

Chapter 1

Introduction and Summary

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BACKGROUND

The increase in the cost of hospital care has been a persistent and growing problem for both the Medicare program and the general public for more than 15 years. A substantial portion of the increase in hospital costs has been attributed to an increase in the use of new and existing medical technologies. * Medicare expenditures for inpatient hospital services have increased more than tenfold since its inception—from about \$3 billion in 1967 to more than \$33 billion in 1982. From 1979 to 1982, the average cost of a day of hospital care increased at an annual rate of almost 18 percent, and Medicare expenditures for hospital services increased at a rate of over 19 percent. In 1982, hospital costs increased by 15.5 percent, three times the rate of inflation in the economy as a whole.

While the fiscal health of the program suffers as a result of hospital cost inflation, Medicare has contributed to the problem through its traditional hospital payment policy. Until October 1982, Medicare employed a retrospective cost-based reimbursement approach whereby hospitals could recover from Medicare most of what they spent for Medicare beneficiaries. Consequently, hospitals had little incentive to control costs. Hospitals have thus been encouraged to acquire and use more technology and to expand their capacity to produce a wider scope of more complex services.

The Medicare program has historically provided leadership for other hospital payment policies. Other third-party payers, including State Medicaid programs and private insurers, have also generally used cost-based reimbursement as their approach to hospital payment. In fact, until 1981, State Medicaid programs were required to follow Medicare's principles of reimbursement for

hospitals unless they applied for and received a waiver from the Federal Government for an alternative system.

However, as early as the late 1960's, some of these other payers began the search for alternatives to retrospective cost-based reimbursement. State-legislated and voluntary programs using alternative payment schemes have appeared throughout the 1970's. These programs have been broadly termed "prospective payment," where rates are set prior to the period during which they apply and the hospital incurs at least some financial risk. They have varied widely in design. For example, some control the amounts hospitals could charge for specific services; others pay hospitals an all-inclusive rate per day of hospital care. But paying by the day sets up incentives for hospitals to increase lengths of stay and admissions, and controlled charges also encourage hospitals to increase the number of services they provide.

Recently, a new kind of prospective payment has emerged: per-case payment. Under this form of payment, the hospital is paid a specific amount for each patient treated, regardless of the number or types of services provided. Thus, the hospital is rewarded for reducing the cost of treating a patient over the entire course of the hospital stay. Per-case payment removes the incentive to provide more technologies and encourages the hospital and its physicians to consider explicitly the benefits of additional services against their added costs.

Per-case payment cannot survive for long without a method to adjust for differences in the kinds of patients that hospitals treat. If hospitals were paid the same amount for each admission regardless of its clinical characteristics, over time they would be encouraged to treat patients who are less ill and to avoid the cases that require more resources. Thus, the implementation of per-case payment has rested on the availability of an acceptable method of measuring the hospital's case mix.

* OTA has defined medical technology as the drugs, devices, and medical and surgical procedures used in medical care, and the organizational and supportive systems within which such care is delivered. In this technical memorandum, the focus is on drugs, devices, and procedures, but many of the points apply to the system technologies.

Case mix has been defined in various ways. In this technical memorandum, it refers to the relative frequency of admissions of various types of patients, reflecting different needs for hospital resources. There are many ways of measuring case mix, some based on patients' diagnoses or the severity of their illnesses, some on the utilization of services, and some on the characteristics of the hospital or area in which it is located.

Diagnosis Related Groups (DRGs) are just one of several approaches to measuring hospital case mix. Their importance is heightened by their recent adoption for use in the new national Medicare prospective payment system. Beginning in October 1983, Medicare will phase in a per-case payment system using DRGs as the case-mix measure. As part of a larger assessment on *Medical Technology and Costs of the Medicare Program*, the Office of Technology Assessment (OTA) was requested by the House Committee on Energy and Commerce and its Subcommittee on Health and the Environment to examine DRGs and their implications for use in the Medicare program.

This technical memorandum, *Diagnosis Related Groups (DRGs) and the Medicare Program: Implications for Medical Technology* presents the results of that examination. As with all OTA technical memoranda, it contains no policy options for congressional consideration. It is intended to be a comprehensive and independent assessment of DRGs in the context of a per-case payment sys-

tem. In its study of DRGs as a case-mix measure, it reviews their development and compares them to alternative case-mix measures. It examines the validity and reliability of the DRG classification system, the accuracy of DRG coding, and the administrative feasibility of administering a DRG-based payment system. It provides examples of proposed and actual uses of DRGs in hospital payment. Finally, the technical memorandum includes a thorough analysis of the implications for medical technology use and adoption of using DRGs as an integral part of a per-case payment system. This analysis includes a review of the key features of design of DRG payment systems that affect medical technology and a discussion of the implications of technological change for the administration of a DRG payment system over time.

Two issues of concern to policymakers are not included in this technical memorandum. First, it does not address the effect of DRG payment on the costs of the Medicare program; rather, it discusses the incentives that will be established by such a system. Second, it does not discuss whether and to what extent DRG payment under Medicare will lead to savings in Medicare program costs at the expense of other payers. These critical issues are presently under debate by other agencies and organizations.

● A detailed account of one actual use—the experimental use of DRGs for hospital payment in New Jersey—is presented in a separate working paper.

SUMMARY

Alternative Case-Mix Measures

An examination of several case-mix measures for their validity and acceptability in a per-case payment system reveals DRGs to be the best available measure. The Disease Staging and the Severity of Illness Index methods of measuring case mix provide more information about the severity of the condition of the patients, but both require more data than are generally available and both are based on subjective methods. Neither measure has reached the stage of development where it is suitable for widespread implementation in a pay-

ment context. Nevertheless, the existence of these alternative approaches does reinforce the concern of some health providers and policymakers regarding the adequacy of DRGs in distinguishing differences in the relative severity of patients' conditions in any given DRG.

Another case-mix measure, Patient Management Categories (PMCS), is also in the developmental stage and will be tested soon. PMCs differ from other case-mix measures, including DRGs, in that they are normative. Physicians specify an optimal set of clinical care components

based on a patient's clinical characteristics, including both final diagnosis and reason for admission. This set of clinical care components is the basis for the relative cost weights of PMCs. This system appears unique in that it recognizes that optimal patient management should be the focus of a system that seeks to encourage efficiency. Thus, the further development of PMCs should be encouraged.

The use of DRGs in the Medicare per-case payment system is appropriate since they are more refined than the alternative case-mix measures. Both statistical and clinical considerations support this conclusion. Since DRGs can be assigned based on the information already processed on the discharge abstracts of patients' medical records, it is superior to the other measures in its administrative feasibility. However, empirical evidence must still be collected on all of the alternative measures to compare them in the context of payment.

DRG Payment and the Use of Medical Technology

There are two general incentives inherent in any per-case payment system: 1) to reduce the cost to the hospital of each inpatient case stay, and 2) to increase the number of inpatient admissions. Cost per case can be reduced by using fewer technological services, including ancillary services, reducing the number of inpatient days, or both. This incentive may result in specialization among hospitals for services that require a minimum number of patients to maintain profitability. This specialization may imply lower access to care for some Medicare patients. There are built-in constraints of unknown magnitude on the possibility of adverse effects on access and quality. One constraint is the fact that physicians are the decisionmakers, and they continue to have financial, ethical, and legal reasons to practice high-quality medicine.

The direction and strength of general incentives for any particular hospital are altered by key features of the DRG payment system, including: 1) the proportion of the hospital's case load covered by DRG payment, 2) the treatment of

costs as pass-throughs, * 3) the methods of DRG rate construction, 4) the methods of updating DRG rates, and 5) the level of risk and reward built into the payment system. Thus, a DRG payment system may include a variety of specific approaches to payment with some predictable effects on medical technology.

DRG payment incentives may be expected to affect technology use in the following ways:

- Overall, the number and intensity of ancillary procedures provided to inpatients can be expected to decrease, but the use of procedures that can be shown to lower the cost per case will increase.
- The settings of technology use are likely to be influenced by DRG payment, but the incentives work in conflicting directions and are sensitive to the key features of program design. It remains to be seen which incentive will dominate for which procedures. DRG payment will encourage the movement of technologies into the home, particularly those for post-hospital care.
- DRG payment is likely to influence the specialization of services, but the magnitude and direction of these effects is unknown. The incentives to reduce costs encourage concentration of capital-intensive technologies in fewer institutions. Conversely, the increasing competition among hospitals for physicians and patients will create incentives for the widespread acquisition of some technologies.
- A change in technology product mix is likely to result from downward pressure on the price and quantity of supplies and, if capital is included in the DRG rate, capital equipment. Greater product standardization can be expected as more expensive models and procedures are eased out of the market through competition.

*"Pass-throughs" are elements of hospital cost that are not controlled by the per-case payment system. Cost-based reimbursement, as a whole, can be interpreted as a payment method in which all cost categories are passed through.

Effects of DRG Payment on Technological Change in Medicine

Perhaps even more important than how DRG payment affects the use of presently available medical technologies is how DRG payment will affect technological change in medicine—the adoption of new technologies and discarding of old ones. DRG payment will influence hospitals' decisions to adopt new medical technologies and may therefore alter the rate and direction of technological change in medicine.

Although no empirical studies on the effect of DRG payment on adoption of technologies are available, studies of other kinds of prospective payment systems suggest that hospitals can and do respond to changes in financial incentives in these decisions. In general, technologies that are cost-reducing to hospitals will be encouraged; cost-raising technologies will be discouraged. However, much depends on the strength and design of the program. In particular, the methods of providing rewards for cost reductions, treating capital costs, and updating DRG prices have important implications for technological change. Though DRG payment does not imply that technological change will approach a standstill, its directions are likely to be altered, and the adoption of technologies that are cost-raising to the hospital is likely to decline by an unknown quantity.

The longrun viability of any DRG payment system depends on its ability to both adapt to and encourage appropriate technological change in medicine. The methods and procedures used to adjust the average payment level, relative DRG rates, and the DRG categories themselves are critical to the survival of the system. The objectives of the adjustment process are to maintain equality across DRGs in the ratios of price to cost of efficient care and to promote the adoption of appropriate new technologies. There are at least five potential processes of adjustment. They vary according to whether the adjustment is conditional on hospitals' actual adoption of new technology, who requests the adjustment, and when in the stage of a new technology's diffusion the adjustment is made. None of these processes alone is

sufficient to adjust the system adequately for technological change.

Implementation Issues

Other considerations for the feasibility of using DRGs as the case-mix measure in the Medicare payment system include two important aspects of implementation of this new system: 1) data and coding issues, and 2) hospital administrative issues. Accurate and timely patient-level data are clearly important to the efficient and effective operation of the DRG system. In the past, evaluations of patient discharge data have found them to be unreliable. However, it is important to note that these abstracts had not been produced for payment purposes. When payment depends on the accuracy and timeliness of discharge abstracts, their importance increases, and data reliability should improve. Monitoring by utilization and quality control peer review organizations as mandated by the new Medicare law, should give hospitals added incentive to improve their data collection and coding.

Such improvements in information quality implies a need for several education programs for medical staff, hospital administrators, and medical records personnel. Error detection, feedback, and training would be important parts of data programs. It should be noted that these types of improvements are likely to be more expensive and time-consuming. Some of these costs will vary among the individual hospitals depending on their current practices. For example, some hospitals might need to adopt computer capability for medical records, while others might need to add to their medical records staff.

Findings and Conclusions

- Although the new Medicare law provides for a DRG-based per-case payment system, DRGs have been inadequately evaluated for their validity as an indicator of patient resource needs and for their impact on medical technology in per-case payment. Thus, it is critical that the new system's implementation be carefully monitored.

- Programs of quality assurance and utilization review will be required to counter the incentives of the per-case payment system to underprovide services and inappropriately admit and discharge patients.
- The treatment of capital costs will affect the use of medical technology. The diversity in hospitals' ages, debt structures, and future needs for expansion and closure argue for hospital-specific determinations of capital payment levels, probably at the State level.
- Periodic reestimation of relative DRG rates to reflect changes in the costs of various DRGs is essential to a workable program. This implies a need for a continuing source of cost and charge data to support the process.
- Methods for updating DRG rates that are conditional on technology adoption maybe important to stimulate desirable but cost-raising technologies, Frequent creation of new technology-specific DRGs, however, can ultimately undermine the incentives of per-case payment.
- The DRG adjustment process requires supporting evidence about the effectiveness, risks, and costs of new technologies. Resources must be adequate for necessary research and the activities of groups such as the Prospective Payment Assessment Commission.
- It is fortunate that the new Medicare law does not discourage individual States from establishing alternative prospective payment systems. These alternative systems will allow experimentation with different payment system configurations, including the use of other case-mix measures as they become more refined.
- The reliance of the DRG classification system on accurate and timely data collection and coding will necessitate improvement of hospitals' medical records procedures and performance. Educational programs for physicians, nurses, hospital administrators, and medical records personnel could be initiated.

ORGANIZATION OF THE TECHNICAL MEMORANDUM

This technical memorandum is organized in six chapters. Chapter 2 reviews and evaluates several alternative approaches to case-mix measurement for payment purposes. In addition to DRGs, Disease Staging, Severity of Illness Index, and PMCs are briefly examined. Chapter 3 analyzes the incentives for hospitals to use medical technologies under a prospective per-case payment system based on DRGs. The effects of DRG payment on technological change in medicine is the focus of chapter 4. Implementation issues regarding data and administration are briefly described in chapter 5. Chapter 6 provides an overview and expansion of the conclusions reached in previous chapters.

Appendix A includes a list of the Health Program Advisory Committee and acknowledgments of assistance in the preparation of this technical

memorandum. Appendix B provides a descriptive overview of the development of DRGs, and appendix C contains brief descriptions of per-case payment systems that have been designed by the States.

A separate working paper is entitled "Using Diagnosis Related Groups (DRGs) in Hospital Payment: The New Jersey Experience" was written by Joanne Finley under contract to OTA. It is a detailed description of the New Jersey experience with an all-payer prospective payment system based on DRGs. *

*Available from the National Technical Information Service (NTIS).