

Appendix C.— Examples of Per-Case and DRG Payment Systems

Diagnosis Related Groups (DRGs) have been used in three State ratesetting systems, as well as in the Medicare reimbursement system under the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) and the Social Security Amendments of 1983 (Public Law 98-21). TEFRA was designed as a temporary response to the problem of hospital cost-containment and specifically called for the Secretary of the Department of Health and Human Services (DHHS) to develop a proposal for a permanent system of prospective payment under Medicare. A December 1982 proposal by the former Secretary of DHHS, Richard Schweiker, called for the creation of a national DRG-specific payment system for Medicare beneficiaries (91). In April 1983, a Medicare DRG payment system was enacted into law with features similar to those suggested in the Schweiker proposal. The new system will be phased in over a 3-year period beginning in October 1983.

Theoretically, DRGs could be used in any hospital payment method, including retrospective cost-based reimbursement, but their importance in payment derives from their use as part of prospective per-case payment systems. *Per-case payment* refers to any prospective hospital payment system with fixed rates of payment based on the hospital admission, not on the bundle of services or number of days of care provided. *DRG payment* is defined here as any per-case hospital payment method in which differences in case mix are taken into account using DRGs to classify case types.

New Jersey is currently the only State in which all patients and all hospitals are subject to DRG-specific rates per case. * Maryland currently uses a case-mix index approach in about 30 of its 51 hospitals, and the current Medicare hospital reimbursement system established by TEFRA sets maximum limits on per-case payment using a DRG case-mix index. Georgia has experimented with the use of DRGs to define hospital groups for per-case payment but is no longer using the system.

New Jersey began using the old 383 DRGs and is now using the modified 467 DRGs in its payment system. The new Medicare system bases payment on the new DRGs. A Medicare case-mix index was developed for TEFRA using the 467 DRGs. Georgia's experiment with hospital groupings was based on the old 383 DRGs. These programs are described in this section.

*The State of New York currently uses a DRG case-mix index in its ratesetting program, but there the unit of payment is the inpatient day, not the case. Payment of per-diem rates creates incentives that are quite different from per-case payment. Consequently, the use of DRGs in New York is not discussed here.

Several other States are using, and the American Hospital Association (AI-IA) once proposed as a model system, per-case payment systems that do not explicitly adjust for case mix. Descriptions of selected per-case systems are presented below as well.

DRG-Specific Rates Per Case: New Jersey*

In 1978, New Jersey passed a law mandating the gradual implementation of a per-case payment system covering all payers. A Hospital Rate-Setting Commission was given the power to adopt an approach that ties payment rates directly to the patient's DRG. (Much of the developmental work for this ratesetting method was funded by a \$3 million Federal Health Care Financing Administration (HCFA) grant to the New Jersey Department of Health.) In May 1980, 26 hospitals began billing patients on a DRG-specific rate per case. By October 1982, all New Jersey hospitals had been brought into the DRG system (22).

The DRG payment system works as follows: each patient is assigned to a specific DRG on discharge, and the hospital is paid a previously specified rate for that DRG. All classes of payers must pay the assigned rate to the hospital regardless of the actual amount of resources consumed in treating the patient, with the exception of these "outlier" cases: patients for whom the length of stay is unusually short or long relative to the mean stay in the DRG; cases where the hospital stay ends with death; when the DRG is a low-volume category; or when discharge is against medical advice. These outlier cases are paid according to the hospital's charges, which are themselves controlled under a pre-existing ratesetting approach.**

The DRG rate assigned to a hospital is constructed from data on the hospital's own costs as well as those of all other similar hospitals in the State.*** A hospital-specific preliminary cost base (PCB) is first established by taking the hospital's actual expenditures in a base year (2 years before the rate year). This PCB includes direct patient care costs, indirect (overhead) costs, allowances for the replacement of capital facilities, bad debt and charity care, and working capital. Only the

● A detailed description of the New Jersey DRG payment system is provided in a separate working paper, "Using Diagnosis Related Groups (DRGs) in Hospital Payment: The New Jersey Experience," by Joanne E. Finley (22).

● *Even these cases would not be reimbursed on a cost-reimbursement basis. They would be paid the DRG rate plus a per diem rate for each day beyond the "trim point."

● **Hospitals are classified in three categories: major teaching, minor teaching, and nonteaching.

direct care component of the PCB is assumed to vary with the DRG. The direct care costs are allocated among DRGs using formulas that presumably reflect actual resource use by patients in various DRGs. For example, nursing costs are allocated among the hospital's DRGs according to the percentage of total patient days in each DRG, while ancillary department costs are allocated among DRGs on the basis of the percentage of total department charges in each DRG.

Each hospital's DRG-specific average direct patient care cost computed as above is the basis for calculation of a statewide average cost per DRG, which becomes a standard DRG rate. The hospital's rate becomes a blend of the hospital's own average direct care cost per DRG and the peer group average (or standard) DRG cost. The portion of each cost average that is used (i. e., the hospital's own or the standard) varies across DRGs depending on the amount of statewide variance in the costs of treating patients within a given DRG. If there is substantial variation in the costs of treating a DRG, greater reliance is placed on the hospital's own cost experience. The percentage of the statewide standard cost used in setting rates ranges from a low of zero percent to a high of 100 percent, with most DRGs falling into the 40- to 75-percent range (62).

After DRG-specific direct care costs are estimated, hospital-based physician costs and overhead costs are added, and the total is inflated to the rate year. Other allowable costs (e.g., allowances for capital facilities and equipment and charity care) are calculated and allocated among DRGs on a percentage basis. Hospitals are then paid these final DRG-specific rates throughout the rate year.

Under this system, hospitals may keep any surplus achieved by reducing per-case costs, but beginning in the 1982 rate year, a part of any surplus resulting from increasing admissions is taken back in the final reconciliation. Similarly, increases in costs per case must be absorbed by the hospitals, but revenue losses due to decreases in admissions are moderated by a formula at reconciliation.

In theory, this method of DRG price construction contains built-in annual adjustments to DRG rates through changes in the base-year costs to reflect changing levels of resource use. The hospital's rate for a particular DRG could change as a result of either changes in its own costs of providing services or statewide peer group changes in the costs of treating the DRG. The rate facing a particular hospital can change even if its own and the statewide peer-group average costs do not change. For example, if the variance among patients in the cost of treating cases in a particular DRG were to decrease due to greater standardization of treatment

across the State, the rate in subsequent years would be based more heavily on the statewide average cost and less on the hospital's own costs than in the previous year. In practice, staff and budget limitations have precluded timely updating of the base year. The 1983 DRG rates are still based on 1979 costs, with only inflation factors changing in recent years (65). The Commission expects to update the base year to 1982 for the 1984 rate year (96).

Changes in specific DRG rates are also possible through an appeals process in which any interested party, be it a hospital, a payer, a patient, or the Commission itself, may request a review of a rate in one or more DRG category if it believes it is offering services using new, more costly technology. As of February 1983, however, only a few DRG appeals had been filed, and none had been completed (96).

Per-Case Payment With a DRG Case-Mix Index: TEFRA

In August 1982, Congress passed landmark legislation, the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) (Public Law 97-248), which moved the entire Medicare system toward DRG payment beginning in October 1982. TEFRA made major revisions in traditional cost-based reimbursement with the imposition of a hospital-specific maximum limit on the amount of reimbursable inpatient operating costs.

The new Medicare approach, which went into effect in October 1982, has two key elements:

- For 3 years starting in October 1982, a hospital's inpatient operating costs per case will have a "target" rate of growth determined by the general rate of wage and price inflation in the hospital's region. If its operating costs per case are below this target rate it may keep 50 percent of the savings, up to 5 percent of the target rate. If the hospital's costs exceed the target rate, it will receive only 25 percent of its excess costs in the first 2 years, and none in the third.
- In no case can the hospital's reimbursement exceed a per-case limit on operating costs established by DHHS. The hospital's new limit is 120 percent* of the mean cost per case for hospitals of the same type. (Each hospital is categorized according to its bedsize and location.) The limit is adjusted up or down by a DRG-based index of case mix for each hospital.

Neither of these provisions puts any limit on capital costs (depreciation and interest), direct teaching ex-

* This limit will be reduced over the 3 years to 110 percent.

penses, or outpatient services. These remain "pass-through" items.

The DRG case-mix index for a particular hospital has been computed as the sum over all DRGs of the number of cases in the DRG times its national relative cost weight. The relative cost weights were constructed from a 1979 20-percent sample of Medicare inpatient claims (the "MedPar" file) which contains data on hospitals' charges and clinical information. The weight assigned to a particular DRG is the ratio of the average charge (adjusted and standardized) per case in that DRG to the average charge per case across all DRGs (18). Although the amounts that hospitals charge patients do not necessarily correspond to the cost of treating patients (69), a study of the relationship between hospitals' overall 1979 DRG index value and their total 1979 inpatient operating costs revealed a simple correlation coefficient of 0.60 between the two (69). Further analysis has shown that a given percentage difference in the case-mix index is met with roughly the same percentage difference in operating costs among hospitals (69).

TEFRA did not represent a wholesale abandonment of cost-based reimbursement. For those hospitals whose costs are below both the per-case limit and the target rate, reimbursement will be on the basis of cost, with a small incentive payment added. Over time, however, as the limit becomes tighter, a greater proportion of hospitals will find themselves with the per-case limits as real price constraints.

It was not clearly specified in the law how often HCFA was to update the hospital's case-mix index. There appeared to be no plans to update the index throughout the life of TEFRA. Annual changes in the case-mix index value to reflect changing case loads are considered unnecessary on the assumption that in the short run, a hospital's case mix is relatively stable and not easily manipulated (see ref. 2). This decision underscores the temporary nature of TEFRA provisions, which will be phased out after 3 years as the new Medicare law is implemented.

DRG-Specific Rates Per Case: The Medicare Law

In April 1983, the President signed into law a sweeping revision of Medicare's inpatient hospital payment system (Public Law 98-21). Beginning in October 1983, the new payment method will evolve over a 3-year transition into a national set of DRG-specific prices adjusted only for the hospital's area wage rate and its urban or rural location. DRG prices will apply to virtually all short-term acute-care general hospitals in the United States.

The new system will gradually supercede TEFRA, which moved the entire Medicare system from retrospective cost-based reimbursement toward DRG payment. The provisions of TEFRA (summarized above) did not represent complete abandonment of cost-based reimbursement, but after the 3-year transition period, the new Medicare system will virtually replace retrospective cost-based reimbursement with a prospective payment system based on DRG prices.

During the 3-year phase-in period, only part of the hospital's payment will be on the basis of a DRG price; the remainder (a percentage decreasing each year) will be made on the basis of its own reasonable costs (with maximum limits as designated by TEFRA). Capital costs will continue to be paid for totally on a retrospective cost basis* until the end of the transition period, at which time the law contemplates, but does not specify the method for, the incorporation of payment for capital into the DRG pricing system.

The pricing system will apply to all inpatient admissions except for a small number of cases (set as a percentage of the total by statute) with unusually long lengths of stay. The rate of payment for these cases will be increased by the estimated incremental marginal costs of care during the extended stay.

The initial national set of DRG prices will be based on the 1980 average inpatient operating cost per case for each DRG in a 20-percent sample of Medicare inpatient claims. The law requires that DRG prices be updated regularly in two ways. First, an overall annual rate of increase is applied to every DRG to keep pace with the general level of inflation and rate of technological change in the economy. Second, the relative prices (i.e., the ratio of one price to another) must be assessed and recalibrated at least once every 4 years, with the first recalibration scheduled for October 1985. The recalibration process must reflect changes in treatment patterns, technology, and other factors that alter the relative use of hospital resources among DRGs. The Prospective Payment Assessment Commission established by the law will be responsible both for making recommendations regarding recalibration and for evaluating any such adjustments made by the Secretary of DHHS.

Certain kinds of hospitals, such as long-term, psychiatric, and children's hospitals, will be exempted from DRG payment. Teaching hospitals are included, but for the present the direct costs of teaching (e.g., residents' and interns' stipends) will be retrospectively reimbursed on the basis of cost, and a further adjustment will be made for the indirect costs associated with teaching. In addition, the law requires the Med-

*For-profit hospitals will be paid a return on equity as part of the capital cost reimbursement.

icare program to participate in any State-legislated alternative prospective payment program that covers at least 75 percent of the State's population, makes provisions for competitive health plans, assures the Federal Government that access to hospital care for Medicare and Medicaid beneficiaries will not decline, and assures the Federal Government that hospital costs in the aggregate will be no higher under the State program. If the State system leads to hospital costs that are higher than would be expected under DRG payment, Medicare is empowered to recoup such overpayments from hospitals in subsequent years. Thus, States will probably move cautiously to adopt alternative all-payer prospective payment systems.

The law also puts into place a mechanism for quality assurance and utilization review by requiring hospitals to contract with regional peer review organizations at a fixed price per review as a condition of payment. The payments for such reviews will come out of the Medicare Hospital Insurance Trust Fund and are guaranteed by statute.

DRG Case-Mix Adjustment: Maryland's Guaranteed Inpatient Revenue System

The State of Maryland has been regulating hospital rates since 1974, when hospitals' charges were frozen pending the implementation of a new ratesetting approach. From its inception until 1977, the Health Services Cost Review Commission was empowered to set rates for all payers except Medicare and Medicaid. In 1977, a waiver from Medicare and Medicaid regulations was granted by HCFA; since then, the system has included all payers.

The ratesetting program has evolved over time with different methods applied to different hospitals. The Guaranteed Inpatient Revenue (GIR) method, which uses DRGs, was first employed in 1976 in 14 hospitals (53). Today, approximately 30 of Maryland's 51 hospitals are paid by this method, including all hospitals with 400 beds or more.

Maryland's GIR method is essentially a revenue control system, where the allowed amount of revenue per case in each DRG is based on the hospital's actual revenue per case in the DRG in a selected base year. Hospitals do not bill the payer directly by the case; they bill on the basis of approved charges for each service provided. At the end of the year, the actual revenue per case in each DRG is compared to the allowed revenue for that DRG. If actual revenue received per case exceeds the previously set allowed revenue per case in a DRG, implying that the intensity of services and/or length of stay have increased from the base year, the hospital's revenue per case for the following

year is reduced by the amount of the difference. If actual revenues per DRG case fall short of approved revenues for the DRG, then the hospital receives the difference in an increase in the following year's approved revenues (8). Hospitals may keep all savings from reductions in per-case costs, but a part of the revenue obtained from increases in admissions is recaptured by the Commission. The hospital is also partly protected from losses due to decreases in admissions.

The GIR system was modified in 1980 to bring interhospital comparisons into the computation of approved revenues per case. Currently, all hospitals in the State are classified by geographic area. For each DRG for each payer category (i.e., Medicare, Medicaid, Blue Cross, and others), an average charge for the group is established. Each hospital's actual charge per DRG in each payer category is then compared to this standard in the group. If, on the average, the hospital's charge is higher than the group standard by more than twice the allowable inflation rate, the hospital's approved revenue is adjusted downward. For example, if the allowable rate of inflation is 6 percent, and the hospital's DRG-specific charges are 15 percent above the group standard, then the hospital is allowed an inflation rate of only 3 percent (15 percent - [2 x 6 percent]) in its computation of allowed revenue for that DRG.

A second modification is also under consideration. For all GIR hospitals, the Commission is moving toward DRG-based reimbursement at the level of the group standard, as opposed to the hospitals' own base-year revenue levels. If, for example, the hospital's DRG revenues are 10 percent higher than the standard across all DRGs, but are well above the standard, say by 40 percent or so, for one or two DRGs, the Commission will move the hospital's rate toward the 10 percent figure on all DRGs. This may have the effect of providing disincentives to the hospital to increase the volume of cases in the more profitable DRGs.

Per-Case Payment With DRGs: Georgia's Medicaid Program

Georgia used DRGs as part of its hospital grouping system in a 1981-82 Medicaid reimbursement experiment. ' As in any grouping scheme, the underlying assumption was that similar hospitals with similar case mixes and service characteristics should consume similar amounts of resources per admission (80). The grouping was accomplished by using two data sets, one containing the number of patients in each of the

● Since Jan. 1, 1983, Georgia's Medicaid program has been operating on a cost-based reimbursement system using 1980 costs plus an inflation factor.

original 383 DRGs and the other containing data on 20 service characteristics (e.g., bed size, surgical facilities, diagnostic radiology, etc.). The case-mix and service characteristics data sets yielded over 400 bits of descriptive information which were then used to group similar hospitals via a cluster analysis. In 1981, 12 groups were formed ranging in size from 7 to 20 hospitals. When the process was repeated for 1982, there were 11 groups, one with 5 hospitals and the others with 10 to 20 (101).⁷

After grouping the hospitals, the Medicaid program compared the operating costs, excluding certain costs such as malpractice premiums, depreciation on capital, and education. A group limit on costs for the next year was set based on 130 percent of the mean. It had been estimated that 10 to 12 percent of the hospitals would be outside their group limits.

Approximately 160 hospitals participated in this project. In the first year, 19 were outside the limit, and in the second year, 22 were higher than the limit. The penalty for being outside the group limit depended on how the hospital's base-year costs had compared to the mean. Hospitals would lose the difference between the allowable inflation rate and the percentage above the base-year mean, with the maximum penalty being the allowable inflation rate. For example, if a hospital were 8 percent over the group limit and if the overall allowable inflation rate were 10 percent, that hospital would have an allowable inflation rate of 2 percent (101).

Per-Case Payment Without DRGs: California Medicaid

From 1980 to the present, California's Medicaid program (Medi-Cal) has operated under a per-case hospital payment system without an explicit adjustment for case mix.⁸ For each patient, hospitals have been reimbursed the lowest of: 1) customary charges, 2) Medicare reasonable costs, or 3) a maximum cost per discharge (CPD) calculated in a fixed base year (generally fiscal year 1980). The CPD comprised the hospital's own base period costs adjusted by an inflation index, growth in service intensity, and pass-through costs (including items such as depreciation,

⁷ If the system had continued after Dec. 31, 1982, it was anticipated that the grouping would be an annual exercise until the groups stabilized. The Georgia Medicaid program staff had discussed changes in the procedure that might have led to stabilization (e.g., using the original 83 Major Diagnostic Categories with some partitioning based on whether or not surgery was performed) (101).

⁸ This method is gradually being phased out in favor of a new "Selected Provider Contracting Program," under which hospitals will be awarded contracts on the basis of competitive bidding to provide inpatient care for Medi-Cal recipients. Except for emergency admissions, Medi-Cal will pay for care delivered to its enrollees only at contract hospitals.

interest, utility costs, and malpractice premiums). Changes in the number of discharges from the base year were reflected in adjustments to the CPD limit. Beginning in October 1981, the program began to reduce allowable fixed costs in hospitals with very low occupancy (below 55 percent), thus reducing the cost per discharge limit in those hospitals as a penalty.

Hospitals have the right to appeal their CPD limit to the Department of Health. For example, if a hospital were to find that its Medicaid patient load shifted from more routine cases to a high-cost load of, say, cardiac surgery, the hospital would have recourse to the appeals process. Otherwise, such case-mix changes from the base year to any rate year would not be reflected in the CPD limit.

Per-Case Payment Without DRGs: The AI-1A April 1982 Proposal

AHA proposed a Medicare payment system for inpatient care based on a prospective fixed rate per discharge. Although beneficiary liabilities for deductibles and copayment would remain, hospitals would be permitted to charge up to \$1,000 per discharge in addition to the rate received from Medicare if they do not agree to accept the Medicare fixed price as payment in full. Each hospital's rate would be based on its own allowable costs in a base year with adjustments for capital expenditures, compliance expenditures, return on equity, high Medicare and Medicaid volume, and self-insurance against professional liability suits. These costs, with adjustments in a given year, would be divided by the number of Medicare discharges to obtain the initial rate. An inflation factor set by an independent panel of economists would be a forecast intended to reflect input price inflation, medical technology advances, and regional differences. The Medicare fixed rate would be computed by multiplying the base rate by the inflation factor. Hospitals would be paid this fixed rate per Medicare discharge.

In its proposal, AHA asserted that hospitals' case mixes would not change in the short term, for which this program was intended, because of long-standing admitting patterns, medical staff relationships, and hospital policies and procedures. The proposal called for an appeals process, however, which would have allowed hospitals to appeal their rates because of increases in the complexity of their case mixes.

Per-Case Reimbursement Without DRGs: Idaho's Medicaid Program

Since 1979, Idaho's Medicaid program has had a per-case maximum limit on payment for Medicaid hospital

stays. The limit in any year is calculated on the basis of the hospital's previous year's audited costs per case with an adjustment for inflation. Hospitals are reimbursed the lower of billed charges, allowable costs, or the per-case limit (92). The per-case limit is implicitly adjusted for changes in case mix over time by the use of the previous year's costs in calculating each year's

rate. At present, one-third of Idaho's 47 hospitals are subject to the per-case limit (81). However, since Medicaid represents only about 5 percent of hospital expenditures in Idaho, the program is not likely to have had much impact on hospitals' fiscal positions or behavior.