

Health Care Financing Trends

Geographic variations in Medicare utilization of short-stay hospital services, 1981-88

by Winston O. Edwards and David A. Gibson

The change in Federal fiscal year 1984 from cost-based reimbursement to prospective payment at a fixed price for a known and defined product—the hospital stay—represents a fundamental change in the role of the Medicare program within the health care delivery system. In this article, national and selected geographic trends in Medicare short-stay hospital inpatient discharges since 1981 are presented, and they show the impact of the implementation of the prospective payment system.

Data sources and limitations

The Health Care Financing Administration (HCFA) maintains extensive data associated with the utilization of inpatient hospital services covered by the Medicare Part A (hospital insurance) program. These data include:

- Bills that are submitted by hospitals to fiscal intermediaries and are processed and forwarded to HCFA's central office.
- Stay records that are prepared in the central office, using bills, costs reports, and other data sources.
- Hospital cost reports.

The various data sources are used for a variety of program management and evaluation initiatives. The data presented in this article are abstracted from Medicare short-stay hospital inpatient discharge bills submitted through July 1989.

Several caveats need to be considered when one is using Medicare administrative data to draw inferences about utilization:

Completion of the data files—For a stay to be covered and reimbursed by the program, it is not imperative that a bill record ultimately come into the central office. Although HCFA makes considerable effort to ensure that bill records prepared by our fiscal agents are forwarded to HCFA's central record system, evidence exists that records are not always sent. The problem of missing data obviously affects conclusions about trends and geographical variation. Two program and administrative initiatives begun during the time covered in this article also affect the completion of the data files. The first is the introduction of the prospective payment system (PPS) for short-stay hospitals beginning with provider fiscal year 1984 (starting October 1, 1983). This new payment mechanism changed the incentives for utilization of services. As with any new procedure or process, some fiscal intermediaries had difficulty sending in bill records correctly. However, we believe the level of nonreporting

for 1984 is relatively small. A second initiative was the introduction of a new bill record format. Lagging slightly behind the implementation of PPS, HCFA introduced a new bill record format designed to contain all the information mandated by the new institutional billing form—the Uniform Bill (UB-82 or HCFA 1450). The new billing record format (UNIBILL) replaced the older patient billing (PATBILL) record format. Some fiscal intermediaries experienced reporting problems when converting their systems. The system conversion during fiscal year 1985 resulted in incomplete submission of discharge bills to HCFA. Therefore, we have made adjustments to reflect a more accurate estimate of total Medicare discharges for that year based on admission notices sent separately from discharge bills for the year.

Use of discharge bills—Utilization estimates based on discharge bills instead of stay records—for example, the Medicare provider analysis and review (MEDPAR) stay record file—may differ because of different methods of grouping data. For example, those stays that span a hospital's transition into PPS may result in two separate discharge bills, one created for the cost-based portion of the stay and one for the PPS-reimbursed portion of the stay. This tends to artificially reduce the average length of stay slightly and increase discharge rates. However, neither total number of days of care nor rates per 1,000 enrollees are affected.

Measures of utilization—Estimates prepared for this article may differ from other reports because definitions of utilization measures may vary. For example, both covered and noncovered (by Medicare) stays are included. In addition, both covered and noncovered days are used.

Changes in classification of providers—With the introduction of PPS in fiscal year 1984, a number of Medicare short-stay hospitals were reclassified as nonshort-stay hospitals. For example, psychiatric, rehabilitation, pediatric, and alcohol/drug short-stay hospitals were reassigned nonshort-stay provider numbers, primarily for payment purposes. Bills for hospitals with nonshort-stay provider numbers are not included in the trends shown. In addition, some hospitals with nonshort-stay numbers, or which had been reassigned nonshort-stay numbers, were later reclassified as short-stay (for example, alcohol/drug hospitals).

Geographic area covered—Only providers in the United States (50 States and the District of Columbia) are covered; discharge bills for providers in the outlying territories (Puerto Rico, Virgin Islands, American Samoa, and Guam) are excluded.

Growth in health maintenance organizations—Since the passage of the Tax Equity and Fiscal Responsibility Act (TEFRA), the number of persons enrolled in health maintenance organizations (HMOs) has grown rapidly; more than 1 million persons are now covered by TEFRA risk HMOs. HCFA does not always receive discharge bills in cases in which an HMO has the responsibility for payment. To the extent that such no-payment bills are missing from the data, the trends are affected. It is

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Table 1
Number of Medicare hospital insurance enrollees and annual percent change, by census region and division: United States, July 1, 1981-88

Geographic area	1981	1982	1983	1984	1985	1986	1987	1988
	Enrollees in thousands							
United States	27,991	28,461	28,968	29,367	29,945	30,558	31,181	31,732
Census region								
Northeast	6,629	6,713	6,796	6,844	6,941	7,023	7,109	7,171
North Central	7,358	7,453	7,566	7,640	7,746	7,872	8,001	8,108
South	9,248	9,434	9,624	9,789	10,024	10,273	10,526	10,766
West	4,729	4,837	4,961	5,074	5,213	5,371	5,526	5,664
Census division								
New England	1,653	1,680	1,707	1,725	1,751	1,778	1,803	1,823
Mid Atlantic	4,976	5,033	5,089	5,119	5,191	5,244	5,305	5,348
East North Central	4,982	5,053	5,140	5,197	5,278	5,373	5,469	5,551
West North Central	2,377	2,400	2,426	2,443	2,468	2,499	2,532	2,557
South Atlantic	4,757	4,879	5,002	5,116	5,261	5,412	5,565	5,710
East South Central	1,847	1,875	1,901	1,921	1,954	1,989	2,025	2,058
West South Central	2,644	2,679	2,721	2,752	2,809	2,872	2,936	2,998
Mountain	1,183	1,221	1,265	1,302	1,348	1,400	1,453	1,503
Pacific	3,546	3,616	3,696	3,772	3,865	3,971	4,074	4,161
	Annual percent change							
United States	—	1.7	1.8	1.4	2.0	2.0	2.0	1.8
Census region								
Northeast	—	1.3	1.2	0.7	1.4	1.2	1.2	0.9
North Central	—	1.3	1.5	1.0	1.4	1.6	1.6	1.3
South	—	2.0	2.0	1.7	2.4	2.5	2.5	2.3
West	—	2.3	2.6	2.3	2.7	3.0	2.9	2.5
Census division								
New England	—	1.6	1.6	1.1	1.5	1.6	1.4	1.1
Mid Atlantic	—	1.1	1.1	0.6	1.4	1.0	1.2	0.8
East North Central	—	1.4	1.7	1.1	1.6	1.8	1.8	1.5
West North Central	—	1.0	1.1	0.7	1.0	1.3	1.3	1.0
South Atlantic	—	2.6	2.5	2.3	2.9	2.9	2.8	2.6
East South Central	—	1.5	1.4	1.1	1.7	1.8	1.8	1.6
West South Central	—	1.3	1.6	1.1	2.1	2.3	2.2	2.1
Mountain	—	3.2	3.6	3.0	3.5	3.9	3.8	3.5
Pacific	—	2.0	2.2	2.1	2.5	2.7	2.6	2.1

SOURCE: Health Care Financing Administration, Bureau of Management and Strategy: Data from the Medicare Decision Support System.

known that risk HMO enrollees are not uniformly spread across the United States. Therefore, the geographic distribution is affected as well.

Period of study—The data in this article are grouped by the discharge date and by the Federal fiscal year, which extends from October through September. For example, fiscal year 1984 covers October 1, 1983-September 30, 1984.

Basic data and annual percent changes for Medicare hospital insurance enrollees during the period 1981-88 are presented by geographic area in the following categories: number of enrollees (Table 1); discharge rates (Table 2); average length of stay (Table 3); and days of care rate (Table 4).

General findings

Discharges

- Short-stay hospital discharges continued to increase during the period 1981-83 as they had done since the program began, reaching 11.6 million for the United States in 1983.

- The growth in aggregate discharge levels in the United States was actually accelerating in 1983 (4.8 percent in 1983 versus 3.7 percent in 1982).
- The growth in discharges, however, was not uniform across the Nation. The number of discharges in the South was growing at rates over 100-percent higher (for 1982) and over 50-percent higher (for 1983) than the lowest growth area, the West.
- Discharges decreased in 1984 for the first time since the beginning of the program and continued to decline for the next 3 years, reaching just over 10 million in 1987. The trend was reversed in 1988. The pattern was not uniform across census regions. The North Central region consistently had the largest or next largest decrease from 1984 to 1987 and the most modest increase in 1988. The decrease in discharges after fiscal year 1983 appears to be related to the implementation of PPS in fiscal year 1984 and to policies implemented in 1985 encouraging ambulatory surgery.
- Discharge rates per 1,000 hospital insurance enrollees, which had been increasing through 1983, declined from 1984 to 1987 and leveled off in 1988. In 1983, there was almost a 25-percent variation in discharge rates

Table 2

Discharge rates for Medicare hospital insurance enrollees, and annual percent change by census region and division: United States, fiscal years 1981-88

Geographic area	1981	1982	1983	1984	1985	1986	1987	1988
	Discharges per 1,000 enrollees							
United States	381	388	400	385	354	334	322	322
Census region								
Northeast	335	343	357	358	340	322	312	315
North Central	395	405	416	393	361	339	324	321
South	417	427	441	421	381	358	346	347
West	353	352	355	342	313	296	289	288
Census division								
New England	341	349	361	359	335	313	301	300
Mid Atlantic	333	342	355	357	341	325	316	320
East North Central	377	387	402	384	356	336	324	325
West North Central	433	444	445	412	377	345	325	313
South Atlantic	384	393	406	387	354	330	320	320
East South Central	459	475	493	469	438	424	409	405
West South Central	448	455	469	452	393	365	353	358
Mountain	369	372	371	350	323	308	296	296
Pacific	347	345	350	339	310	292	286	285
	Annual percent change							
United States	—	1.8	3.1	-3.8	-8.1	-5.6	-3.6	0.0
Census region								
Northeast	—	2.4	4.1	0.3	-5.0	-5.3	-3.1	1.0
North Central	—	2.5	2.7	-5.5	-8.1	-6.1	-4.4	-0.9
South	—	2.4	3.3	-4.5	-9.5	-6.0	-3.4	0.3
West	—	-0.3	0.9	-3.7	-8.5	-5.4	-2.4	-0.3
Census division								
New England	—	2.3	3.4	-0.6	-6.7	-6.6	-3.8	-0.3
Mid Atlantic	—	2.7	3.8	0.6	-4.5	-4.7	-2.8	1.3
East North Central	—	2.7	3.9	-4.5	-7.3	-5.6	-3.6	0.3
West North Central	—	2.5	0.2	-7.4	-9.5	-7.5	-5.8	-3.7
South Atlantic	—	2.3	3.3	-4.7	-8.5	-6.8	-3.0	0.0
East South Central	—	3.5	3.8	-4.9	-6.6	-3.2	-3.5	-1.0
West South Central	—	1.6	3.1	-3.6	-13.1	-7.1	-3.3	1.4
Mountain	—	0.8	-0.3	-5.7	-7.7	-4.6	-3.9	0.0
Pacific	—	-0.6	1.4	-3.1	-8.6	-5.8	-2.1	-0.3

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Medicare Decision Support System.

between the region with the highest rate (the South) and the one with the lowest (the West).

- All regions except the Northeast had a lower rate in 1984 than in 1983. (The Northeast contained four States waived from participation in PPS—Maryland, Massachusetts, New Jersey, and New York.)
- All regions had decreasing rates for 1985-87. The U.S. rate was essentially the same in 1988 as in 1987, with two regions increasing and two regions decreasing.

Average length of stay

- Average lengths of stay decreased across all regions from 1981 to 1985, with the largest decreases in 1984, the transition year of PPS implementation, and the second largest decrease in 1985, the first full year of PPS implementation for the original nonwaiver States.
- In 1986, average lengths of stay increased in all regions except the Northeast, where Massachusetts and New York made the transition into PPS.
- Average length of stay increased across all regions in 1987.

Days of care

- Days of care continued to increase from 1981 to 1983, reaching a high of 116 million. However, they did not grow as fast as discharges, primarily because length of stay was decreasing during the same period. The West showed negligible growth in days of care, while the South grew almost 3 percent each year.
- Days of care dropped precipitously in 1984 to 104 million and reached a low of 89 million in 1986. After modest growth in 1987, the levels began to climb again in 1988.
- Only the North Central region has shown decreases in days of care every year since 1984, (but the previous caveat on the growth of HMOs should be taken into account).
- Standardized for the growth in the population, days of care grew more modestly, only 0.4 percent in 1982, with decreases every year since, except in 1988.
- Only the West showed a decrease in its rate every year since 1982.
- The largest drop in the rate per 1,000 enrollees was in 1985, followed by 1984.

Table 3

Average length of stay for Medicare hospital insurance enrollees and annual percent change, by census region and division: United States, fiscal years 1981-88

Geographic area	1981	1982	1983	1984	1985	1986	1987	1988
	Average number of days							
United States	10.5	10.3	10.0	9.2	8.7	8.7	8.9	9.0
Census region								
Northeast	13.0	12.8	12.4	11.7	11.1	10.9	11.0	11.3
North Central	10.8	10.6	10.2	9.0	8.4	8.5	8.6	8.5
South	9.6	9.5	9.3	8.5	8.1	8.3	8.5	8.6
West	8.7	8.5	8.2	7.5	7.2	7.3	7.4	7.3
Census division								
New England	12.0	12.0	11.4	10.6	10.3	10.1	10.4	10.6
Mid Atlantic	13.3	13.1	12.8	12.2	11.4	11.1	11.3	11.5
East North Central	11.1	10.9	10.5	9.3	8.7	8.8	8.8	8.7
West North Central	10.1	9.9	9.7	8.4	7.7	7.9	8.0	8.0
South Atlantic	10.2	9.9	9.7	8.8	8.5	8.6	8.9	9.1
East South Central	9.4	9.3	9.1	8.4	8.0	8.1	8.2	8.1
West South Central	9.0	9.0	8.8	8.0	7.5	7.8	8.0	8.1
Mountain	8.7	8.5	8.3	7.6	7.1	7.1	7.1	7.1
Pacific	8.7	8.5	8.2	7.5	7.3	7.3	7.5	7.4
	Annual percent change							
United States	—	-1.6	-3.0	-8.5	-5.1	0.4	1.9	0.6
Census region								
Northeast	—	-1.4	-3.4	-5.2	-5.2	-2.6	1.7	2.5
North Central	—	-2.0	-3.3	-11.8	-7.1	1.6	1.0	-1.1
South	—	-1.4	-2.4	-8.9	-4.2	2.2	2.8	1.3
West	—	-1.9	-3.2	-8.4	-4.3	0.4	2.3	-1.5
Census division								
New England	—	-0.4	-5.0	-7.0	-2.2	-2.6	3.0	2.6
Mid Atlantic	—	-1.6	-2.9	-4.7	-6.1	-2.7	1.4	2.3
East North Central	—	-2.0	-4.1	-10.9	-7.1	1.4	0.6	-1.4
West North Central	—	-2.1	-2.1	-14.0	-8.3	2.7	1.9	-0.7
South Atlantic	—	-2.0	-2.7	-9.2	-3.5	1.8	3.5	2.4
East South Central	—	-1.3	-1.8	-8.1	-4.2	1.0	1.1	-0.6
West South Central	—	-0.6	-2.4	-9.0	-5.8	3.7	3.1	0.5
Mountain	—	-2.1	-2.4	-8.9	-6.1	0.5	0.1	-0.9
Pacific	—	-1.8	-3.5	-8.2	-3.6	0.4	3.1	-1.6

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Medicare Decision Support System.

Table 4

Days of care rate for Medicare hospital insurance enrollees and annual percent change, by census region and division: United States, fiscal years 1981-88

Geographic area	1981	1982	1983	1984	1985	1986	1987	1988
	Days of care per 1,000 enrollees							
United States	3,998	4,013	4,008	3,533	3,085	2,917	2,873	2,890
Census region								
Northeast	4,361	4,405	4,423	4,201	3,784	3,496	3,446	3,561
North Central	4,259	4,277	4,243	3,537	3,020	2,874	2,781	2,726
South	4,024	4,056	4,095	3,563	3,087	2,961	2,944	2,985
West	3,057	2,995	2,929	2,580	2,262	2,152	2,142	2,109
Census division								
New England	4,094	4,168	4,102	3,787	3,454	3,144	3,114	3,193
Mid Atlantic	4,450	4,485	4,531	4,340	3,895	3,616	3,565	3,686
East North Central	4,196	4,215	4,202	3,580	3,082	2,947	2,861	2,833
West North Central	4,389	4,410	4,330	3,447	2,890	2,716	2,608	2,492
South Atlantic	3,903	3,908	3,934	3,406	3,002	2,848	2,855	2,923
East South Central	4,310	4,410	4,490	3,925	3,514	3,434	3,348	3,294
West South Central	4,041	4,080	4,114	3,602	2,954	2,846	2,838	2,890
Mountain	3,205	3,163	3,061	2,652	2,293	2,200	2,115	2,098
Pacific	3,008	2,939	2,877	2,556	2,251	2,135	2,152	2,113
	Annual percent change							
United States	—	0.4	-0.1	-11.9	-12.7	-5.4	-1.5	0.6
Census region								
Northeast	—	1.0	0.4	-5.0	-9.9	-7.6	-1.4	3.3
North Central	—	0.4	-0.8	-16.6	-14.6	-4.8	-3.2	-2.0
South	—	0.8	0.9	-13.0	-13.3	-4.1	-0.6	1.4
West	—	-2.0	-2.2	-11.9	-12.3	-4.9	-0.5	-1.5
Census division								
New England	—	1.8	-1.6	-7.7	-8.8	-9.0	-0.9	2.5
Mid Atlantic	—	0.8	1.0	-4.2	-10.3	-7.2	-1.4	3.4
East North Central	—	0.5	-0.3	-14.8	-13.9	-4.4	-2.9	-1.0
West North Central	—	0.5	-1.8	-20.4	-16.2	-6.0	-4.0	-4.5
South Atlantic	—	0.1	0.7	-13.4	-11.8	-5.1	0.2	2.4
East South Central	—	2.3	1.8	-12.6	-10.5	-2.3	-2.5	-1.6
West South Central	—	1.0	0.8	-12.4	-18.0	-3.7	-0.3	1.8
Mountain	—	-1.3	-2.6	-13.9	-13.5	-4.1	-3.9	-0.9
Pacific	—	-2.3	-2.1	-11.2	-11.9	-5.2	0.8	-1.8

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Medicare Decision Support System.