

Health Care Financing Note

Medicare: Short-stay hospital services, by leading diagnosis-related groups, 1983 and 1985

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Assigning a code from any of the diagnosis-related groups to a short-stay hospital discharge covered by Medicare is tantamount to the Medicare payment to the hospital, subject to certain statutory adjustments. Therefore, diagnosis-related groups are the backbone of the prospective payment system implemented October 1, 1983. However, methods employed in the assignment of diagnosis-related groups have changed since the prospective payment system was introduced. The focus of this article is to note some of these changes in methods of assigning diagnosis-related groups, which may have caused some of the migrations, or shifts, from one diagnosis-related group to another during the period 1983-85.

Introduction

In this article, we present Medicare program data on diagnosis-related group (DRG) assignment and charges for the 66 most frequently reported (leading) DRG's assigned to short-stay hospital discharges for calendar year (CY) 1985. These are then compared with similar data for CY 1983. The data highlight changes in use and charges for inpatient services—changes that underscore differences in the method of DRG assignment in the year of implementation (1983) of the Medicare prospective payment system (PPS) compared with those in the second full year (1985) of PPS experience. It is important to note that 1983 was a transitional year for PPS because PPS became operational on October 1, 1983, with a phase-in period. Hence, comparisons of 1983 data with 1985 data are not true longitudinal comparisons but rather comparisons of DRG assignments under two different Medicare payment systems.

Medicare has the responsibility and the hospital a financial incentive to improve the methods by which the DRG assignment is made because the DRG assignment determines the Medicare payment to hospitals under PPS. The PPS payment is expressed, in its simplest form, by the following formula:

$$\text{PPS payment} = \text{DRG weight} \times \text{Dollar rate,}$$

where the DRG weight is an index number reflecting the relative use of resources associated with each DRG; and the dollar rate is an average operating cost per discharge determined by the Health Care

Financing Administration (HCFA), based on a blend (for 1983-85) of a federally established rate and a hospital-specific rate. Thus, a change in an assignment to a DRG with a higher (lower) DRG weight will result in a higher (lower) PPS payment.

The process of assigning DRG's,¹ and the subsequent Medicare payment, begins with the principal diagnosis. Beginning in 1980, reporting was required for the principal diagnosis plus up to four secondary diagnoses and the principal surgical procedure plus up to two secondary procedures. Coupled with the reporting revisions and changes in incentives to report, Medicare peer review organizations (PRO's) were mandated in 1983 to review medical coding for accuracy, to educate hospital providers, and to reinforce stringent adherence to coding guidelines. As illustrated in this article, these and other factors—e.g., changes in DRG definitions, medical practices, and the health care system—have produced notable shifts in the assignment of some DRG's.

The most notable shift was the 563-percent increase in the number of discharges recorded for DRG 124—circulatory disorders, excluding acute myocardial infarction, with cardiac catheterization and complex diagnosis. DRG 124 climbed in rank order from 244th in 1983 (7,165 discharges) to 49th in 1985 (47,500 discharges). Prior to PPS, the use of cardiac catheterization was rarely reported, but now that the coding of this procedure affects the hospital payment under PPS, hospitals have learned to identify, code, and report cardiac catheterizations because of the probable financial incentives.

Occasionally, medical coding rules and guidelines can artificially inflate and shift the number of discharges for certain DRG's, for instance, DRG 121—circulatory disorders, with acute myocardial infarction and cardiovascular complications, discharged alive. According to HCFA regulations governing the coding of acute myocardial infarction (AMI), if there is a repeat admission within 8 weeks, the principal diagnosis is coded as though the patient had a new AMI. Medicare program data show that there was a 235-percent increase in the assignment of DRG 121 during the 1983-85 period, from 35,095 discharges to 117,475. To rectify this problem with existing coding rules, the ICD-9-CM Coordination and Maintenance Committee has been working for more than 2 years to change the rules to reflect a definitive distinction between a new AMI and a subsequent readmission within 8 weeks for the preceding AMI.

In addition, discharges assigned to some DRG's have increased or decreased in response to a focused review of DRG 88 by the PRO's (Office of the

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¹Definitions and DRG code numbers are given in "Technical note."

Inspector General, 1986). As a result, the PRO's have reinforced coding guidelines and conventions relating to specificity (that is, medical history is reported with a more uniform application of *The International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* (1980). In 1983, for example, there were 273,100 discharges assigned to DRG 88—chronic obstructive pulmonary disease—but only 172,545 discharges in 1985, a decrease of 37 percent. Many of these discharges probably were shifted to DRG 96—bronchitis and asthma, age greater than 69 and/or complications or comorbidity. DRG 96 rose from 143,405 discharges in 1983 to 186,930 in 1985, an increase of 20 percent.

Another example of improved coding practices, as related to specificity, is shown in the decline in the number of discharges for DRG 132—atherosclerosis, age greater than 69 and/or complications or comorbidity. Discharges dropped from 212,490 in 1983 to 47,900 in 1985, a reduction of 78 percent. This reflects the fact that both physicians and medical coders, as instructed by the PRO's, are paying closer attention to DRG 132, looking for more specific diagnoses, which could change the DRG assignment.

Stricter adherence to coding guidelines (Office of the Inspector General, 1986) probably caused DRG 82—respiratory neoplasms—to decline from 138,370 discharges in 1983 to 102,765 in 1985, a decrease of 26 percent. These discharges probably were shifted to DRG 410—chemotherapy—which increased 169 percent (from 39,590 discharges in 1983 to 106,510 in 1985). According to coding guidelines, if a patient with neoplasm of any kind is admitted to the hospital for the sole purpose of receiving chemotherapy, the treatment, not the condition, must be selected as the principal diagnosis.

Finally, advances in medical technology have increased referrals for outpatient treatment, in lieu of inpatient hospital admission. The referrals have changed medical practice patterns and probably triggered the shifts and decreases for the following DRG's:

- DRG 39—lens procedures.
- DRG 134—hypertension.
- DRG 183—esophagitis, gastroenteritis, and miscellaneous digestive disorders, age 18-69, without complications or comorbidity.
- DRG 294—diabetes, age greater than 35.

The decreases between 1983 and 1985 were 75 percent for DRG 39, 59 percent for DRG 134, 63 percent for DRG 183, and 32 percent for DRG 294.

It should be noted, however, that there is no definitive explanation for the DRG's that declined or rose dramatically. There is not a direct relationship for most of these shifts; that is, there is no evidence that a particular principal diagnosis shifted to a particular DRG in every instance. Furthermore, because the selection of the principal diagnosis is critical to the assignment of the DRG and the PPS payment rate, HCFA, the PRO's, and the hospitals have been emphasizing improved and more accurate coding practices.

Diagnosis-related group assignment

The principal diagnosis is defined in the Uniform Hospital Discharge Data Set (UHDDS) as the "condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care." Prior to PPS, this definition was not widely used by physicians, and some physicians were selecting the principal diagnosis based on the most severe, the most life threatening, or the most resource demanding. Upon implementation of PPS, HCFA and the PRO's instructed all physicians to use the UHDDS definition. The aim was to achieve consistency in reporting the principal diagnosis. Under PPS, the principal diagnosis must correspond to the condition that caused the admission of the patient, and this condition must be reported as the principal diagnosis and coded according to the ICD-9-CM.

To determine DRG assignment under PPS, each principal diagnosis is first classified into one of the 23 mutually exclusive major diagnostic categories (MDC's). (All MDC's, except MDC 23, are related to the human body systems. MDC 23 includes principal diagnoses for factors influencing health status and other health services, such as ill-defined medical conditions—edema, pallor, debility, etc.—annual physical examinations; or the administration of vaccines). A physician panel developed MDC's to insure that DRG's are clinically coherent; that is, the individual DRG should correspond to a single organ system or etiology and be associated with a particular medical specialty.

For example, principal diagnoses denoting heart diseases or conditions are generally assigned to MDC 5, diseases and disorders of the circulatory system, which encompasses DRG's 103-145. An exception to a normal MDC 5 coding classification, however, could be a record showing a principal diagnosis of heart failure and a surgical procedure of cholecystectomy. Because the cholecystectomy is unrelated to the principal diagnosis, the record will be assigned to DRG 468—unrelated operating room procedures. Similarly, any record with a principal diagnosis that is invalid as a discharge diagnosis will be assigned to DRG 469, and ungroupable records will be assigned to DRG 470.

Most of the MDC's are partitioned into surgical versus nonsurgical categories because this partition captures significant clinical differences that translate into significant resource use differences. Subsequently, discharges may be classified into separate DRG's on the basis of the following:

- Age (those under 18 years of age, those 18-69 years of age, and those 70 years of age or over).
- The presence of secondary diagnoses.
- Discharge status (living or deceased).

After matching these specific patient characteristics, the discharge is partitioned into the appropriate DRG. Although there is some variation among patients within a DRG, there should be an overall similarity

across patients in the same DRG. The DRG system, therefore, should provide equitable payments, in that comparable services should be comparably reimbursed (Helbing, 1985).

In terms of characteristics and objectives, the DRG system was designed according to the following criteria:

- Limitation of DRG classification categories to less than 500.
- Homogeneity of resource intensity within each DRG.
- Clinical coherence of each DRG.
- Patient information used in the definition of the DRG's limited to that collected on hospital abstract systems.
- The set of DRG's representative of the entire range of hospital inpatients.
- Each DRG large enough to permit comparative analysis across hospitals.

Diagnosis-related groups: Legislative background

From July 1, 1966, through September 30, 1983, without regard for diagnosis, hospitals received reimbursement from the Medicare program for the reasonable cost of inpatient services rendered to Medicare beneficiaries. Although hospitals were required to include a principal diagnosis in the bills submitted for Medicare patients, the diagnosis did not directly affect the amounts paid by Medicare.

The inflationary character of this retrospective cost-based payment system became apparent during the early years of the Medicare program. No incentives existed for cost containment, and, consequently, Medicare costs were continually escalating. This constant rise in expenditures challenged the fiscal viability of the Medicare program. Congress, thereby, enacted provisions contained in the 1972 amendments to the Social Security Act (Public Law 92-603), which authorized the Secretary to engage in a broad program of experiments and demonstration projects to determine the feasibility of making prospective payments to Medicare providers.

In 1975, in accordance with this legislation, the Health Care Financing Administration (HCFA) awarded a contract to Yale University to develop a Medicare-specific DRG patient classification system that could be used to support a hospital inpatient prospective payment system. The DRG system was first designed by Yale University in the late 1960's to create an effective framework for monitoring and evaluating hospital performance and quality of care (Fetter et al., 1980). In 1979, hospitals in the United States began coding all diagnostic and surgical procedure information using the ICD-9-CM; HCFA, as a result, awarded a followup contract to Yale to create a new and improved set of Medicare-specific DRG definitions based on ICD-9-CM (Fetter et al., 1980). The new Medicare-specific DRG patient

classification system was subsequently developed by Yale, tested in the early 1980's, and found to be the most viable system for measuring a hospital's output and implementing a prospective payment system.

The Tax Equity and Fiscal Responsibility Act of 1982 (Public Law 97-248) required the Secretary of the Department of Health and Human Services (DHHS) to develop, in consultation with Congress, a legislative proposal for Medicare payments to hospitals on a prospective basis. In addition, a network of 54 utilization and quality control PRO's was established to review health care services provided to Medicare patients to assure that such services are reasonable and medically necessary, that the quality meets professionally recognized standards, and to determine if inpatient services could be provided in an appropriate manner and more economically on an outpatient basis.

The 1983 amendments to the Social Security Act (Public Law 98-21), enacted April 20, 1983, provided for a prospective payment system, based on DRG's, for short-stay hospitals certified to furnish inpatient care to Medicare beneficiaries. The law also modified the PRO program, extending its functions to include the review of the validity of diagnostic and procedural information, quality of care, appropriateness of admissions, and appropriateness of care for outlier cases. The implementation of the Medicare prospective payment system began on October 1, 1983.

In May 1983, an award was made by HCFA to Health Systems International (HSI) to evaluate and modify the Yale DRG product. In June 1983, the revised DRG's were released for use in Medicare PPS beginning October 1, 1983. Because DRG assignment affected program payments to the hospitals, DRG's came under intense investigation by hospitals after PPS became effective. Thus, in July 1984, HCFA again contracted HSI to maintain and update the software and definitions used to classify cases in accordance with HCFA policy.

The Secretary was mandated by Congress (Public Law 98-21) to adjust the DRG weighting factors (recalibration) for fiscal year 1986 and for at least 4 years thereafter to reflect changes in treatment patterns, technology, and other factors affecting hospital resource utilization. The Prospective Payment Assessment Commission (ProPAC) was established by Congress to consult with the Secretary and make recommendations on the need for adjustments to the Medicare DRG's or the creation of new DRG categories based on its evaluation of new practices, technologies, and treatment modalities. ProPAC was required to report to Congress on its evaluation of adjustments made by the Secretary.

Payments in addition to the DRG rate are made for atypical (outlier) cases that have unusually long stays or exceptionally high costs when compared with most discharges classified in the same DRG. The additional payment approximates the marginal costs of care beyond the outlier cutoff criteria (days or dollar amounts). The total proportion of outlier payments

cannot be less than 5 percent or more than 6 percent of total DRG-related payments in any year.

The DRG system is, therefore, a fluid system. As more data are collected and as medical technology advances, the DRG's will be reviewed and revised as mandated by Congress. More detailed information on DRG development can be found in *DRGs, Diagnosis Related Groups, Fourth Revision, Definitions Manual* (1986).

Summary

The PPS placed a price tag on hospital use by Medicare beneficiaries prior to the actual hospitalization and provided an incentive for cost containment. "The change from cost-based reimbursement to prospective payment represents a fundamental change in the role of the Medicare program within the health care system. Rather than reimbursing the hospital for actual costs incurred, the Medicare program now pays a fixed price for a known and defined product—the hospital stay. PPS is designed to change hospital behavior by directly altering the economic incentives facing hospital decision-makers" (Guterman, 1987).

It is difficult, however, to analyze or develop meaningful inferences about PPS because of the rapidly changing health care industry. These changes include intensified cost-containment efforts among other public and private payers, the increased supply of physicians, and the increasing availability of alternative arrangements for the provision of and payment for health care. Thus, both desirable and undesirable effects that might be consistent with expectations about PPS may actually be caused by other factors or the joint product of PPS and several other factors (*Federal Register*, 1985; Guterman, 1987).

The PPS environment and the way DRG's are assigned may have influenced hospital behavior in the following ways:

- Hospitals are probably more careful and selective in the admissions process. The decline in the annual number of short-stay hospital discharges following the implementation of PPS was the first in the history of the Medicare program. The reasons for this decline are not fully understood; admissions for the population as a whole also declined (Guterman, 1987).
- Hospitals may be more prudent in patient-care practices. The average length of stay declined from 9.8 days in CY 1983 to 8.6 days in CY 1985. Many medical tests, examinations, and treatments that were normally performed after the hospital admission are now being performed on an outpatient basis, prior to admission.
- Hospitals are changing medical practice patterns by channeling selected surgical procedures to alternative treatment sites; if feasible, the procedures are performed on an outpatient basis.
- Hospitals may be avoiding unnecessary admissions by referring patients with certain medical conditions

to outpatient clinics, where treatment of the condition is judged to be safe, effective, and preferable to inpatient care.

- Hospitals, in cooperation with HCFA and the PRO's, are improving the reporting and coding of the principal diagnosis.
- Hospitals are responding quickly to stimuli induced by modifications to DRG weights.

In this article, annual rates of use and charges are arrayed by area of provider (Table 1) to give an overview of program experience during the 1983-85 period. For the 66 leading DRG's, additional data compare the number of discharges, average length of stay, and average total charges (Table 2); length-of-stay statistics—mean, standard deviation, coefficient of variation, and selected percentiles (Table 3); and percent distributions for the types of inpatient accommodation and ancillary services (Table 4). Data relating specifically to hospitals operating under PPS during 1985 are arrayed by the leading DRG's and type of PPS discharges—including day and cost outlier discharges (Table 5).

Selected data highlights

Area of provider, 1983-85

For short-stay hospital inpatient services rendered to Medicare beneficiaries, data presented in Table 1 provide a means of comparing changes between 1983 and 1985 in discharge and days-of-care rates, average length of stay, and average charges per enrollee and per discharge. Data are arrayed by area of provider (region, and State within division). The data, therefore, provide a basis for measuring and analyzing the impact of the Medicare PPS during the period 1983-85.

Discharge rates per 1,000 enrollees

Subsequent to the implementation of PPS, and for the first time in the history, short-stay hospital discharges declined. Therefore, between 1983 and 1985, the annual discharge rates declined 15.9 percent for all areas (390 to 328) and the United States (396 to 333). The decline in the number of discharges during 1985, however, reflects a substantial number of missing discharge records, especially for Virginia and North Carolina, that were returned to the intermediary. Therefore, the data for these States were eliminated from analysis in this article. Similarly, the national decrease in the number of discharges is probably overstated.

Among the regions, discharge rates were lowest in the West, decreasing from 351 to 300 during the 1983-85 period. In contrast, the highest discharge rates were recorded for the South Region (438 in 1983 and 353 in 1985); however, the South also showed the greatest percent change, decreasing 19.4 percent during this period. Although there was no change in the rank order among the regions, the ratio of the

Table 1

Rates, means, and percent changes for the number of discharges, total days of care, and charges for Medicare beneficiaries discharged from participating short-stay hospitals, by area of provider: 1983-85

Area of provider ¹	Number of discharges			Total days of care						Charges					
	Per 1,000 enrollees ¹		Percent change 1983-85	Per 1,000 enrollees ¹		Percent change 1983-85	Per discharge		Percent change 1983-85	Per enrollee ¹		Percent change 1983-85	Per discharge		Percent change 1983-85
	1983	1985		1983	1985		1983	1985		1983	1985		1983	1985	
All areas ²	390	328	-15.9	3,837	2,832	-26.2	9.8	8.6	-12.2	\$1,853	\$1,748	-5.7	\$4,749	\$5,332	12.3
United States	396	333	-15.9	3,899	2,876	-26.2	9.8	8.6	-12.2	1,889	1,781	-5.7	4,766	5,352	12.3
Northeast	354	322	-9.0	4,309	3,539	-17.9	12.2	11.0	-9.8	1,942	1,940	-0.1	5,481	6,024	9.9
North Central	411	338	-17.8	4,092	2,804	-31.5	10.0	8.3	-17.0	1,910	1,698	-11.1	4,648	5,027	8.2
South	438	353	-19.4	4,002	2,847	-28.9	9.1	8.1	-11.0	1,807	1,702	-5.8	4,124	4,815	16.8
West	351	300	-14.5	2,846	2,154	-24.3	8.1	7.2	-11.1	1,844	1,845	-5.1	5,540	6,156	11.1
New England	357	313	-12.3	3,944	3,152	-20.1	11.1	10.1	-9.0	1,760	1,732	-1.6	4,935	5,532	12.1
Connecticut	309	273	-11.7	3,286	2,614	-20.5	10.6	9.6	-9.4	1,495	1,513	1.2	4,845	5,535	14.2
Maine	379	339	-10.6	3,362	2,982	-11.3	8.9	8.8	-1.1	1,654	1,570	-5.1	4,370	4,632	6.0
Massachusetts	384	329	-14.3	4,634	3,595	-22.4	12.1	10.9	-9.9	2,074	2,023	-2.5	5,406	6,144	13.7
New Hampshire	353	319	-9.6	3,206	2,589	-19.2	9.1	8.1	-11.0	1,326	1,328	0.2	3,760	4,162	10.7
Rhode Island	322	309	-4.0	3,441	3,164	-8.0	10.7	10.2	-4.7	1,458	1,512	3.7	4,532	4,888	7.9
Vermont	361	305	-15.5	3,631	2,690	-25.9	10.1	8.8	-12.9	1,337	1,255	-6.1	3,703	4,116	11.2
Middle Atlantic	354	325	-8.2	4,431	3,670	-17.2	12.5	11.3	-9.6	2,004	2,010	0.3	5,666	6,183	9.1
New Jersey	334	295	-11.7	4,140	3,434	-17.1	12.4	11.6	-6.5	1,474	1,485	0.7	4,410	5,029	14.0
New York	333	312	-6.3	4,658	4,084	-12.3	14.0	13.1	-6.4	1,949	1,987	1.9	5,857	6,373	8.8
Pennsylvania	389	359	-7.7	4,245	3,256	-23.3	10.9	9.1	-16.5	2,350	2,333	-0.7	6,047	6,498	7.5
East North Central	398	330	-17.1	4,079	2,834	-30.5	10.3	8.6	-16.5	1,999	1,752	-12.4	5,025	5,315	5.8
Illinois	406	340	-16.3	4,297	3,094	-28.0	10.6	9.1	-14.2	2,338	2,053	-12.2	5,758	6,033	4.8
Indiana	413	325	-21.3	4,135	2,700	-34.7	10.0	8.3	-17.0	1,606	1,411	-12.1	3,893	4,349	11.7
Michigan	394	332	-15.7	4,061	2,882	-29.0	10.3	8.7	-15.5	2,210	2,019	-8.6	5,608	6,080	8.4
Ohio	398	328	-17.6	4,152	2,778	-33.1	10.4	8.5	-18.3	1,943	1,626	-16.3	4,885	4,964	1.6
Wisconsin	371	311	-16.2	3,428	2,447	-28.6	9.2	7.9	-14.1	1,441	1,270	-11.9	3,884	4,077	5.0
West North Central	439	355	-19.1	4,119	2,740	-33.5	9.4	7.7	-18.1	1,722	1,582	-8.1	3,925	4,455	13.5
Iowa	409	321	-21.5	3,577	2,408	-32.7	8.7	7.5	-13.8	1,420	1,263	-11.1	3,469	3,938	13.5
Kansas	436	353	-19.0	4,768	2,579	-45.9	10.9	7.3	-33.0	1,620	1,440	-11.1	3,719	4,076	9.6
Minnesota	414	309	-25.4	3,655	2,234	-38.9	8.8	7.2	-18.2	1,551	1,305	-15.9	3,743	4,223	12.8
Missouri	447	396	-11.4	4,413	3,377	-23.5	9.9	8.5	-14.1	2,089	2,075	-0.7	4,671	5,238	12.1
Nebraska	478	354	-25.9	4,144	2,633	-36.5	8.7	7.4	-14.9	1,703	1,475	-13.4	3,564	4,167	16.9
North Dakota	537	432	-19.6	4,649	3,178	-31.6	8.7	7.4	-14.9	1,928	1,868	-3.1	3,591	4,326	20.5
South Dakota	468	395	-15.6	4,098	2,659	-35.1	8.8	6.7	-23.9	1,480	1,352	-8.6	3,163	3,422	8.2
South Atlantic	405	318	-21.5	3,858	2,686	-30.4	9.5	8.5	-10.5	1,804	1,644	-8.9	4,449	5,178	16.4
Delaware	334	310	-7.2	3,799	2,795	-26.4	11.4	9.0	-21.1	1,592	1,567	-1.6	4,763	5,053	6.1
Dist. of Columbia	475	444	-6.5	6,353	5,267	-17.1	13.4	11.9	-11.2	4,217	4,250	0.8	8,880	9,575	7.8
Florida	402	325	-19.2	3,696	2,651	-28.3	9.2	8.2	-10.9	2,099	1,985	-5.4	5,226	6,115	17.0
Georgia	458	406	-11.4	3,715	3,057	-17.7	8.1	7.5	-7.4	1,625	1,721	5.9	3,552	4,243	19.5
Maryland	371	328	-11.6	4,167	3,203	-23.1	11.2	9.8	-12.5	1,632	1,525	-6.6	4,393	4,650	5.9
North Carolina ²	396	253	-36.1	3,875	2,252	-41.9	9.8	8.9	-9.2	1,397	1,078	-22.8	3,530	4,262	20.7
South Carolina	366	329	-10.1	3,490	2,861	-18.0	9.5	8.7	-8.4	1,384	1,469	6.1	3,776	4,461	18.1
Virginia ²	393	224	-43.0	3,978	2,015	-49.3	10.1	9.0	-10.9	1,694	1,085	-36.0	4,311	4,853	12.6
West Virginia	471	387	-17.8	4,266	2,946	-30.9	9.1	7.6	-16.5	1,748	1,634	-6.5	3,711	4,221	13.7

See footnotes at end of table.

Table 1—Continued

Rates, means, and percent changes for the number of discharges, total days of care, and charges for Medicare beneficiaries discharged from participating short-stay hospitals, by area of provider: 1983-85

Area of provider ¹	Number of discharges			Total days of care						Charges					
	Per 1,000 enrollees ¹		Percent change 1983-85	Per 1,000 enrollees ¹		Per discharge		Per enrollee ¹		Per discharge		Percent change			
	1983	1985		1983	1985	1983	1985	1983	1985	1983	1985	1983-85	1983	1985	1983-85
East South Central	482	416	-13.7	4,333	3,316	-23.5	9.0	8.0	-11.1	\$1,831	\$1,874	2.3	\$3,796	\$4,502	18.6
Alabama	480	388	-19.2	4,140	3,068	-25.9	8.6	7.9	-8.1	2,025	1,981	-2.2	4,217	5,111	21.2
Kentucky	431	399	-7.4	3,898	3,129	-19.7	9.0	7.8	-13.3	1,456	1,603	10.1	3,378	4,013	18.8
Mississippi	495	438	-11.5	4,345	3,212	-26.1	8.8	7.3	-17.0	1,522	1,457	-4.3	3,071	3,328	8.4
Tennessee	518	442	-14.7	4,833	3,729	-22.8	9.3	8.4	-9.7	2,134	2,222	4.1	4,121	5,027	22.0
West South Central	467	377	-19.3	4,034	2,823	-30.0	8.6	7.5	-12.8	1,795	1,688	-6.0	3,841	4,482	16.7
Arkansas	485	401	-17.3	3,843	2,787	-27.5	7.9	7.0	-11.4	1,475	1,477	-3.9	3,043	3,534	16.1
Louisiana	462	427	-7.6	4,010	3,232	-19.4	8.7	7.6	-12.6	1,931	2,045	5.9	4,176	4,790	14.7
Oklahoma	439	339	-22.8	3,724	2,541	-31.8	8.5	7.5	-11.8	1,756	1,517	-13.6	4,000	4,474	11.9
Texas	472	366	-22.5	4,169	2,784	-33.2	8.8	7.6	-13.6	1,839	1,690	-8.1	3,895	4,616	18.5
Mountain	362	313	-13.5	2,936	2,199	-25.1	8.1	7.0	-13.6	1,598	1,569	-1.8	4,414	5,017	13.7
Arizona	348	321	-7.8	2,963	2,412	-18.6	8.5	7.5	-11.8	1,716	1,756	2.3	4,938	5,474	10.9
Colorado	387	311	-19.6	3,324	2,230	-32.9	8.6	7.2	-16.3	1,718	1,528	-11.1	4,440	4,905	10.5
Idaho	341	292	-14.4	2,397	1,787	-25.4	7.0	6.1	-12.9	1,072	1,028	-4.1	3,146	3,526	12.1
Montana	400	339	-15.3	2,989	2,143	-28.3	7.5	6.3	-16.0	1,357	1,228	-9.5	3,303	3,618	6.6
Nevada	393	326	-17.0	3,164	2,488	-21.4	8.0	7.6	-5.0	2,711	2,852	5.2	6,898	8,752	26.9
New Mexico	362	318	-12.2	2,874	2,155	-25.0	7.9	6.8	-13.9	1,447	1,466	1.3	3,992	4,607	15.4
Utah	317	263	-17.0	2,360	1,721	-27.1	7.4	6.5	-12.2	1,200	1,129	-5.9	3,780	4,291	13.5
Wyoming	359	341	-5.0	2,857	2,232	-21.9	8.0	6.5	-18.8	1,155	1,195	3.5	3,215	3,505	9.0
Pacific	347	295	-15.0	2,915	2,138	-24.0	8.1	7.2	-11.1	2,063	1,941	-5.9	5,942	6,576	10.7
Alaska	320	296	-7.5	2,638	2,214	-16.1	8.2	7.5	-8.5	1,572	1,633	3.9	4,915	5,514	12.2
California	348	298	-14.4	2,899	2,227	-23.2	8.3	7.5	-9.6	2,308	2,174	-5.8	6,631	7,285	9.9
Hawaii	262	246	-6.1	2,508	2,082	-17.8	9.6	8.4	-12.5	1,367	1,374	0.5	5,210	5,591	7.3
Oregon	355	295	-16.9	2,583	1,815	-29.7	7.3	6.1	-16.4	1,448	1,314	-9.3	4,077	4,449	9.1
Washington	352	287	-18.5	2,580	1,898	-26.4	7.3	6.6	-9.6	1,303	1,247	-4.3	3,699	4,346	17.5
Residence unknown	396	333	-15.9	3,899	2,876	-26.2	9.8	8.6	-12.2	1,889	1,781	-5.7	4,766	5,352	12.3
Other areas	188	178	-5.3	1,700	1,459	-14.2	9.0	8.2	-8.9	391	435	11.3	2,077	2,446	17.8
Puerto Rico	189	179	-5.3	1,693	1,458	-13.9	9.0	8.2	-8.9	390	435	11.5	2,070	2,434	17.5

¹Rates are based on area of residence of the enrollees.

²In 1985, data for some States, especially Virginia and North Carolina, are understated because of discharge bills returned to the intermediary.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data are from the Medicare Statistical System; data development by the Office of Research and Demonstrations.

discharge rates between regions with the highest and lowest rates decreased from 1.25 in 1983 to 1.18 in 1985.

For the individual States, Hawaii's discharge rate (262) was lowest in 1983, and North Dakota's (537) was highest. Data for 1985 showed the lowest discharge rate in Hawaii (246) and the highest in the District of Columbia (444). Among the States, Nebraska had the highest decrease in the discharge rate between 1983 and 1985, 25.9 percent; Rhode Island had the lowest rate of decrease, 4.0 percent. With two exceptions—Montana (in 1983 and 1985) and Wyoming (in 1985)—all States in the Mountain and Pacific divisions were below the national discharge rate for 1983 (396) and 1985 (333). In 1983, 28 of the States (55 percent) were below the national discharge rate; in 1985, 30 States (59 percent) were below the national rate.

Days of care rates

The combination of the declining discharge rate and the accelerated decline in the average length of stay resulted in a substantial decrease in the rate for total days of care (TDOC). For all areas and the United States, TDOC rates decreased 26.2 percent during the 1983-85 period. However, TDOC rates for the United States were slightly higher (3,899 and 2,876 for 1983 and 1985, respectively) than the rates for all areas (3,837 and 2,832, respectively).

The West Region recorded the lowest TDOC rates in 1983 and 1985 (2,846 and 2,154, respectively, a decrease of 24.3 percent). The Northeast Region recorded the highest (4,309 and 3,539 for 1983 and 1985, respectively, a decrease of 17.9 percent). Of all the regions, the North Central Region showed the greatest decrease in TDOC rates (31.5 percent) between 1983 and 1985. Unlike the convergence among the regions noted in the discharge rates, the ratio of TDOC rates between regions with the highest and the lowest rates widened from 1.51 in 1983 to 1.64 in 1985. This reflects the relatively lower rate of decrease in the average length of stay and the discharge rate for the Northeast Region.

Among the States, Utah had the lowest TDOC rate for both 1983 (2,360) and 1985 (1,721); the District of Columbia had the highest TDOC rate for both 1983 (6,353) and 1985 (5,267). Rhode Island had the lowest percent decrease in TDOC rates (8.0 percent) for the 1983-85 period, and Kansas had the highest decrease, 45.9 percent. Every State in the Mountain and Pacific Divisions had TDOC rates below the national average. Of all the States, 28 (55 percent) were below the national TDOC rate in 1983 (3,899); the figure climbed to 32 States (63 percent) in 1985.

Average length of stay

The average length of stay (ALOS) per discharge for all areas and the United States declined from 9.8 days in 1983 to 8.6 days in 1985, a decrease of 12.2 percent. Although Medicare ALOS has continually

fallen since the program began, this represented the largest 2-year decrease in the program's history.

The West Region had the shortest ALOS among the regions, with 8.1 days in 1983 and 7.2 days in 1985, a decrease of 11.1 percent. The Northeast Region had the longest ALOS for 1983 (12.2 days) and 1985 (11.0 days), a decrease of 9.8 percent. The North Central Region showed the highest percent decrease in ALOS, declining 17.0 percent, from 10.0 days in 1983 to 8.3 days in 1985.

Among the States, Idaho had the shortest ALOS during the 1983-85 period, declining from 7.0 days to 6.1 days, a decrease of 12.9 percent. New York's ALOS, the longest, declined from 14.0 days in 1983 to 13.1 days in 1985, a decrease of 6.4 percent. Kansas showed a significant decrease, 33.0 percent, by lowering the ALOS from 10.9 days to 7.3 days. Maine, which already had a low ALOS in 1983 (8.9 days), reduced it further in 1985 (8.8 days), a decrease of 1.1 percent. There were 34 States (67 percent) at or below the national ALOS for 1983; in 1985, there were 35 (69 percent).

Average charge per enrollee

The amount of charges for short-stay hospital inpatient services appears to have leveled off with the inception of PPS (\$54.8 billion in 1983 and \$53.5 billion in 1985) (Table 4).

In fact, average charge per enrollee (ACPE) showed a decrease of 5.7 percent for all areas and the United States between 1983 and 1985, reflecting an increase in the number of Medicare enrollees. In all areas, ACPE decreased from \$1,853 to \$1,748 from 1983 through 1985; for the United States as a whole, it decreased from \$1,889 to \$1,781.

In 1983, ACPE ranged from \$1,807 in the South Region to \$1,944 in the West. In 1985, the lowest and highest ACPE were reported, respectively, for the North Central Region (\$1,698) and the Northeast Region (\$1,940). The largest decrease in ACPE (11.1 percent) was seen in the North Central Region; conversely, ACPE in the Northeast Region remained constant during 1983-85.

Data for individual States showed that Idaho had the lowest ACPE for 1983 (\$1,072) and 1985 (\$1,028), a decrease of 4.1 percent. In contrast, the District of Columbia had the highest in 1983 and 1985 (\$4,217 and \$4,250, respectively), an increase of 0.8 percent. Of all the States, 17 States (33 percent) showed increases in ACPE. The lowest percent increase in ACPE was for New Hampshire (0.2 percent); the highest was for Kentucky (10.1 percent). Decreases in ACPE ranged from 0.7 percent in Pennsylvania and Missouri to 16.3 percent in Ohio.

Average charge per discharge

There were identical increases of 12.3 percent in the average charge per discharge (ACPD) for all areas and the United States between 1983 and 1985. ACPD rose from \$4,749 to \$5,332 in all areas and from

\$4,766 to \$5,352 in the United States as a whole. The increase in ACPD (as compared with the decrease in ACPE) reflects the decline in the number of Medicare discharges from 1983 through 1985.

The South Region, although lowest in ACPD for 1983 (\$4,124) and 1985 (\$4,815), showed the largest percent increase (16.8 percent). Conversely, the West Region had the highest ACPD for 1983 (\$5,540) and 1985 (\$6,156), an increase of 11.1 percent. The North Central Region had the lowest increase (8.2 percent).

All States showed increases in ACPD for the 1983-85 period. The lowest ACPD was recorded for Arkansas in 1983 (\$3,043) and for Mississippi in 1985 (\$3,328). The District of Columbia had the highest ACPD in 1983 (\$8,880) and 1985 (\$9,575). The lowest percent increase between 1983 and 1985 was for Ohio (1.6 percent); the highest, for Nevada (26.9 percent).

Leading diagnosis-related groups

To measure the effects of PPS on DRG assignment, the 66 leading DRG's assigned to short-stay hospital (SSH) discharges in 1985 are compared with similar data for 1983 (Table 2). Data are shown for the number and rank order of discharges, average length of stay, average charge per discharge, and corresponding percent changes. Most of the significant increases and decreases in the data are probably attributable to changes in the method of reporting principal diagnosis or surgical procedure, changes in reinforcement of coding guidelines or conventions, and changes in medical practice patterns, rather than real changes in the diagnoses or procedures (which determine the DRG). Some of the increases and decreases cannot be explained easily, if at all.

Discharges and rank order

In 1983, the number of discharges attributed to the 66 leading DRG's (7,045,395) accounted for 61 percent of all discharges (11,547,300). However, in 1985, discharges for the 66 leading DRG's (7,079,360) totaled 71 percent of all discharges (10,027,010). The number of discharges for the top 20 DRG's is shown for CY's 1983 and 1985 in Figure 1.

The number of discharges in 1983 ranged from a low of 7,165 for DRG 124—circulatory disorders, excluding acute myocardial infarction, with cardiac catheterization and complex diagnosis—to a high of 457,470 for DRG 127—heart failure and shock. DRG 39—lens procedures—had the second highest number of discharges (438,680) in 1983.

Of the 66 leading DRG's in 1985, the number of discharges (498,305) for DRG 127 remained the highest. DRG 140—angina pectoris—had the second highest number of discharges (348,940). DRG 39—lens procedures—rank order position 2 in 1983, dropped to position 23 in 1985. However, the largest relative change was shown for DRG 124, which increased 563 percent (from 7,165 to 47,500 discharges) during the 1983-85 period and rose in rank

order from position 243 to position 49. Among the 66 leading DRG's, the lowest number of discharges in 1985 was for DRG 257—total mastectomy for malignancy, age greater than 69 and/or complications or comorbidity—however, DRG 257 increased 48 percent from 1983 (24,230 discharges) through 1985 (35,850) and climbed in rank order position from 106 to 66.

For some of the more significant changes no ready explanation is available. For example, DRG 144—other circulatory system diagnoses with complications or comorbidity—increased from 15,695 (1983) discharges to 42,280 (1985), a rise of 169 percent, and ascended in rank order from 151 to 59. In addition, DRG 79—respiratory infections and inflammations, age greater than 69 and/or complications or comorbidity—showed an increase of 172 percent, going from 25,765 to 69,945 discharges during the period 1983-85 and moving up in rank order position from 99 to 36.

Average length of stay

For all DRG's assigned in both 1983 and 1985, the ALOS was 9.8 days and 8.6 days, respectively, a decrease of 12.2 percent. The ALOS for the 66 leading DRG's decreased from 9.8 to 8.5 days of care, a drop of 13.3 percent.

Among the 66 leading DRG's, the shortest ALOS (2.5 days in 1983 and 2.1 days in 1985, a decrease of 16.0 percent) was recorded for DRG 39—lens procedures. DRG 148—major small and large bowel procedures, age greater than 69 and/or complications or comorbidity—accounted for the longest ALOS (18.8 days in 1983 and 16.5 days in 1985, a decrease of 12.2 percent). The ALOS for the top 20 DRG's is shown in Figure 2.

The smallest percent decrease (0.6) in ALOS from 1983 through 1985 was shown for DRG 154—stomach, esophageal, and duodenal procedures, age greater than 69 and/or complications or comorbidity. However, there was no change for DRG 403—lymphoma and leukemia, age greater than 69 and/or complications or comorbidity. The largest relative decrease (38.9 percent) was for DRG 125—circulatory disorders except acute myocardial infarction, with cardiac catheterization without complex diagnosis. The ALOS for DRG 125 went from 5.4 days to 3.3 days during the period 1983-85.

Average charge per discharge

For all DRG's assigned during 1983 and 1985, the ACPD rose from \$4,749 to \$5,332, an increase of 12.3 percent. The increase was somewhat lower (8.5 percent) for the 66 leading DRG's, whose corresponding ACPD was \$4,673 and \$5,071, respectively.

Of the 66 leading DRG's, the lowest ACPD (\$1,918 in 1983) was for DRG 410—chemotherapy—and (\$2,141 in 1985) for DRG 183—esophagitis, gastroenteritis, and miscellaneous disorders, age

Table 2
Medicare short-stay hospital discharges, average length of stay, and average charge per discharge, by the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number	Discharges			Rank order		Average length of stay			Average charge per discharge		
	Number		Percent change 1983-85	1983	1985	1983	1985	Percent change 1983-85	1983	1985	Percent change 1983-85
	1983	1985									
Total, all DRG's	11,547,300	10,027,010	-13.2	—	—	9.8	8.6	-12.2	\$4,749	\$5,332	12.3
Leading DRG's	7,045,395	7,079,360	0.5	—	—	9.8	8.5	-13.3	4,673	5,071	8.5
005 ¹	43,880	56,535	28.8	54	42	10.9	8.5	-22.0	7,175	7,124	-0.7
012	63,945	43,830	-31.5	35	55	13.9	13.1	-5.0	5,046	5,739	13.7
014	299,445	312,285	4.3	4	5	15.0	11.1	-24.7	6,046	5,674	-6.2
015	158,820	167,975	5.8	14	11	7.1	5.7	-19.7	2,767	2,719	-1.7
024	41,620	58,660	40.9	60	41	7.9	6.6	-16.5	3,483	3,654	4.9
039 ¹	438,680	108,270	-75.3	2	23	2.5	2.1	-16.0	2,220	2,406	8.4
079	25,765	69,945	171.5	99	36	14.5	12.6	-13.1	8,266	9,186	10.9
082	138,370	102,765	-25.7	17	25	10.9	9.4	-12.8	5,007	5,269	5.2
087	63,535	98,190	54.5	36	26	11.2	9.6	-13.4	7,605	8,257	8.6
088	273,100	172,545	-36.8	6	9	9.7	8.2	-15.5	4,845	5,052	4.3
089	262,795	347,275	32.1	7	3	10.9	9.0	-17.4	5,054	5,177	2.4
098	143,405	186,930	30.4	16	8	8.1	7.0	-13.6	3,435	3,838	11.7
099	36,070	43,280	20.0	71	57	7.7	5.8	-23.4	3,882	3,406	-12.3
110 ¹	35,010	59,995	71.4	75	39	17.4	15.4	-11.5	14,362	15,907	10.8
112 ¹	35,260	36,905	4.7	73	64	14.0	11.3	-18.6	10,488	9,834	-6.2
116 ¹	48,125	52,495	9.1	51	44	10.5	8.4	-19.0	11,933	12,089	1.3
121	35,095	117,475	234.7	74	21	12.9	11.5	-10.9	7,326	7,536	2.9
122	195,375	142,820	-26.9	11	16	11.9	9.2	-21.8	5,901	5,299	-10.2
123	56,260	70,735	25.7	43	35	6.1	5.5	-9.8	5,582	6,083	9.0
124	7,165	47,500	562.9	243	49	9.1	6.5	-28.6	6,815	5,773	-15.3
125	31,160	80,840	159.4	86	29	5.4	3.3	-38.9	4,437	3,132	-29.4
127	457,470	498,305	8.9	1	1	10.1	8.1	-18.8	4,559	4,502	-1.3
128	37,910	40,135	5.9	67	61	10.7	9.2	-14.0	3,486	3,620	3.8
130	97,655	80,640	-17.4	26	30	10.0	7.6	-24.0	4,089	3,646	-10.8
132	212,490	47,900	-77.5	9	48	8.5	6.4	-23.5	3,634	3,516	-3.2
134	118,710	48,665	-59.0	21	46	7.6	6.1	-19.7	2,892	2,762	-4.5
138	179,280	209,555	16.9	12	6	7.5	5.9	-20.0	3,794	3,464	-8.7
140	273,360	348,940	27.6	5	2	6.5	5.2	-20.0	3,049	2,884	-5.4
141	70,415	92,690	31.6	32	27	6.5	5.3	-18.5	2,750	2,732	-0.7
143	88,370	77,595	-12.2	29	32	5.5	3.9	-29.1	2,716	2,380	-12.4
144	15,695	42,280	169.4	151	59	9.3	8.1	-12.9	5,191	5,118	-1.4

See footnotes at end of table.

Table 2—Continued

Medicare short-stay hospital discharges, average length of stay, and average charge per discharge, by the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number	Discharges			Rank order		Average length of stay			Average charge per discharge		
	Number		Percent change 1983-85	1983	1985	1983	1985	Percent change 1983-85	1983	1985	Percent change 1983-85
	1983	1985									
148 ¹	74,520	116,970	57.0	31	22	18.8	16.5	-12.2	\$12,062	\$13,401	11.1
154 ¹	37,055	46,345	25.1	69	51	16.6	16.4	-0.6	11,227	15,414	37.3
157 ¹	27,290	40,480	48.3	95	60	7.4	6.0	-17.6	3,312	3,572	7.9
161 ¹	69,545	75,385	8.4	33	33	6.2	4.7	-24.2	2,915	2,857	-2.0
172	65,260	43,420	-33.5	34	56	12.2	9.9	-18.9	5,313	4,956	-6.7
174	110,005	150,940	37.2	24	15	8.7	6.9	-20.7	4,227	4,000	-5.4
180	52,175	68,960	32.2	46	37	8.8	7.1	-19.3	3,730	3,439	-7.8
182	371,795	313,140	-15.8	3	4	7.0	5.9	-15.7	2,636	2,777	5.3
183	130,925	48,290	-63.1	18	47	6.1	4.6	-24.6	2,435	2,141	-12.1
188	58,995	47,475	-19.5	40	50	7.9	6.2	-20.5	3,596	3,503	-2.6
197 ¹	62,655	72,790	16.2	38	34	13.4	10.7	-19.4	7,267	7,372	1.2
207	51,835	49,380	-4.7	47	45	8.3	6.6	-20.5	3,590	3,446	-4.0
209 ¹	117,460	164,800	40.3	22	12	17.5	14.2	-18.9	9,855	10,641	8.0
210 ¹	96,570	121,100	25.4	27	19	18.6	15.1	-18.3	8,563	8,791	2.7
236	52,580	44,095	-16.1	45	54	16.6	11.8	-28.3	5,557	4,616	-16.9
239	43,880	61,275	39.6	55	38	12.2	10.0	-18.0	4,276	4,230	-1.1
243	208,935	169,155	-19.0	10	10	9.2	7.3	-19.8	2,997	2,897	-3.3
253	42,785	35,950	-16.0	57	65	9.5	7.3	-22.1	3,085	2,847	-7.7
257 ¹	24,230	35,850	48.0	106	66	9.7	7.5	-22.7	4,532	4,479	-1.2
277	47,735	59,615	24.9	52	40	10.8	8.6	-19.4	4,006	3,957	-1.2
294	177,220	119,765	-32.4	13	20	9.7	8.0	-17.5	3,469	3,493	0.7
296	125,515	208,120	65.8	19	7	10.0	7.7	-23.0	3,909	3,663	-6.3
310 ¹	41,395	55,020	32.9	61	43	6.4	5.3	-17.2	3,174	3,343	5.3
316	55,235	43,030	-22.1	44	58	11.1	9.3	-16.2	6,471	5,750	-11.1
320	124,600	140,450	12.7	20	17	9.3	8.0	-14.0	3,619	3,953	9.2
336 ¹	115,725	160,855	39.0	23	13	8.9	7.0	-20.2	4,174	4,109	-1.6
395	99,695	84,385	-15.4	25	28	8.2	6.3	-23.2	3,325	3,223	-3.1
403	57,250	45,730	-20.1	42	52	11.4	11.4	0.0	5,745	7,223	25.7
410	39,590	106,510	169.0	63	24	3.7	3.2	-10.8	1,918	2,222	15.0
416	42,025	80,070	90.5	59	31	13.4	10.6	-20.1	7,598	6,995	-7.9
429	63,180	44,195	-30.0	37	53	13.6	12.0	-8.8	3,715	4,346	17.0
430	95,755	130,870	36.7	28	18	17.2	16.3	-4.1	5,020	5,579	11.1
442 ¹	21,375	39,410	84.4	112	63	13.0	9.6	-25.4	8,642	8,471	-2.0
449	32,840	39,555	20.4	85	62	7.4	6.1	-17.6	3,062	3,298	7.7
468	223,530	152,025	-32.0	8	14	16.7	15.1	-7.8	10,043	10,929	8.8
All other DRG's	4,501,905	2,947,650	-34.5	—	—	9.9	8.9	-9.1	4,868	5,958	22.4

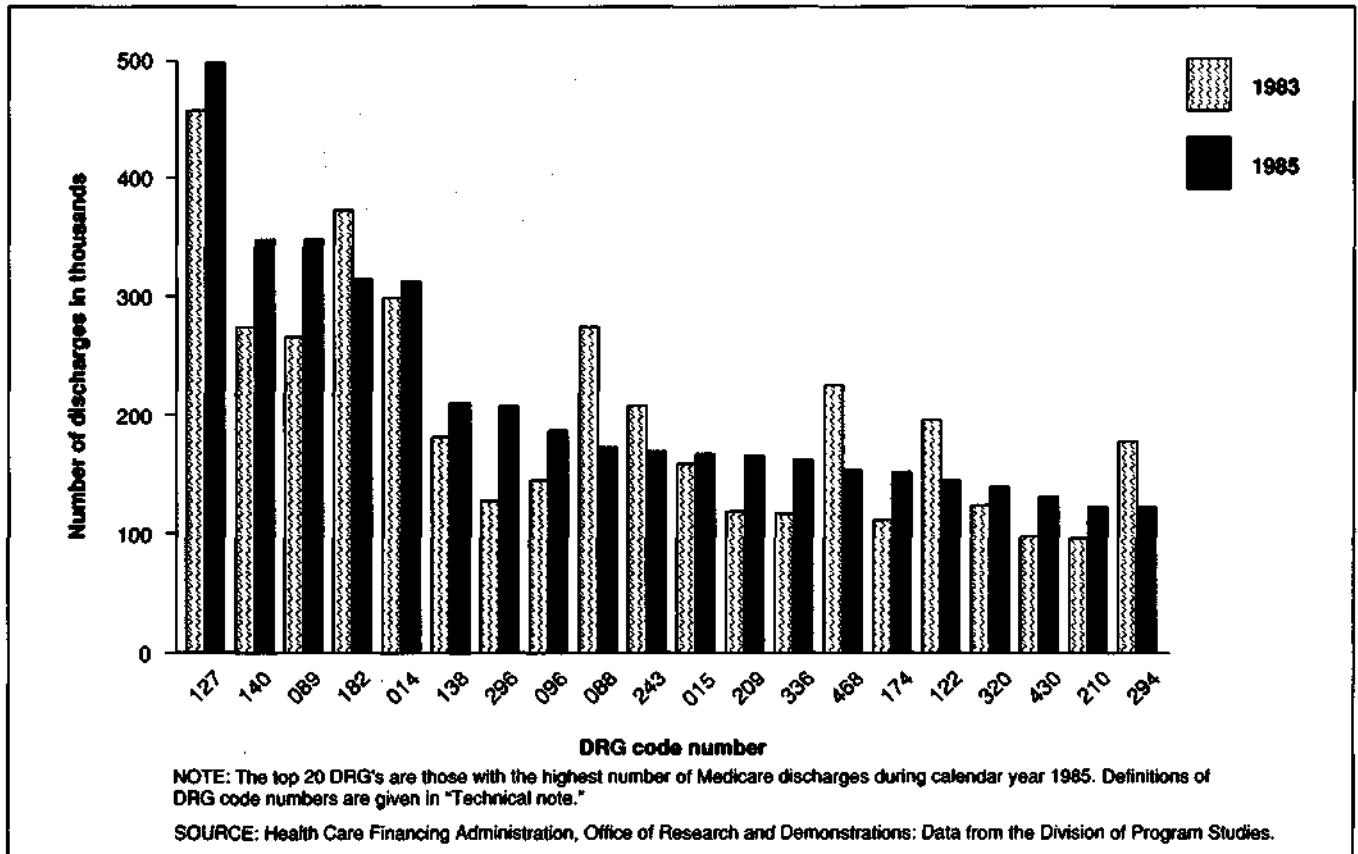
¹Indicates surgical DRG's.

NOTE: Definitions of DRG code numbers are given in "Technical note."

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data are from the Medicare Statistical System; data development by the Office of Research and Demonstrations.

Figure 1

**Number of Medicare discharges for the top 20 diagnosis-related groups (DRG'S):
1983 and 1985**



18-69, without complications or comorbidity. The highest ACPD (\$14,362 in 1983 and \$15,907 in 1985) was for DRG 110—major reconstructive vascular procedure, without pump, age greater than 69 and/or complications or comorbidity. In 1985, nearly 61 percent of the individual DRG's had ACPD's less than those of the ACPD for the 66 leading DRG's, contrasted with 56 percent in 1983. The ACPD for the top 20 DRG's is shown in Figure 2.

Length of stay

To compare changes in the length of stay for 1983 and 1985, mean, standard deviation, coefficient of variation, and selected percentiles are shown in Table 3. Data are arrayed by the 66 leading DRG's of 1985. The standard deviation (SD) provides a statistic for measuring the dispersion of the data around the ALOS. The coefficient of variation is a statistic used to provide a measure of relative variation; that is, a measure that expresses the magnitude of the variation (SD) relative to the size of the quantity that is being measured (ALOS). In both statistics, the greater the value, the greater the dispersion of the data around the ALOS.

Average length of stay

The ALOS for Medicare beneficiaries discharged

from short-stay hospitals (SSH's) declined from 9.8 days in 1983 to 8.6 days in 1985, a decrease of 12 percent. This was the largest 2-year decrease in the history of the Medicare program.

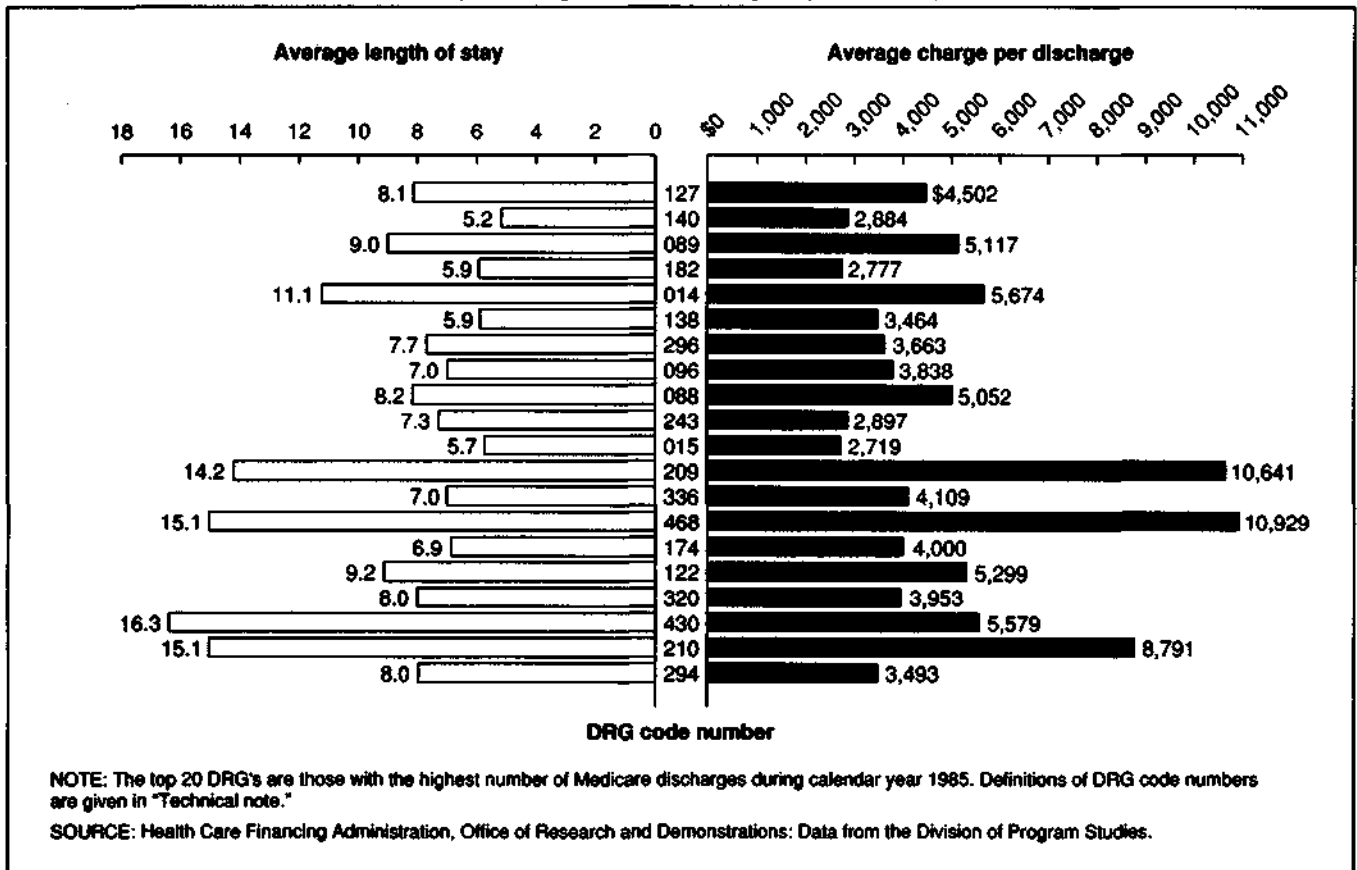
For both 1983 and 1985, the shortest ALOS was for DRG 39—lens procedures (2.5 days and 2.1 days, respectively). In 1983, the longest ALOS (18.8 days) was for DRG 148—major small and large bowel procedures, age greater than 69 and/or complications or comorbidity. In 1985, the longest ALOS (16.5 and 16.4 days, respectively) was registered for both DRG 148 and DRG 154—stomach, esophageal, and duodenal procedures, age greater than 69 and/or complications or comorbidity.

Standard deviation

There was a corresponding decline (14 percent) in the standard deviation of length of stay, from 11.3 days in 1983 to 9.7 days in 1985.

For individual DRG's assigned in 1983, the standard deviation ranged from 1.8 days for DRG 39—lens procedures (with an ALOS of 2.5 days)—to 18.5 days for DRG 236—fractures of hip and pelvis (with an ALOS of 16.6 days). In 1985, DRG 39 again had the lowest standard deviation (1.9 days); DRG 468—unrelated operating room procedures—had the highest (17.8 days).

Figure 2
Average length of stay and average charge per Medicare discharge
for the top 20 diagnosis-related groups (DRG's): 1985



Coefficient of variation

The coefficient of variation (CV) (the ratio of the standard deviation to the ALOS) for all DRG's declined from 1.15 in 1983 to 1.13 in 1985, reflecting a larger relative decrease in the standard deviation of length of stay (14 percent) than in the ALOS (12 percent) during the study period.

Among the leading DRG's in 1985, the CV ranged from 0.57 days for DRG 209—major joint and limb reattachment procedures—to 1.60 days for DRG 123—circulatory disorders with acute myocardial infarction, expired.

Percentiles

Based on the length-of-stay percentiles, the decrease in the length of stay between 1983 and 1985 appears to be concentrated in the higher percentiles; that is, the longer stays. For example, the drop in length of stay from 1983 through 1985 was only about 6 percent for the 25th percentile (from 3.6 days to 3.4 days). For the 75th percentile, the decline in length of stay was 13 percent (from 12.1 to 10.5 days). For the 90th percentile, the decrease in length of stay was 16 percent (from 20.0 to 16.9 days).

In 1983, the ALOS (9.8 days) was 44 percent higher than the median length of stay (6.8 days); and in 1985, the ALOS (8.6 days) was 39 percent higher than the median length of stay (6.2 days).

Among the leading DRG's in 1985, the median length of stay ranged from 2.0 for DRG 39—lens procedures—to 13.3 for DRG 148—major small and large bowel procedures, age 18-69, without complications or comorbidity.

Distribution of charges

Data in Table 4 are the distribution of charges (for the leading DRG's) incurred by Medicare beneficiaries discharged from SSH's, by type of service, for calendar years 1983 and 1985. Hospital charges for accommodation services (routine room and board, and intensive or coronary care) and ancillary services (operating room, laboratory, etc.) were recorded on the billing form (HCFA 1453 for 1983 and HCFA 1450 for 1985).

Distribution of total charges

Of the total inpatient charges for services rendered to Medicare beneficiaries in participating SSH's, routine room and board accommodations declined

Table 3

Length-of-stay statistics and selected length-of-stay percentiles for Medicare beneficiaries discharged from short-stay hospitals, by the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number ¹	Length-of-stay statistics			Selected length-of-stay percentiles					DRG code number ¹	Length-of-stay statistics			Selected length-of-stay percentiles				
	Mean	Standard deviation	CV ²	10th	25th	50th	75th	90th		Mean	Standard deviation	CV ²	10th	25th	50th	75th	90th
All DRG's ³	9.8	11.3	1.15	2.0	3.6	6.8	12.1	20.0	110 ¹	17.4	13.3	0.77	7.0	10.1	14.1	20.7	31.3
All DRG's	8.6	9.7	1.13	1.9	3.4	6.2	10.5	16.9	110	15.4	12.5	0.81	6.2	8.9	12.2	17.9	27.9
005 ¹	10.9	8.9	0.82	4.1	5.5	8.3	13.0	20.1	112 ¹	14.0	12.7	0.91	3.0	6.4	10.8	17.5	27.7
005	8.5	6.9	0.81	3.6	4.6	6.5	10.1	15.3	112	11.3	11.3	1.00	2.0	4.4	8.4	14.0	23.1
012	13.9	16.5	1.18	2.9	5.0	9.0	16.2	28.7	116 ¹	10.5	8.2	0.78	3.6	5.5	8.6	13.2	19.1
012	13.1	16.3	1.25	2.6	4.5	8.3	15.3	28.8	116	8.4	7.0	0.84	2.9	4.4	6.9	10.4	15.3
014	15.0	17.4	1.16	2.6	5.4	10.2	18.2	30.8	121	12.9	8.4	0.65	3.7	7.8	11.7	16.1	22.7
014	11.1	13.3	1.20	2.5	4.7	8.1	13.1	21.3	121	11.5	7.3	0.64	4.6	7.4	10.3	14.0	19.1
015	7.1	8.0	1.12	1.9	3.1	5.3	8.5	13.4	122	11.9	8.0	0.67	3.7	7.4	10.8	14.6	19.9
015	5.7	7.1	1.25	1.7	2.7	4.4	6.9	10.3	122	9.2	6.4	0.70	3.2	6.1	8.8	11.4	14.5
024	7.9	9.4	1.19	1.9	3.2	5.5	9.3	15.3	123	6.1	9.8	1.60	0.5	1.3	2.6	7.4	15.2
024	6.6	7.4	1.13	1.8	2.9	4.8	7.8	12.6	123	5.5	8.8	1.60	0.5	1.3	2.6	6.7	13.2
039 ¹	2.5	1.8	0.70	1.5	1.8	2.2	2.8	3.6	124	9.1	9.0	0.98	1.8	2.9	6.7	11.9	19.0
039	2.1	1.9	0.91	0.9	1.6	2.0	2.4	3.1	124	6.5	6.9	1.05	1.5	2.3	4.9	8.6	13.4
079	14.5	13.5	0.93	3.2	6.4	11.2	18.4	28.5	125	5.4	6.2	1.16	1.6	1.9	2.7	6.6	12.5
079	12.6	11.2	0.89	3.4	6.1	9.9	15.5	23.8	125	3.3	3.1	0.94	1.0	1.6	2.2	3.7	7.0
082	10.9	11.5	1.05	1.8	3.6	7.7	14.2	23.3	127	10.1	10.0	0.99	2.8	4.7	7.6	12.3	19.4
082	9.4	9.6	1.02	1.8	3.6	7.0	12.1	19.4	127	8.1	7.9	0.98	2.6	4.1	6.4	9.9	15.1
087	11.2	13.6	1.22	1.8	4.2	7.9	13.5	21.8	128	10.7	6.9	0.65	4.6	6.7	9.3	12.9	17.5
087	9.6	10.4	1.08	2.0	4.1	7.2	11.7	18.5	128	9.2	5.3	0.58	4.3	6.2	8.3	11.0	14.6
088	9.7	9.8	1.09	2.9	4.5	7.3	11.5	18.2	130	10.0	12.5	1.25	1.8	3.5	7.1	12.1	19.5
088	8.2	8.4	1.02	2.7	4.2	6.4	9.6	14.7	130	7.6	8.9	1.18	1.8	2.7	5.9	9.6	14.3
089	10.9	10.1	0.93	3.3	5.5	8.5	13.2	20.2	132	8.5	8.8	1.04	2.1	3.7	6.3	10.2	16.1
089	9.0	7.9	0.88	3.1	4.9	7.4	10.9	15.9	132	6.4	7.3	1.14	1.8	3.0	4.8	7.6	11.7
096	8.1	6.7	0.83	2.9	4.3	6.6	9.8	14.4	134	7.6	7.5	0.99	2.2	3.5	5.7	9.2	14.4
096	7.0	5.4	0.77	2.7	3.9	5.8	8.5	12.3	134	6.1	8.1	1.34	1.9	2.9	4.6	7.2	11.0
099	7.7	8.8	1.15	1.7	2.9	5.1	9.1	15.1	138	7.5	7.8	1.04	1.9	3.3	5.6	9.1	14.3
099	5.8	6.3	1.09	1.6	2.6	4.4	7.2	11.2	138	5.9	5.7	1.18	1.7	2.8	4.6	7.3	11.1

See footnotes at end of table.

Table 3—Continued

Length-of-stay statistics and selected length-of-stay percentiles for Medicare beneficiaries discharged from short-stay hospitals, by the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number ¹	Length-of-stay statistics			Selected length-of-stay percentiles					DRG code number ¹	Length-of-stay statistics			Selected length-of-stay percentiles				
	Mean	Standard deviation	CV ²	10th	25th	50th	75th	90th		Mean	Standard deviation	CV ²	10th	25th	50th	75th	90th
140 ³	6.5	5.7	0.88	2.1	3.3	5.2	8.0	11.9	183	6.1	6.1	1.00	1.8	2.9	4.7	7.3	11.1
140	5.2	4.3	0.83	1.9	2.9	4.3	6.4	9.1	183	4.6	3.6	0.79	1.5	2.4	3.8	5.8	8.2
141	6.5	6.5	1.00	1.8	2.9	4.9	8.0	12.3	188	7.9	10.9	1.39	1.8	2.5	5.0	9.2	15.7
141	5.3	5.8	1.10	1.7	2.6	4.2	6.4	9.5	188	6.2	7.4	1.18	1.5	2.3	4.4	7.7	12.7
143	5.5	5.9	1.09	1.6	2.4	4.0	6.6	10.4	197 ¹	13.4	8.2	0.61	6.5	8.3	11.3	16.0	22.3
143	3.9	3.3	0.85	1.6	2.1	3.2	4.8	7.1	197	10.7	7.4	0.69	5.3	6.7	8.8	12.4	17.5
144	9.3	9.2	0.98	2.0	3.8	6.9	11.9	18.6	207	8.3	8.1	0.97	2.3	3.8	6.3	10.2	16.0
144	8.1	7.8	0.97	2.0	3.7	6.3	10.1	15.4	207	6.6	6.1	0.92	1.9	3.3	5.2	8.1	12.3
148 ¹	18.8	12.0	0.64	9.0	11.5	15.7	22.3	32.3	209 ¹	17.5	10.0	0.57	9.6	12.0	15.4	19.8	27.2
148	16.5	11.7	0.71	7.9	10.0	13.3	19.1	26.2	209	14.2	8.2	0.57	7.9	9.9	12.6	16.0	21.3
154 ¹	16.6	13.2	0.79	4.9	8.3	13.2	20.8	31.7	210 ¹	18.6	12.0	0.64	8.9	11.9	15.8	21.8	30.6
154	16.4	13.4	0.82	5.3	8.5	12.9	20.2	30.8	210	15.1	11.6	0.77	7.0	9.5	12.7	17.0	24.3
157 ¹	7.4	7.2	0.97	2.0	3.2	5.4	9.2	14.6	236	16.6	18.5	1.12	2.8	6.7	12.4	19.7	31.5
157	6.0	6.6	1.10	1.6	2.7	4.5	7.4	11.6	236	11.8	14.5	1.23	2.4	4.9	8.4	13.4	22.3
161 ¹	6.2	5.1	0.83	2.6	3.5	4.9	7.3	11.0	239	12.2	11.6	0.95	2.9	5.2	9.1	15.4	23.8
161	4.7	4.3	0.91	1.5	2.5	3.8	5.5	8.4	239	10.0	9.1	0.91	2.9	4.8	7.8	12.3	19.2
172	12.2	13.7	1.12	2.0	3.9	8.0	15.6	26.6	243	9.2	8.1	0.88	2.6	4.4	7.4	11.5	17.1
172	9.9	11.2	1.13	1.8	3.6	6.7	12.2	20.8	243	7.3	6.3	0.87	1.9	3.5	6.0	9.2	13.5
174	8.7	9.5	1.08	2.4	4.1	6.6	10.3	16.4	253	9.5	10.7	1.13	1.9	3.6	6.6	11.4	19.2
174	6.9	6.3	0.91	2.2	3.6	5.6	8.3	12.4	253	7.3	10.3	1.41	1.6	2.9	5.1	8.5	13.8
180	8.8	10.6	1.20	1.9	3.5	6.2	10.4	17.5	257 ¹	9.7	6.3	0.66	4.9	6.4	8.4	11.1	15.2
180	7.1	7.4	1.04	1.9	3.3	5.4	8.4	13.2	257	7.5	4.6	0.61	3.7	4.9	6.7	8.8	11.9
182	7.0	7.1	1.01	2.0	3.3	5.3	8.4	13.1	277	10.8	10.2	0.95	3.4	5.3	8.1	12.8	19.7
182	5.9	5.5	0.94	1.9	3.0	4.6	7.2	10.7	277	8.6	8.1	0.94	3.2	4.7	7.0	10.2	15.0

See footnotes at end of table.

Table 3—Continued

Length-of-stay statistics and selected length-of-stay percentiles for Medicare beneficiaries discharged from short-stay hospitals, by the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number ¹	Length-of-stay statistics			Selected length-of-stay percentiles					DRG code number ¹	Length-of-stay statistics			Selected length-of-stay percentiles				
	Mean	Standard deviation	CV ²	10th	25th	50th	75th	90th		Mean	Standard deviation	CV ²	10th	25th	50th	75th	90th
294 ³	9.7	9.9	1.02	3.1	4.8	7.5	11.4	17.5	410	3.7	4.4	1.19	0.7	1.8	2.4	4.5	6.7
294	8.0	8.0	1.00	2.8	4.2	6.4	9.3	13.9	410	3.2	3.4	1.05	0.7	1.8	2.4	4.3	6.0
296	10.0	11.9	1.19	2.5	4.1	6.9	11.7	19.6	416	13.4	14.2	1.06	2.3	5.9	10.3	16.2	26.2
296	7.7	8.8	1.14	2.2	3.5	5.8	9.0	14.2	416	10.6	9.4	0.89	2.4	5.4	8.7	13.1	19.5
310 ¹	6.4	6.7	1.04	1.8	2.6	4.8	7.7	12.8	429	13.6	17.3	1.27	2.8	4.9	8.4	14.8	24.9
310	5.3	5.6	1.04	1.5	2.4	3.9	6.4	10.3	429	12.0	16.1	1.34	2.6	4.5	7.7	14.1	23.9
316	11.1	14.5	1.30	1.5	3.4	7.2	13.7	23.6	430	17.2	17.1	0.99	3.2	6.4	12.7	22.5	35.6
316	9.3	9.8	1.05	1.6	3.6	6.9	11.7	18.7	430	16.3	15.7	0.96	3.0	6.3	12.5	21.7	33.4
320	9.3	8.7	0.94	2.8	4.5	7.2	11.1	16.7	442 ¹	13.0	14.7	1.13	1.8	3.4	8.4	16.8	29.0
320	8.0	8.0	1.00	2.9	4.3	6.5	9.5	13.8	442	9.6	12.4	1.29	1.7	2.5	5.7	12.0	21.5
336 ¹	8.9	6.1	0.69	4.3	5.4	7.2	10.2	15.1	449	7.4	7.6	1.02	1.7	3.1	5.5	9.1	14.5
336	7.0	5.1	0.73	3.5	4.5	5.9	8.0	11.6	449	6.1	6.8	1.12	1.9	2.6	4.4	7.4	11.7
395	8.2	9.2	1.12	1.6	3.2	6.0	10.0	15.8	468	16.7	16.7	1.00	2.9	6.3	12.3	21.3	34.3
395	6.3	7.6	1.20	1.7	2.5	4.7	7.8	12.0	468	15.1	17.8	1.16	2.4	5.5	10.7	18.7	30.8
403	11.4	12.7	1.11	1.6	3.5	7.5	14.6	25.6	All other	9.9	11.8	1.20	1.9	3.4	6.6	11.9	20.4
403	11.4	12.6	1.11	1.7	3.7	7.5	14.5	25.2	All other	8.9	10.7	1.20	1.7	3.1	6.0	10.8	18.5

¹Indicates surgical DRG's.²CV indicates coefficient of variation and is equal to the standard deviation divided by the mean.³Data in the first row of each set of DRG numbers are for 1983; the second row shows data for 1985.

NOTE: Definitions of DRG code numbers are given in "Technical note."

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy. Data are from the Medicare Statistical System; data development by the Office of Research and Demonstrations.

Table 4—Continued
Total charges and percent distribution of charges incurred for Medicare beneficiaries discharged from short-stay hospitals, by type of service and the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number ¹	Total charges in millions	All services ²	Type of service													Other
			Accommodation			Ancillary										
			Routine care	Intensive or coronary care	Total	Operating room	Pharmacy	Laboratory	Radiology	Supplies	Anesthesia	Inhalation therapy	Physical therapy	Occupational therapy	Speech pathology	
Percent distribution																
087	\$483	100.0	20.1	16.4	61.3	0.3	13.3	13.1	3.3	7.2	0.1	16.8	0.5	0.1	(*)	6.5
087	811	100.0	17.3	16.5	66.0	0.3	16.1	12.4	3.5	7.0	0.1	20.0	0.4	(*)	(*)	6.0
088	1,323	100.0	32.6	6.9	58.6	0.3	13.2	11.0	3.2	4.8	0.1	19.9	0.7	0.1	(*)	5.3
088	872	100.0	31.3	7.3	61.1	0.3	14.9	11.5	3.5	4.6	0.1	20.8	0.5	0.1	(*)	4.9
089	1,328	100.0	36.0	5.0	57.9	0.3	17.1	12.0	3.9	6.1	0.1	12.5	0.7	0.1	0.1	5.0
089	1,798	100.0	33.3	5.1	61.3	0.3	19.7	12.3	4.2	5.7	0.1	13.8	0.5	(*)	(*)	4.6
096	493	100.0	39.2	3.8	56.1	0.3	13.8	11.2	3.3	4.5	0.1	16.9	0.6	(*)	(*)	5.4
096	717	100.0	34.6	4.5	60.7	0.2	17.0	11.5	3.4	4.5	0.1	18.6	0.5	(*)	(*)	5.0
099	140	100.0	32.0	9.4	56.6	1.2	10.6	13.3	5.2	5.3	0.2	13.0	0.6	0.1	(*)	7.1
099	147	100.0	31.7	8.1	59.9	0.8	11.9	13.3	6.4	4.7	0.2	14.3	0.4	0.1	(*)	7.9
110 ¹	503	100.0	20.3	11.7	66.9	12.9	12.2	11.8	4.6	10.1	2.2	6.2	0.7	0.1	(*)	6.2
110	954	100.0	17.0	12.0	70.7	13.5	14.0	10.8	4.7	11.5	2.3	7.1	0.7	(*)	(*)	6.1
112 ¹	370	100.0	22.1	11.4	65.6	12.6	11.3	11.7	5.3	9.7	2.1	5.0	0.7	0.1	(*)	7.0
112	363	100.0	21.4	11.2	67.3	12.1	12.2	11.0	6.6	10.1	2.0	4.9	0.7	0.1	(*)	7.7
116 ¹	574	100.0	12.7	10.5	76.0	17.6	4.1	5.2	3.5	31.7	0.8	1.9	0.2	(*)	(*)	10.9
116	635	100.0	10.4	10.4	79.1	12.0	4.3	4.8	4.1	40.6	0.7	1.9	0.2	(*)	(*)	10.5
121	257	100.0	22.3	26.4	50.5	0.2	9.4	13.4	3.8	6.2	(*)	7.7	0.6	0.1	0.1	8.9
121	885	100.0	20.5	26.6	52.8	0.2	10.1	13.7	4.4	5.8	(*)	8.0	0.6	0.1	(*)	10.0
122	1,153	100.0	25.7	26.9	46.5	0.3	7.9	13.1	3.6	5.2	(*)	5.8	0.7	0.2	(*)	9.6
122	757	100.0	24.4	27.5	48.0	0.2	7.8	13.0	4.1	4.5	(*)	5.3	0.6	0.1	(*)	12.3

See footnotes at end of table.

Table 4—Continued

Total charges and percent distribution of charges incurred for Medicare beneficiaries discharged from short-stay hospitals, by type of service and the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number ¹	Total charges in millions	All services ²	Type of service													Other
			Accommodation		Ancillary											
			Routine care	Intensive or coronary care	Total	Operating room	Pharmacy	Laboratory	Radiology	Supplies	Anesthesia	Inhalation therapy	Physical therapy	Occupational therapy	Speech pathology	
Percent distribution																
123	\$314	100.0	10.9	23.9	64.3	0.6	13.8	15.5	4.2	10.1	0.2	10.8	0.2	(*)	(*)	8.8
123	430	100.0	8.6	23.7	67.5	0.3	15.6	15.5	4.6	9.9	0.1	12.2	0.2	(*)	(*)	9.1
124	49	100.0	22.9	15.4	60.7	6.0	7.3	12.1	6.9	7.3	0.4	4.7	0.3	(*)	(*)	15.7
124	274	100.0	19.1	17.0	63.9	1.2	7.7	10.8	7.6	6.8	0.1	5.0	0.2	(*)	(*)	24.7
125	138	100.0	20.9	9.3	69.0	11.5	6.2	11.2	9.0	8.2	0.7	3.0	0.2	(*)	(*)	18.9
125	253	100.0	19.8	8.3	71.8	2.0	4.9	8.5	10.5	6.5	0.1	1.8	0.1	(*)	(*)	37.3
127	2,086	100.0	36.9	10.9	51.1	0.2	9.5	14.3	4.3	5.2	0.1	9.2	0.6	0.1	(*)	7.5
127	2,243	100.0	32.9	12.6	54.3	0.2	10.5	14.8	5.0	5.2	(*)	10.3	0.5	(*)	(*)	7.7
128	132	100.0	54.6	1.3	43.5	0.2	11.3	13.6	5.1	5.7	(*)	1.7	1.1	(*)	(*)	4.6
128	145	100.0	51.6	1.5	46.9	0.2	13.4	14.3	6.1	6.0	(*)	2.2	1.0	(*)	(*)	3.8
130	399	100.0	42.6	4.9	50.6	2.4	10.7	11.7	7.6	6.6	0.5	3.5	1.5	0.1	(*)	5.8
130	294	100.0	44.1	3.7	51.8	1.1	12.0	12.6	10.3	5.8	0.2	2.8	1.3	0.1	(*)	5.6
132	772	100.0	34.7	11.9	51.9	0.9	8.6	13.4	5.3	5.9	0.1	6.2	0.8	0.1	0.1	10.6
132	168	100.0	31.0	15.4	53.5	0.7	8.2	14.8	6.0	5.0	0.1	6.2	0.5	0.1	(*)	11.8
134	343	100.0	43.7	7.3	48.0	0.7	7.9	13.9	6.7	4.4	0.1	3.7	1.2	0.2	0.1	9.2
134	134	100.0	42.0	8.4	49.2	0.5	8.2	14.7	8.5	4.1	0.1	3.3	0.8	0.1	(*)	9.1
138	680	100.0	30.9	15.9	52.2	1.1	6.8	13.2	4.6	8.2	0.1	4.8	0.5	0.1	0.1	12.7
138	726	100.0	28.8	18.5	52.5	0.4	7.7	14.6	5.4	5.9	0.1	5.4	0.4	(*)	(*)	12.6
140	833	100.0	31.8	18.8	48.4	0.4	6.4	14.7	5.0	4.2	0.1	4.8	0.4	0.1	(*)	12.2
140	1,006	100.0	27.8	20.9	51.2	0.2	7.1	16.1	5.5	4.2	(*)	5.4	0.3	(*)	(*)	12.4

See footnotes at end of table.

Table 4—Continued

Total charges and percent distribution of charges incurred for Medicare beneficiaries discharged from short-stay hospitals, by type of service and the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number ¹	Total charges in millions	All services ²	Type of service													
			Accommodation		Ancillary											
			Routine care	Intensive or coronary care	Total	Operating room	Pharmacy	Laboratory	Radiology	Supplies	Anesthesia	Inhalation therapy	Physical therapy	Occupational therapy	Speech pathology	Other
Percent distribution																
182	\$980	100.0	45.2	2.8	51.0	1.6	11.8	13.6	8.6	5.0	0.2	2.6	0.6	0.1	(³)	6.9
182	870	100.0	41.6	3.2	55.0	1.5	14.7	14.2	9.4	4.8	0.2	2.7	0.5	(³)	(³)	7.0
183	319	100.0	41.6	3.3	53.9	2.1	12.3	13.9	9.9	4.7	0.3	2.5	0.5	(³)	(³)	7.7
183	103	100.0	41.0	2.9	55.8	1.9	14.1	13.8	12.6	4.0	0.2	1.2	0.3	(³)	(³)	7.7
188	212	100.0	38.3	4.3	55.3	4.4	13.5	13.0	6.0	6.6	0.8	3.5	0.5	0.1	(³)	6.8
188	166	100.0	37.3	3.7	58.3	3.0	16.4	13.7	7.1	6.1	0.4	3.1	0.3	(³)	(³)	8.1
197 ¹	457	100.0	31.2	5.8	62.5	10.7	15.6	11.3	4.8	7.9	2.5	4.8	0.3	(³)	(³)	4.6
197	537	100.0	27.5	6.1	66.3	11.8	17.6	10.9	5.1	8.7	2.6	5.2	0.3	(³)	(³)	4.1
207	186	100.0	39.6	3.8	55.4	1.9	14.4	14.1	9.2	5.3	0.4	2.9	0.4	(³)	(³)	6.9
207	170	100.0	37.4	3.8	58.8	1.1	16.6	15.0	11.5	4.6	0.1	3.0	0.3	(³)	(³)	6.6
209 ¹	1,158	100.0	33.8	1.5	64.1	18.0	8.1	6.9	2.4	16.3	2.0	2.1	4.6	0.3	(³)	3.6
209	1,754	100.0	28.6	1.6	69.6	17.7	8.3	6.3	2.4	22.9	2.0	2.2	4.4	0.2	(³)	3.2
210 ¹	827	100.0	39.6	2.7	57.0	10.9	9.0	8.6	4.3	10.2	2.0	3.4	3.8	0.2	(³)	4.5
210	1,065	100.0	36.1	2.9	60.7	11.9	9.9	8.5	5.1	11.2	2.1	3.6	3.6	0.1	(³)	4.6
236	292	100.0	51.6	2.5	42.7	3.0	7.8	8.1	4.5	6.6	0.6	3.2	4.1	0.4	(³)	4.2
236	204	100.0	54.7	2.5	41.9	1.3	7.5	8.4	6.0	5.5	0.2	3.4	4.3	0.6	(³)	4.6
239	188	100.0	54.3	1.1	43.4	0.9	9.5	9.0	8.3	4.4	0.2	2.7	2.7	0.2	(³)	5.5
239	259	100.0	51.3	1.1	47.4	0.5	10.9	9.2	11.1	4.6	0.1	3.1	2.8	0.1	(³)	5.0
243	626	100.0	55.0	1.2	42.7	0.9	6.6	7.8	8.8	4.0	0.2	1.6	6.8	0.3	0.1	5.6
243	490	100.0	51.6	1.2	47.1	0.6	7.3	8.1	12.6	4.4	0.1	1.6	6.9	0.3	(³)	5.2

See footnotes at end of table.

Table 4—Continued

Total charges and percent distribution of charges incurred for Medicare beneficiaries discharged from short-stay hospitals, by type of service and the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number ¹	Total charges in millions	All services ²	Type of service													Other
			Accommodation		Ancillary											
			Routine care	Intensive or coronary care	Total	Operating room	Pharmacy	Laboratory	Radiology	Supplies	Anesthesia	Inhalation therapy	Physical therapy	Occupational therapy	Speech pathology	
Percent distribution																
253	\$132	100.0	55.5	1.6	40.9	2.3	6.3	8.0	6.3	5.4	0.5	2.2	4.0	0.4	(*)	5.4
253	102	100.0	55.5	1.5	42.5	2.1	6.4	8.3	7.7	5.2	0.5	2.2	3.9	0.4	(*)	5.8
257 ¹	110	100.0	40.9	1.2	57.6	19.2	5.4	12.0	4.0	6.8	3.9	1.8	0.4	(*)	(*)	4.1
257	161	100.0	36.3	1.4	62.2	22.1	6.5	10.9	4.2	8.5	4.4	1.8	0.3	(*)	(*)	3.3
277	191	100.0	49.9	1.2	47.4	0.8	18.4	10.2	3.1	6.9	0.1	1.6	2.1	0.1	(*)	4.2
277	236	100.0	47.0	1.2	51.5	0.6	22.1	11.2	3.8	6.1	0.1	1.8	1.8	(*)	(*)	4.0
294	615	100.0	49.6	3.7	45.5	0.6	9.8	16.0	4.7	4.4	0.1	2.7	1.4	0.1	(*)	5.7
294	418	100.0	46.5	4.3	48.8	0.4	11.6	17.5	5.1	4.6	0.1	2.8	1.2	0.1	(*)	5.4
296	491	100.0	46.1	3.4	49.6	0.5	12.1	14.4	4.6	6.6	0.1	4.1	1.0	0.1	(*)	6.0
296	762	100.0	43.0	3.5	53.3	0.5	14.4	15.2	5.5	6.3	0.1	4.4	0.8	0.1	(*)	5.9
310 ¹	131	100.0	38.9	1.5	59.3	16.2	9.3	11.3	5.0	7.5	3.2	1.5	0.2	(*)	(*)	5.2
310	184	100.0	34.5	1.4	63.9	17.5	11.2	10.8	6.4	8.1	3.4	1.6	0.2	(*)	(*)	4.6
316	357	100.0	29.9	8.1	59.3	1.4	11.9	15.6	3.8	6.7	0.2	4.9	0.6	0.1	0.1	14.1
316	247	100.0	32.6	8.0	59.0	0.7	13.6	16.6	4.8	6.6	0.1	5.6	0.6	0.1	(*)	10.4
320	451	100.0	44.1	1.9	52.9	1.5	17.5	13.3	4.5	6.8	0.3	3.1	0.8	0.1	(*)	5.0
320	555	100.0	41.2	2.0	56.4	1.0	21.2	14.1	5.0	6.4	0.2	3.3	0.6	0.1	(*)	4.5
336 ¹	483	100.0	39.2	1.8	58.6	15.4	10.1	11.1	3.9	8.7	2.9	1.7	0.3	(*)	(*)	4.5
336	661	100.0	35.7	1.7	62.6	17.8	11.7	10.6	4.0	9.3	3.3	1.6	0.2	(*)	(*)	3.9
395	332	100.0	44.7	2.3	51.3	0.9	9.2	18.2	6.0	4.6	0.1	2.8	0.6	0.1	(*)	8.8
395	272	100.0	40.2	2.5	55.6	0.9	10.6	18.9	6.5	4.6	0.1	3.0	0.5	(*)	(*)	10.4

See footnotes at end of table.

Table 4—Continued

Total charges and percent distribution of charges incurred for Medicare beneficiaries discharged from short-stay hospitals, by type of service and the 66 leading diagnosis-related groups (DRG's): 1983 and 1985

DRG code number ¹	Total charges in millions	All services ²	Type of service													
			Accommodation		Total	Ancillary										
			Routine care	Intensive or coronary care		Operating room	Pharmacy	Laboratory	Radiology	Supplies	Anesthesia	Inhalation therapy	Physical therapy	Occupational therapy	Speech pathology	Other
Percent distribution																
403	\$329	100.0	39.6	2.4	56.6	1.3	16.6	16.8	4.8	5.2	0.2	3.1	0.6	(³)	(³)	7.9
403	330	100.0	35.2	3.1	61.1	1.4	19.5	16.5	6.0	5.1	0.3	3.4	0.6	(³)	(³)	8.5
410	76	100.0	40.4	0.5	58.5	0.6	33.1	10.4	4.6	4.1	0.1	0.7	0.2	0.1	(³)	4.8
410	237	100.0	34.4	0.7	64.7	1.0	39.6	9.0	5.3	5.1	0.1	0.8	0.2	(³)	(³)	3.5
416	319	100.0	32.1	6.3	59.8	0.5	20.6	14.6	3.6	7.6	0.1	5.7	0.7	0.1	(³)	6.3
416	560	100.0	30.8	6.1	62.8	0.4	24.0	14.9	4.3	7.0	0.1	6.2	0.6	(³)	(³)	5.4
429	235	100.0	60.6	2.4	34.7	0.3	6.5	9.2	4.6	4.0	0.1	1.8	1.2	0.5	0.1	6.3
429	192	100.0	63.2	2.7	32.4	0.3	5.5	8.8	5.9	2.9	(³)	1.5	1.0	0.6	0.1	5.9
430	481	100.0	75.3	2.0	21.1	0.3	4.4	5.8	2.2	1.2	0.2	0.6	0.6	1.2	(³)	4.5
430	730	100.0	75.5	2.5	21.8	0.4	4.6	5.3	2.5	1.0	0.2	0.6	0.7	1.5	(³)	4.9
442 ¹	185	100.0	28.1	5.8	64.4	14.1	12.3	9.6	3.0	11.2	2.0	2.9	1.4	0.1	(³)	7.8
442	334	100.0	24.6	5.7	69.4	15.1	13.4	9.8	3.4	12.1	2.3	2.8	0.9	0.1	(³)	9.5
449	101	100.0	40.6	10.3	48.5	0.3	8.8	5.0	4.4	5.4	0.1	5.3	0.9	0.1	(³)	8.0
449	130	100.0	35.2	11.6	53.0	0.3	10.1	15.9	5.4	5.4	0.1	6.8	0.7	0.1	(³)	8.3
468	2,245	100.0	29.6	7.4	61.6	8.8	12.9	11.8	4.3	8.9	1.6	5.3	1.0	0.1	0.1	6.8
468	1,662	100.0	27.4	9.0	62.9	6.9	14.0	11.7	5.2	8.9	1.2	7.0	1.0	0.2	0.1	6.8
All other	21,915	100.0	35.7	5.8	57.0	7.7	11.7	11.5	4.7	7.5	1.4	4.5	1.1	0.2	(³)	6.7
All other	17,562	100.0	30.7	6.8	62.2	9.4	13.1	10.9	5.2	8.8	1.6	4.8	1.2	0.3	0.1	6.8

¹Indicates surgical DRG's.

²Detail may not add to total because of rounding.

³Data in the first row of each set of DRG numbers are for 1983; the second row shows data for 1985.

⁴Less than 0.01 percent.

NOTE: Definitions of DRG code numbers are given in "Technical note."

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data are from the Medicare Statistical System; data development by the Office of Research and Demonstrations.

from 36 percent in 1983 to 32 percent in 1985. On the other hand, total ancillary charges rose from 56 to 60 percent of charges for all services during the same period. The proportion of charges for intensive or coronary care increased from 7 to 8 percent.

Distribution of ancillary charges

Of the individual ancillary charges, pharmacy and laboratory charges combined accounted for over two-fifths of all ancillary charges. More than any other ancillary service, pharmacy charges increased the most from 1983 through 1985, rising from 11.3 percent to 13.0 percent. Laboratory charges remained about the same (11.6 to 11.5 percent).

Among the leading DRG's, substantial changes were noted, as shown below, in the distribution of ancillary charges between 1983 and 1985.

For operating room services, there was a large relative decline in charges for the following:

- DRG 116—permanent cardiac pacemaker implant, without acute myocardial infarction, heart failure, or shock (from 17.6 percent to 12.0 percent).
- DRG 124—circulatory disorders except AMI, with cardiac catheterization and complex diagnosis (from 6.0 to 1.2 percent).
- DRG 125—same as DRG 124, except without complex diagnosis (from 11.5 to 2.0 percent).

For pharmacy services, there were large relative increases between 1983 and 1985 in charges for the following:

- DRG 79—respiratory infections and inflammations, age greater than 69 and/or complications or comorbidity (17.7 to 21.7 percent).
- DRG 96—bronchitis and asthma, age greater than 69 and/or complications or comorbidity (13.8 to 17.0 percent).
- DRG 277—cellulitis, age greater than 69 and/or complications or comorbidity (18.4 to 22.1 percent).
- DRG 320—kidney and urinary tract infections, age greater than 69 and/or complications or comorbidity (17.5 to 21.2 percent).
- DRG 410—chemotherapy (33.1 to 39.6 percent).

For laboratory services, there was a significant increase between 1983 and 1985 in the proportion of charges for the following:

- DRG 449—poisoning and toxic effects of drugs, age greater than 69 and/or complications or comorbidity (5.0 to 15.9 percent).

For supply services, there was a substantial increase between 1983 and 1985 in the proportion of charges for the following:

- DRG 116—permanent pacemaker implant, without acute myocardial infarction, heart failure, or shock (31.7 to 40.6 percent).
- DRG 209—major joint and limb reattachment procedures (16.3 to 22.9 percent).

Outlier discharges

The type of PPS outlier discharges and associated ALOS and ACPD, arrayed by the 66 leading DRG's, are shown in Table 5 for Medicare beneficiaries discharged from short-stay hospitals operating under PPS in 1985. Because the DRG classification system was not designed to handle uncommon cases, Congress instructed DHHS to set aside 5-6 percent of the total PPS payments to pay for the marginal cost of uncommon discharges defined as outliers. Outliers include either unusually long hospital stays (day outliers) or exceptionally high costs (cost outliers). For PPS discharges identified as outliers, Medicare will pay hospitals a reimbursement amount above the fixed DRG payment.

Number and type of discharges

Of all the SSH discharges (10.0 million) recorded in 1985, 83.4 percent (8.4 million) were from SSH's operating under PPS. The PPS discharges included 172,740 outliers, comprised of 64,275 (37 percent) cost outliers and 108,465 (63 percent) day outliers. Outlier discharges are a small proportion (2.1 percent) of all PPS discharges, but these cases accounted for 13.2 percent (\$5.8 billion) of all PPS, SSH inpatient charges (\$43.8 billion).

Discharges for the 66 leading DRG's (5,946,275) accounted for 71 percent of all PPS discharges, 64 percent of all outlier discharges (110,920), 68 percent of all cost outliers (43,930), and 62 percent of all day outliers (66,990). As a proportion of all discharges for the leading DRG's, outliers were 1.9 percent.

Among the DRG's, the one with the largest proportion of PPS outliers as a percent of discharges was DRG 154—stomach, esophageal, and duodenal procedures, age greater than 69 and/or complications or comorbidity. DRG 154 was assigned to 39,475 PPS discharges, of which 4,675 (11.8 percent) were outlier discharges; 7 percent (2,680) were cost outliers. In contrast, the smallest proportion (0.1 percent) of outlier cases (75) was registered for DRG 125—circulatory disorders except acute myocardial infarction, with cardiac catheterization, without complex diagnosis. DRG 125 had 74,305 PPS discharges.

For nearly one-third of the 66 leading DRG's, nearly all of the PPS outlier cases were day outlier discharges. For DRG 183 and DRG 410—chemotherapy—all of the outlier cases were day outliers. On the other hand, the following DRG's had an unusually high proportion (about two-thirds) of cost outlier discharges:

- DRG 116—permanent cardiac pacemaker implant, without AMI, heart failure, or shock.
- DRG 121—circulatory disorders, with AMI and cardiovascular complications, discharged alive.
- DRG 148—major small and large bowel procedures, age greater than 69 and/or complications or comorbidity.

- DRG 209—major joint and limb reattachment procedures.

Average length of stay

For 1985, a day outlier was required to exceed the geometric mean length of stay for the DRG the lesser of 17 days, or 1.94 standard deviations. The ALOS for all PPS day outliers was 43.7 days, or about 5.5 times greater than the ALOS (7.9 days) for all PPS discharges.

Among the 66 leading DRG's, the highest ALOS (54.9 days) for day outliers was shown for DRG 210—hip and femur procedures except major joint, age greater than 69 and/or complications or comorbidity. A similar ALOS (54.8 days) for day outliers was recorded for DRG 148—major small and large bowel procedures, age greater than 69 and/or complications and comorbidity.

In contrast, the ALOS for all PPS discharges for DRG 39—lens procedures—was only 2.0 days; the ALOS for the 600 day outlier discharges (0.9 percent of all PPS discharges) was 10.9 days.

Average charge per discharge

To qualify as a cost outlier during 1985, the discharge must have failed the criteria for length of stay, and the covered charges (adjusted to cost) were required to exceed the greater of \$13,500, or twice the Federal rate for the DRG. The ACPD for all PPS cost outliers (\$31,848) was 6.1 times greater than the ACPD for all PPS discharges.

For cost outliers among the 66 leading DRG's, the highest ACPD (\$38,808) was incurred for DRG 110—major reconstructive vascular procedures, without pump, age greater than 69, and/or complications or comorbidity. The second highest (\$36,801) was for DRG 154—stomach, esophageal, and duodenal procedures, age greater than 69 and/or complications or comorbidity. For both of these DRG's, slightly less than one-half of the outlier cases were cost outliers.

Among the ACPD's for day outliers, the highest were noted for DRG 154 (\$58,620), DRG 148 (\$58,023), and DRG 110 (\$56,835).

The ALOS and ACPD for all PPS discharges were 7.9 days and \$5,232, respectively; for all outliers, 36.0 days and \$33,528; for all cost outliers, 23.1 days and \$31,848; and for all day outliers, 43.7 days and \$34,523.

The largest ACPD was shown for DRG 110 for total PPS (\$16,244), total PPS outliers (\$47,110), and total PPS cost outliers (\$38,808). DRG 110 is a major reconstructive vascular procedure, without pump, age greater than 69 and/or complications or comorbidity. DRG 110 was third highest in ACPD for day outliers (\$56,835). However, DRG 110 ranked eighth in the number of discharges for total PPS outliers (4,495) and third in the ALOS for total PPS (14.9 days). Only two other DRG's had a larger

proportion of outliers as a percent of the total PPS discharges than did DRG 110 (8.7 percent).

Sources and limitations of data

The data shown in this article were derived from the Health Care Financing Administration (HCFA) short-stay hospital inpatient stay record file. This file is generated by linking information from three HCFA master program files. Thus, the statistical stay record provides information on the patient, the hospital, and the hospitalization.

The DRG code is assigned by GROUPER software, maintained by HCFA, and implemented by the fiscal intermediaries, based on variables contained on the discharge bill record: the principal and secondary diagnoses; the principal and secondary procedures; complications or comorbidities; and the age, sex, and discharge status of the patient. Each individual stay record is processed through GROUPER, and the appropriate DRG code is then added to the short-stay hospital inpatient stay record.

The data shown by geographic division were summarized by the location of the provider. Data for other areas (not shown separately) include the Virgin Islands and all other areas outside the 50 States and the District of Columbia. Annual use and charge rates (based on the number of enrollees) were summarized by the location of the residence of the beneficiary.

The hospital's charges for services rendered are entered on the hospital inpatient billing form. For the purpose of this study, charges are used rather than reimbursements because charge data are readily available and provide a better basis for measuring the relative differences in the resources used for services rendered.

Data shown in Table 5 represent discharges from hospitals participating in the Medicare prospective payment system (PPS). The PPS legislation categorically excludes specified specialty units of short-stay hospitals (e.g., psychiatric and rehabilitation units). In addition, data are excluded for SSH's exempt from participating in PPS in the waiver States—Maryland, Massachusetts, New Jersey, and New York. Sole community hospitals as well as cancer hospitals are also excluded.

Three types of limitations should be considered when analyzing the data shown in this report: sampling variability, incompleteness of files due to administrative time lag, and diagnostic and DRG coding. Each of these data limitations is described below.

Sampling variability

The data presented in this article are based on short-stay hospital stay records contained in the 20-percent MEDPAR inpatient stay record file. Therefore, the data are subject to sampling variability. Sample counts were multiplied by a factor of 5 to estimate population totals.

Table 5
Number and type of discharges, average length of stay per discharge, and average charge per discharge for Medicare beneficiaries discharged from short-stay hospitals operating under the prospective payment system (PPS), by the 66 leading diagnosis-related groups (DRG's): 1985

DRG code number ¹	Number and type of discharges					Average length of stay				Average charge per discharge			
	Total PPS ²	PPS outliers			Outliers as percent of total PPS	Total PPS	PPS outliers			Total PPS	PPS outliers		
		Total	Cost	Day			Total	Cost	Day		Total	Cost	Day
All DRG's	8,363,920	172,740	64,275	108,465	2.1	7.9	36.0	23.1	43.7	\$5,232	\$33,528	\$31,848	\$34,523
Leading DRG's	5,946,275	110,920	43,930	66,990	1.9	7.8	34.5	22.3	42.5	4,956	31,781	30,162	32,842
005 ¹	50,895	930	510	420	1.8	8.2	32.0	21.6	44.7	7,141	33,005	28,040	39,034
012	29,305	535	85	450	1.8	8.7	43.6	20.9	47.9	3,972	27,644	25,177	28,110
014	263,475	6,515	1,820	4,695	2.5	9.7	40.4	22.9	47.1	5,255	27,275	27,323	27,256
015	143,225	605	85	540	0.4	5.1	29.4	17.2	30.9	2,822	17,609	21,475	17,144
024	50,695	605	165	440	1.2	6.1	32.5	19.7	37.3	3,576	23,822	28,362	22,119
039 ¹	64,815	605	5	600	0.9	2.0	10.8	8.0	10.9	2,521	8,181	2,907	8,225
079	62,160	3,530	1,830	1,700	5.7	11.9	33.6	22.1	46.1	9,030	36,218	30,220	42,676
082	83,245	2,075	490	1,585	2.5	8.7	35.1	21.7	39.3	5,122	25,922	29,110	24,936
087	87,880	4,650	2,645	2,005	5.3	9.3	32.0	20.2	47.6	8,343	40,551	29,744	54,807
088	145,545	2,315	1,145	1,170	1.6	7.6	32.3	21.3	43.2	4,961	34,133	28,282	39,859
089	300,570	4,715	2,315	2,400	1.6	8.5	32.0	21.2	42.5	5,066	29,791	28,167	31,358
096	163,085	1,460	265	1,195	0.9	6.7	30.4	17.4	33.3	3,828	24,299	24,141	24,334
099	37,930	325	145	180	0.9	5.4	30.8	17.7	41.1	3,330	27,412	25,428	29,010
110 ¹	51,535	4,495	2,425	2,070	8.7	14.9	36.2	22.5	52.1	16,244	47,110	38,808	56,835
112 ¹	31,915	1,880	845	1,035	5.9	10.6	34.6	21.3	45.3	9,741	36,712	31,881	40,656
116 ¹	44,960	815	520	295	1.8	8.0	26.9	19.7	39.5	12,178	31,471	29,018	35,793
121	101,070	2,320	1,545	775	2.3	11.1	29.2	22.6	42.2	7,553	29,017	27,170	32,699
122	116,975	515	280	235	0.4	8.6	29.7	22.6	38.2	5,194	25,126	24,584	25,772
123	58,755	2,000	1,000	1,000	3.4	5.0	25.7	16.1	35.3	6,126	32,437	28,982	35,891
124	43,550	610	335	275	1.4	6.4	29.5	22.3	38.3	5,820	36,425	34,395	38,899
125	74,305	75	45	30	0.1	3.3	22.1	19.3	26.2	3,174	26,994	31,020	18,454
127	419,155	5,265	2,120	3,145	1.3	7.6	32.1	20.7	39.8	4,408	27,270	26,800	27,587
128	34,410	220	15	205	0.6	8.8	34.0	22.3	34.8	3,564	20,213	27,335	19,692
130	68,085	490	95	395	0.7	6.8	32.7	19.0	36.1	3,410	21,238	26,312	20,018
132	38,810	225	95	130	0.6	5.8	26.8	19.3	32.2	3,339	27,250	24,553	29,221
134	40,645	250	45	205	0.6	5.4	29.0	14.3	32.2	2,607	18,991	14,157	20,052
138	179,070	1,065	250	815	0.6	5.5	34.3	19.4	38.9	3,325	26,007	25,806	26,069
140	289,315	1,115	75	1,040	0.4	4.9	26.4	14.5	27.3	2,842	15,386	19,838	15,065
141	80,505	385	15	370	0.5	4.9	29.0	17.0	29.5	2,647	16,108	28,763	15,595
143	69,690	190	15	175	0.3	3.8	24.5	3.3	26.3	2,369	10,871	1,759	11,652
144	37,330	700	250	450	1.9	7.7	30.8	19.7	37.0	5,005	27,593	29,816	26,359

See footnotes at end of table.

Table 5—Continued

Number and type of discharges, average length of stay per discharge, and average charge per discharge for Medicare beneficiaries discharged from short-stay hospitals operating under the prospective payment system (PPS), by the 66 leading diagnosis-related groups (DRG's): 1985

DRG code number ¹	Number and type of discharges					Average length of stay				Average charge per discharge			
	Total PPS ²	PPS outliers			Outliers as percent of total PPS	Total PPS	PPS outliers			Total PPS	PPS outliers		
		Total	Cost	Day			Total	Cost	Day		Total	Cost	Day
148 ¹	99,125	8,415	5,425	2,990	8.5	16.0	35.5	24.8	54.8	13,682	42,050	33,246	58,023
154 ¹	39,475	4,675	2,680	1,995	11.8	16.1	36.6	24.0	53.6	15,809	46,112	36,801	58,620
157 ¹	34,225	355	40	315	1.0	5.8	35.7	21.1	37.6	3,487	28,210	30,189	27,958
161 ¹	62,850	820	20	800	1.3	4.5	23.0	10.5	23.4	2,844	16,519	24,181	16,327
172	34,190	895	125	770	2.6	8.7	39.5	21.3	42.5	4,657	25,017	31,569	23,953
174	131,810	1,125	410	715	0.9	6.6	32.1	20.2	38.9	3,931	27,791	27,199	28,130
180	59,530	630	110	520	1.1	6.6	33.3	22.3	35.7	3,335	22,902	24,237	22,620
182	271,465	2,330	150	2,180	0.9	5.5	29.0	16.4	29.9	2,698	17,669	21,725	17,390
183	41,860	100	0	100	0.2	4.3	25.2	0.0	25.2	2,090	10,697	0	10,697
188	38,980	440	145	295	1.1	5.8	32.7	21.2	38.4	3,438	29,735	30,847	29,188
197 ¹	63,090	1,930	850	1,080	3.1	10.4	32.0	20.5	41.1	7,394	33,409	27,251	38,256
207	41,965	225	75	150	0.5	6.1	31.0	22.6	35.1	3,310	21,342	23,839	20,093
209 ¹	145,535	3,460	2,285	1,175	2.4	13.5	33.3	24.4	50.6	10,572	29,797	26,153	36,883
210 ¹	104,080	2,695	1,440	1,255	2.6	13.8	40.1	27.2	54.9	8,507	31,910	28,658	35,642
236	35,830	640	135	505	1.8	9.4	41.9	23.8	46.8	3,840	21,463	27,211	19,914
239	52,590	860	55	805	1.6	9.4	40.9	21.4	42.2	4,054	20,067	22,864	19,876
243	149,155	595	55	540	0.4	6.8	36.7	21.5	38.2	2,783	19,567	23,591	19,157
253	30,670	230	20	210	0.7	6.4	37.8	19.8	39.6	2,544	16,997	18,290	16,874
257 ¹	30,225	245	20	225	0.8	7.3	30.2	17.5	31.4	4,450	18,428	24,781	17,863
277	48,400	360	65	295	0.7	7.9	35.6	21.5	38.7	3,813	21,710	31,225	19,613
294	100,400	790	195	595	0.8	7.3	36.7	21.3	41.7	3,329	25,380	28,737	24,280
296	185,135	2,010	400	1,610	1.1	7.1	37.4	19.4	41.9	3,526	23,924	26,159	23,368
310 ¹	45,005	605	30	575	1.3	5.1	28.9	18.8	29.5	3,320	19,125	21,180	19,018
316	36,470	1,180	390	790	3.2	8.7	33.4	20.1	39.9	5,589	28,014	31,293	26,396
320	122,995	890	155	735	0.7	7.4	35.8	23.2	38.5	3,822	21,217	26,273	20,151
336 ¹	139,385	1,275	145	1,130	0.9	6.7	30.0	1.9	31.3	4,062	19,909	24,019	19,382
395	70,235	530	95	435	0.8	5.7	35.3	17.7	39.2	3,105	25,945	27,272	25,655
403	37,295	2,315	515	1,800	6.2	10.6	39.1	23.8	43.4	7,031	33,113	30,376	33,896
410	90,545	1,100	0	1,100	1.2	3.1	21.9	0.0	21.9	2,227	15,365	0	15,365
416	70,565	2,260	1,025	1,235	3.2	10.1	32.1	20.6	41.8	6,977	29,210	28,230	30,024
429	29,385	455	50	405	1.5	8.7	43.6	24.3	46.0	3,327	17,659	27,589	16,433
430	49,255	1,705	35	1,670	3.5	11.6	44.2	21.4	44.7	3,686	13,875	25,374	13,634
442 ¹	34,185	2,045	750	1,295	6.0	9.1	36.9	21.3	45.9	8,484	36,950	32,410	39,579
449	34,670	355	140	215	1.0	5.6	29.4	19.0	36.2	3,160	27,538	29,990	25,942
468	122,795	10,900	4,445	6,455	8.9	13.4	39.7	23.3	51.1	10,615	40,307	30,534	47,038
All Other DRG's	2,417,645	61,820	20,345	41,475	2.6	8.2	38.7	24.8	45.6	5,910	36,663	35,490	37,238

¹Indicates surgical DRG's.

²Excludes non-PPS data for sole community hospitals, cancer hospitals, specialty units of short-stay hospitals (SSH's) and all participating SSH's in the four waiver States.

NOTE: Definition of DRG code numbers are given in "Technical note."

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data are from the Medicare Statistical System; data development by the Office of Research and Demonstrations.

Incompleteness of data files

The incompleteness of the MEDPAR stay record files used to prepare the report is a result of the inherent administrative time lag between the time when a bill (HCFA-1450) is submitted for payment and when it is posted to the central records. In addition, for 1985, a substantial number of discharge records for Virginia and North Carolina were missing from the MEDPAR file used to prepare this article. The processing cut-off dates for the data in this article were December 1984 for 1983 data and December 1986 for 1985 data. Therefore, discharges recorded after those dates were not included. A complete count of Medicare discharges from short-stay hospitals in 1983 and 1985 will probably total about 3 percent and 5 percent more, respectively, than the total figures used in this study.

Diagnostic and diagnosis-related group coding

This limitation is associated with coding the principal and secondary diagnoses, surgical procedures, and the eventual assignment of the DRG code. The diagnostic information used to generate the DRG codes was classified according to the *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)*. For each sample bill record, a unique three-, four-, or five-digit code was assigned for the principal and secondary diagnoses. Similarly, a unique two-, three-, or four-digit code was assigned for each surgical procedure. DRG assignment errors, essentially, result from errors in selecting and coding the diagnoses and procedures; precision and understanding of the DRG definitions; and comprehending and adhering to HCFA coding guidelines and regulations. Based on a report in the *New England Journal of Medicine* concerning the accuracy of diagnostic coding, an error rate of 20.8 percent in DRG coding was reported for the period October 1984 through March 1985. Errors were distributed equally between physicians and hospitals. Small hospitals had significantly higher error rates. Previous studies had found that errors occurred randomly, so that one-half the errors benefited the hospital financially and one-half penalized the hospital. The present study found that a statistically significant 61.7 percent of coding errors favored the hospital. The study concluded that "creep" does occur in the coding of DRG's, resulting in overpayment to hospitals for patients covered by Medicare (Hsia et al., 1988). As a result of this study and other related studies, the data in this article should be used with caution.

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Technical note

The following are definitions of the leading diagnosis-related groups (DRG's) within the major diagnostic classifications (MDC's):

- MDC 1 Diseases and disorders of the nervous system (DRG's 1-35)
 - 005¹ Extracranial vascular procedures
 - 012 Degenerative nervous system disorders
 - 014 Specific cerebrovascular disorders except transient ischemic attack
 - 015 Transient ischemic attacks
 - 024 Seizure and headache, age greater than 69 and/or complication or comorbidity
- MDC 2 Diseases and disorders of the eye (DRG's 36-48)
 - 039¹ Lens procedures
- MDC 4 Diseases and disorders of the respiratory system (DRG's 75-102)
 - 079 Respiratory infections and inflammations, age greater than 69 and/or complication or comorbidity
 - 082 Respiratory neoplasms
 - 087 Pulmonary edema and respiratory failure
 - 088 Chronic obstructive pulmonary disease
 - 089 Simple pneumonia and pleurisy, age greater than 69 and/or complication or comorbidity
 - 096 Bronchitis and asthma, age greater than 69 and/or complication or comorbidity
 - 099 Respiratory signs and symptoms, age greater than 69 and/or complication or comorbidity
- MDC 5 Diseases and disorders of the circulatory system (DRG's 103-145)
 - 110¹ Major reconstructive vascular procedures, without pump, age greater than 69 and/or complication or comorbidity
 - 112¹ Vascular procedures except major reconstruction
 - 116¹ Permanent cardiac pacemaker implant, without acute myocardial infarction or congestive heart failure
 - 121 Combined with 122

122	Circulatory disorders, with acute myocardial infarction, with or without cardiovascular complications discharged alive	183	Esophagitis, gastroenteritis, and miscellaneous digestive disease, age 18-69 without complication or comorbidity
121	Circulatory disorders, with acute myocardial infarction and cardiovascular complications, discharged alive (<i>Federal Register</i> , September 1, 1983)	188	Other digestive system diagnoses, age greater than 69 and/or complication or comorbidity
122	Circulatory disorders, with acute myocardial infarction, without cardiovascular complications, discharged alive (<i>Federal Register</i> , September 1, 1983)	MDC 7	Diseases and disorders of the hepatobiliary system and pancreas (DRG's 191-208)
123	Circulatory disorders, with acute myocardial infarction, expired	197 ¹	Total cholecystectomy, with and without common bile duct exploration, age greater than 69 and/or complication or comorbidity
124	Circulatory disorders except acute myocardial infarction, with cardiac catheterization and complex diagnosis	197 ¹	Total cholecystectomy, without common bile duct exploration age greater than 69 and/or complication or comorbidity (<i>Federal Register</i> , September 1, 1983)
125	Circulatory disorders except acute myocardial infarction, with cardiac catheterization, without complex diagnosis	207	Disorders of the biliary tract, age greater than 69 and/or complication or comorbidity
127	Heart failure and shock	MDC 8	Diseases and disorders of the musculoskeletal system and connective tissue (DRG's 209-256, 471)
128	Deep vein thrombophlebitis	209 ¹	Major joint and limb reattachment procedures
130	Peripheral vascular disorders, age greater than 69 and/or complication or comorbidity	210 ¹	Hip and femur procedures except major joint, age greater than 69 and/or complication or comorbidity
132	Atherosclerosis, age greater than 69 and/or complication or comorbidity	236	Fractures of hip and pelvis
134	Hypertension	239	Pathological fractures and musculoskeletal and connective tissue malignancy
138	Cardiac arrhythmia and conduction disorders, age greater than 69 and/or complication or comorbidity	243	Medical back problems
140	Angina pectoris	253	Fractures, sprains, strains, and dislocation of upper arm, lower leg except foot, age greater than 69 and/or complication or comorbidity
141	Syncope and collapse age, greater than 69 and/or complication or comorbidity	MDC 9	Diseases and disorders of the skin, subcutaneous tissue and breast (DRG's 257-284)
143	Chest pain	257 ¹	Total mastectomy for malignancy, age greater than 69 and/or complication or comorbidity
144	Other circulatory diagnoses, with complication and/or comorbidity	277	Cellulitis, age greater than 69 and/or complication or comorbidity
MDC 6	Diseases and disorders of the digestive system (DRG's 146-190)	MDC 10	Endocrine, nutritional, and metabolic diseases and disorders (DRG's 285-301)
148 ¹	Major small and large bowel procedures, age greater than 69 and/or complication or comorbidity	294	Diabetes, age greater than 35
154 ¹	Stomach, esophageal, and duodenal procedures, age greater than 69 and/or complication or comorbidity	296	Nutritional and miscellaneous metabolic disorders, age greater than 69 and/or complication or comorbidity
157 ¹	Anal procedures, age greater than 69 and/or complication or comorbidity	MDC 11	Diseases and disorders of the kidney and urinary tract (DRG's 302-333)
161 ¹	Inguinal and femoral hernia procedures, age greater than 69 and/or complication or comorbidity	310 ¹	Transurethral procedures, age greater than 69 and/or complication or comorbidity
172	Digestive malignancy, age greater than 69 and/or complication or comorbidity	316	Renal failure without dialysis
174	Gastrointestinal hemorrhage, age greater than 69 and/or complication or comorbidity	316	Renal failure (<i>Federal Register</i> , August 31, 1984)
180	Gastrointestinal obstruction, age greater than 69 and/or complication or comorbidity		
182	Esophagitis, gastroenteritis, and miscellaneous digestive disease, age greater than 69 and/or complication or comorbidity		

- 320 Kidney and urinary tract infections, age greater than 69 and/or complication or comorbidity
- MDC 12 Diseases and disorders of the male reproductive system (DRG's 334-352)
 - 336¹ Transurethral prostatectomy, age greater than 69 and/or complication or comorbidity
- MDC 16 Diseases and disorders of the blood and blood forming organs and immunological disorders (DRG's 392-399)
 - 395 Red blood cell disorders, age greater than 17
- MDC 17 Myeloproliferative diseases and disorders, and poorly differentiated neoplasms (DRG's 400-414, 473)
 - 403 Lymphoma or leukemia, age greater than 69 and/or complication or comorbidity
 - 410 Chemotherapy
- MDC 18 Infections and parasitic diseases (systemic or unspecified sites) (DRG's 415-423)
 - 416 Septecemia, age greater than 17
- MDC 19 Mental diseases and disorders (DRG's 424-432)
 - 429 Organic disturbances and mental retardation
 - 430 Psychoses
- MDC 21 Injuries, poisonings, and toxic effect of drugs (DRG's 439-455)
 - 442¹ Other operating room procedures for injuries, age greater than 69 and/or complication or comorbidity
 - 449 Toxic effects of drugs, age greater than 69 and/or complication or comorbidity
- Not an MDC
 - 468 Unrelated operating room procedure
 - 469 Principal diagnosis invalid as discharge diagnosis
 - 470 Ungroupable

¹Surgical DRG code.

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