most of the research on post-acute care that has been conducted to date has been focused on the utilization and costs of specific types of care. Neither the availability and adequacy of care after discharge from the hospital nor the effectiveness of the care delivered have been examined. Particularly with the incentives of the DRG system, there has been a growing interest in examining episodes of patient care in more depth, including examining the types of services delivered in various settings and the outcomes of that care. In addition, there is considerable interest in comparing the cost effectiveness of services delivered in the various settings.

The issue of availability and adequacy of post-hospital care services is especially important because of the sociodemographic characteristics of the elderly. After the death or institutionalization of a spouse, many of the elderly live alone. Individuals living alone are likely to face special care needs after discharge from the hospital. The rate of use of Medicare-covered post-acute care services rises substantially as age increases, no doubt reflecting increased morbidity and frailty with advancing years as well as the increased likelihood of living alone because of the death of a spouse.

In an interim study submitted to HCFA (Forgy and Williams, 1987) in which patients' severity of illness at the time of hospital discharge was analyzed, the authors indicate that patient severity was greater, on average, in 1985 than in 1982. Using a severity-of-illness classification system known as MEDISGROUPS, the authors compared 1982 and 1985 data. They found that a higher proportion of patients in 1985 than in 1982 were discharged at level 1; this means that the patients had not recuperated enough to reach level 0, the lowest level of severity in

that system. This may not be detrimental to the patient. However, availability and adequacy of post-hospital services are clearly necessary in an era of shorter hospitalizations and increased severity of illness at the time of discharge.

Another issue is that, among the elderly, acute illness often strikes those who are already facing chronic illness. Chronically ill or disabled elderly who reside in the community and who suffer an acute care episode are likely to have greater care needs than other discharges after they leave the hospital and return home.

HCFA and the Office of the Assistant Secretary for Planning and Evaluation of the Department of Health and Human Services have under way two major studies that focus on some of these issues (Health Care Financing Administration, 1988). The first is a pilot study to design and test methods for a national study on the availability and adequacy of post-hospital care. In the study, procedures for identifying patients at high risk of experiencing difficulties in obtaining post-hospital care and at risk of adverse outcomes are being developed and tested. The pilot study is focused on elderly patients discharged to the community (to home health care or self-care) rather than to institutions. Data will be gathered on all nursing, rehabilitation, and personal care services provided by formal caregivers (both those covered by Medicare and those not covered) and informal caregivers. These are the types of care most likely to be important in the immediate post-discharge period and most likely to be affected by the shorter lengths of stay associated with the DRG payment system. This pilot study contract was awarded to Systems Sciences, Inc., with Mathematica Policy Research as the subcontractor. It is expected to be completed by January 1989.

HCFA and the Office of the Assistant Secretary for Planning and Evaluation are also funding a 3-year cooperative agreement project awarded to the University of Minnesota to study the course and outcomes of Medicare- and non-Medicare-covered post-acute care received in the home, in skilled nursing facilities, and in inpatient hospital rehabilitation facilities. Patients with five types of conditions will be studied: stroke, congestive heart failure, chronic obstructive pulmonary disease, hip fractures, and hip/joint procedures. Included among the questions to be addressed in this study are the following. What factors influence where elderly patients go after they leave the hospital, that is, as they move from one care setting to another? What patterns can we identify in these complex transitions? What factors are associated with the kind and amount of post-acute care that patients receive? How well do patients function and how independently do they live at 6 weeks and 6 months after hospitalization? What are the determining factors for how well they function? Data, including clinical severity and functional status, will be gathered immediately prior to patient discharge from the acute care hospital, then again at 6 weeks and 6 months after discharge.

Medicare patient bill files linked across acute care and the three settings of post-acute care under study will also be analyzed for this project as part of a subcontract to the Rand Corporation. Results are expected in early 1990.

In these major studies, some of the issues that have been raised by the introduction of the DRG system will be addressed. The problems that some beneficiaries encounter after discharge from the hospital may be amenable to changes in existing mechanisms or to better coordination among Federal, State, and local programs as well as community-based initiatives that focus on at-risk populations. The appropriate policy changes clearly depend on understanding the problems being encountered and the experience of the Medicare population in an ever-changing environment.

Availability and use of post-acute care services will no doubt be influenced by the recent passage of the Medicare Catastrophic Coverage Act of 1988. This legislation made a number of important changes in the provisions affecting skilled nursing facility and home health care. With regard to SNF care, the requirement for a prior 3-day hospital stay was removed. The number of covered SNF days was changed from 100 days per spell of illness to a total of 150 days per year. The coinsurance provisions for SNF care were altered. Prior to the amendment, 20 SNF days were provided without any cost sharing; for the 21st to 100th days, a cost-sharing amount equaling 12.5 percent of the hospital deductible was required per day. The new legislation requires coinsurance equaling 20 percent of the national SNF average per diem costs for the first 8 days of SNF care in a year. These changes in SNF services become effective on January 1, 1989.

For home health care, the new legislation mandates that the definition of skilled nursing care be expanded so that "daily" care can be provided for up to 38 consecutive days in any given period, instead of the previous widely used interpretation of 21 days. Intermittent care will be available for up to 6 days a week for qualifying persons, instead of the 4 days per week generally authorized previous to the 1988 Amendments to the Social Security Act. These provisions for HHA services take effect on January 1, 1990.

At present, it is difficult to predict the effects and magnitude of these changes on future SNF and HHA utilization and costs. Some increases are expected in both of these services. It will be important to assess the impact of these new provisions in the law, especially as they relate to the availability and use of post-hospital care.

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