HOSPITAL COST AND USE CONTROL VIA NEW YORK CITY HEALTH DEPARTMENT

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Spiraling hospital costs inevitably have meant the grim disenfranchisement of many medical indigents enrolled in Medicaid as one after another of the States has felt obliged to cut back on enrollment and benefits. In 1969 New York City's Medicaid program spent $351 million to provide more than 4.5 million days of care to more than 400,000 of the city's 2 million Medicaid enrollees. Reflecting the national trend, budgeted costs for health care in New York City

increased from $280 million in 1967 to $668 million in 1969 solely for Medicaid reimbursements. The New York City Medicaid budget alone accounts for 20 percent of the national Medicaid expenditures.

Between 1957 and 1967, U.S. expenditures for medical care increased nearly 37 percent. During the following 3 years, 1967 to 1970, costs escalated by an incredible 20 percent. Inpatient hospital care represents 38 percent, or the largest part of total medical care expenditures, totaling $25.5 billion in 1970. The hospitalization of about one in seven Americans predictably has had an agonizing fiscal impact on the general population. New York City pays about 70 percent of its total Medicaid expenditures for inpatient hospital and nursing home care.

Through title II of the Social Welfare Law and the cooperative agreement with the New York State Departments of Health and Social Services, the New York City Department of Health evaluates the appropriateness and necessity for all Medicaid health care. In exercising this responsibility the New York City Department of Health conducts one of the nation's most active and effective Medicaid cost and utilization control programs for monitoring professional services (*1–5*). This program has reduced costs and improved the quality of Medicaid professional services. In 1968 the city health department saved or recovered $41 for each dollar spent in reviewing professional services. Subsequent cutbacks in Medicaid benefits meant that less potential money for services could be recovered per auditing dollar. Nevertheless, even in 1970–71 the health department was realizing about $2.50–$3.00 for each auditing dollar invested.

Since 1968, hospital costs have increased 15 percent per year. In New York City, hospital per diem costs rose from $7 in 1940 to $30 in 1955 to $110 in 1968. In Ginzburg's opinion (*6*), major third parties such as government and the insurance companies must be involved in hospital cost control. He recommends that third parties stipulate the outer limits of reimbursement and help design pre-expenditure controls.

Johnson (*7*) suggests that cost reimbursement formulas militate against improving hospital efficiency and that appropriate incentives are necessary to increase hospital efficiency. He comments that the current system provides little incentive for improving labor efficiency, since improvement diminishes reimbursement from third-party payers.

Klarman (*8,9*) similarly points out that "reasonable cost" reimbursements result in lack of incentives for hospital efficiency. Medicare resulted in higher spending. Klarman also recommends using the reimbursement mechanism to improve efficiency.

Somers (*10*) sees no conflict between quality and economy. Rising hospital costs are at least a partial consequence of inadequate mechanisms to reward efficiency and to penalize inefficiency. Somers attributes this to the cost method of reimbursement by major purchasers such as Blue Cross.

Feasibility Study

In a 6-month feasibility study, financed by a grant from the Medical Services Administration of the Department of Health, Education, and Welfare, we devised methods to siphon the health department's regulatory powers into effective ways of screening and auditing hospitals receiving Medicaid reimbursement. The screening methods presumably would specify the hospital functions that should be subject to field audit by the health department to improve use, productivity, and cost control and to constrain length of hospital stay.

The health department would assist hospitals in strengthening their own internal utilization and cost controls, would suggest supplementing internal studies by the hospitals, and would recommend sanctions only if hospitals refused to cooperate with reasonable utilization and controls.

Hospital Screening

The New York City Department of Health reviewed the following methods to control hospital cost and expand service and productivity.

Establishment of per diem reimbursement rates. Per diem hospital rates are established, usually on an annual basis, by a fiscal intermediary such as Blue Cross or a public body such as the State health department, or both, who review data submitted by the hospital. The per diem rate setting method has lent itself to certain methods of cost control: (*a*) through ceilings on the per diem increase permitted when new rates are established and (*b*) through disallowance of certain hospital expenses from incorporation within the per diem rate.

Today's per diem reimbursement rates derive from the hospital's past pattern of expenditure. This method has been condemned as post facto, "cost plus," and inherently wasteful.

Prospective review of hospital budget (capital and operating). Analysis of prospective budgets for the coming fiscal period requires program and cost center budgeting on a prospective basis. This is possible only if valid cost and management engineering standards exist for hospital services. Unfortunately, these are in inadequate supply.

Claims review of requests for payment from hospitals. During each patient's hospital stay the costs of this care, based on length of stay and special services and supplies furnished, are submitted by the individual hospital to the third-party payer. In this claims review process, cost control and hospital productivity can be based upon appropriateness of the admission, reasonableness of length of stay, and the necessity of the special services and supplies provided.

Claims review protects the fiscal stability of a third-party payer but does not generally influence the actual costs of patient care provided by a hospital. It is post facto, for care has already been provided and costs incurred, and the actual costs are not thereby reduced. They are merely shifted from the third party either to the provider or to the patient.

Management engineering methods to analyze hospital operations. Productivity standards of personnel, procedural standards, and cost guidelines are criteria to assess hospital productivity and efficiency. One can measure the hospital's operations against these standards and against similar operations in comparable hospitals. Unfortunately, validated standards are frequently lacking for many hospital functions.

Hospital utilization review. Utilization review committees scrutinize records to determine appropriateness of admission, length of stay, and volume of service. These review committees vary enormously in commitment, skills, and effectiveness. The committees at present often limit their monitoring and review to Medicare patients.

Elimination and consolidation of services. To reduce costs, hospitals merge or share services which have low patient volume or productivity, or they eliminate certain services duplicated elsewhere in the same area by another institution. There are implications for community planning, for radioisotopes, for heart-lung machines, and other services.

Reallocation in the use of hospital beds. Acute-care beds—medical, surgical, pediatric, obstetrical—are used for substantial periods of time for patients with nonacute conditions. These patients can be transferred to less costly, extended care beds in a rational system of planned bed use.

Hospitals Selected for the Study

The health department needed the cooperation of hospitals for the study. We approached seven representative hospitals of the four major types—voluntary teaching, voluntary nonteaching, municipal, and proprietary—providing Medicaid service to significant numbers of patients. All seven agreed to cooperate. We selected one of each of the four types for the study.

Why the cooperation? Three of the four hospitals (excepting the proprietary) were experiencing financial deficits. One hospital feared an operating deficit of several million dollars during the coming year and was already conducting a self-evaluation in an effort to reduce this deficit. Another hospital had recently established internal management teams to review costs and operations of many of its functional areas. The health department found that hospital administrative staffs were interested in using the current study findings as a step forward in their own cost-containment efforts. Several of the hospital department heads had never encountered comprehensive data collection and information on their units.

In the study we used existing knowledge, methods, and data systems. We identified the hospitals in New York City providing the largest number of Medicaid inpatient days of care.

Thirty-five hospitals (of a total of 121 general care hospitals) accounted for 75 percent of the total New York City Medicaid patient days of general care in 1969—15 municipal hospitals (of a total of 16) accounted for 50 percent, 19 key voluntary hospitals (of a total of 71) accounted for 24.5 percent, and one proprietary hospital (of a total of 34) accounted for 0.5 percent.

The acute-care hospitals selected for the study were (*a*) a proprietary hospital with more than 150 beds and more than 50 percent Medicaid patient days, (*b*) a voluntary teaching hospital with more than 500 beds and more than 32 percent Medicaid patient days, (*c*) a voluntary nonteaching hospital with between 200 and 300 beds and 51 percent Medicaid patient days, and (*d*) a municipal hospital with more than 1,000 beds and 86 percent Medicaid patient days.

Screening Instruments

Each hospital's data systems were reviewed for specifics that provided measures of hospital use, costs, and productivity. When available, the fol-

lowing categories of information were screened:

The uniform financial report, which provides information about salaries and other cost data for 13 major functions such as laboratory, radiology, nursing, laundry, dietary, and operating room.

The Associated Hospital Service (AHS) cost accounting reports, which provide information about cost per unit of production for laboratory, radiology, operating room, nursing, and dietary.

The hospital administrative services (HAS), which provides information about direct salary, expenses for materials, and for laboratory, radiology, nursing, laundry, dietary, operating room, housekeeping costs, and so on. In addition, this system gives information on the number of man-hours per unit of service by major function.

Utilization review committee data, which were reviewed to determine the following measures: (*a*) attendance of members, (*b*) number of cases reviewed by payment source, that is, Medicare, Medicaid, and the Associated Hospital Service, and (*c*) decision making on review cases regarding appropriateness of admissions, length of stay, and adequacy of services.

Findings

Health department teams conducted onsite visits to each of the four hospitals to obtain the data systems reports and to collect the screening data. Not every data system was available at each of the study hospitals; all hospitals had the uniform statistical and uniform financial reports, two had the Associated Hospital Service cost accounting reports and utilization review committee reports, and one hospital had data from the Professional Activity Study.

Expenses had gone up significantly for all these hospitals in almost all of the major hospital functions. Unless we knew why these increases had occurred or how they related to productivity, it was impossible to choose among functions for the appropriate followup field audit.

Value of Screening Instruments

Medicaid inpatient data on number of days, from the New York State Health Department, the Associated Hospital Service, and the Health and Hospital Planning Council of Southern New York, helped us identify the hospitals that are major candidates for field audit.

Lack of data prevented us from comparing lengths of stay for all patients or for specific diagnoses or procedures among hospitals. Consequently, we could not identify hospitals with prolonged Medicaid patient stays. Similarly, the different methods of cost accounting and reporting in hospitals made it difficult to compare per diem rates and to identify hospitals with excessive costs.

Despite these limitations, screening provided some limited guidelines for the health department so that it could focus its field auditing programs on those hospitals where cost reductions and productivity improvements potentially have the greatest impact on Medicaid short-term, in-hospital patient costs.

Originally we had hoped that the hospital screening would select for field audit those functions whose cost and productivity were deviant from a previous period, from established standards of performance, or from functions of similar hospitals. It was disconcerting to find that (*a*) management data systems (such as HAS) are not used by a majority of the significant Medicaid hospitals and (*b*) standards of performance, other than simple averages for purposes of comparing hospital functions among peer groups, do not exist.

The uniform financial report and AHS cost accounting report No. 9, available for the majority of hospitals, provided information on salary and nonsalary expense and other management indicators according to specific functions. These functions could be matched with standard price changes and costs of services and compared with average cost for similar hospitals. Variations were significant in most cases, and they were difficult to interpret because of differences among hospitals in cost and expense reporting.

Whether we can screen out specific hospital functions where further study would pay off presumably relates to the comprehensiveness of the data systems in use by each hospital. The greater the number of systems and the more complete their data, the more evidence we have to audit one hospital function rather than another. The deficiency of standards and noncomparability of reporting practices uncovered in hospital screening have persuaded us that the most practical approach is to conduct field audits for each of the primary functions in each hospital.

In general, the hospital profile resulting from screening can (*a*) identify the key Medicaid hospitals in New York City, (*b*) describe each hospital's general characteristics, (*c*) describe the scope of services provided by each hospital, (*d*) help determine the priorities for field auditing, and (*e*)

identify those areas where more information is needed.

A Medicaid claims review system integrated with hospital screening can help choose specific hospitals and specific functions for field audit. In order to do so the following information is needed: the cost of total stay by selected diagnosis or procedure, or both, the length of stay by selected diagnosis or procedure, or both, including the preoperative and postoperative days, plus the information on comparative length of stay by physician experience.

Field Auditing Methods

Field auditing methods should rapidly determine much of what we need to know about (*a*) hospital operations (organization, staffing, information and control systems, allocations of resources, productivity, and costs) and (*b*) hospital management practices and systems (possible contributions to excessive unit costs, inappropriate prolongation of stays, and inappropriate use of inpatient services).

The rationale for field audit guides for each of these areas is as follows:

Admitting office. The function of the hospital admitting office includes responsibility for accepting both scheduled and emergency patients, transferring patients, scheduling operations and procedures, discharging patients, and maintaining records of admissions, discharges, and deaths. The admitting office is a key activity center in the hospital in that it coordinates the availability of beds with physician demands for bed space and controls the routing of patients through the hospital.

Operating room. This functional area has a potential impact on length of patient stay which depends on the unit's ability to coordinate the patient's need for operating room time with availability of attending physicians, admitting office, and nursing services and to maximize the utilization of operating room facilities and personnel.

Radiology and laboratory units. These units have major impact on both costs and length of stay. They need review of productivity, that is, number of procedures per time period per manhours, and of the total costs or procedures. In addition there must be review of staff and equipment utilization, responsibilities and work performed at appropriate staff levels (radiologist, technician), and hours of operation in order to militate against operating practices which might contribute to waste, excessive delays, and prolonged hospitalization of patients.

The specific objectives of the hospital field audits were as follows:

1. To collect data on high cost and labor intensive functions in the participating hospitals.
2. To select hospital functions that are most amenable to cost control and use control by applying existing standards of quality performance and productivity.
3. To develop field audit guides for these functions and instructions for their use in collecting data and followup.
4. To validate by field auditing the specific screening indicators and potentially modify the data collected for initial screening.

Several functional areas selected for field auditing represent a major percentage (62 percent) of the total hospital operating costs or control factors, or both, relating to the patient's length of stay. These areas include the admitting office, operating room, radiology unit, laboratory unit, nursing department, utilization review, and dietary area.

Nursing department. The nursing department is the largest cost center of a hospital and employs the greatest number of persons. The cost and productivity of nursing services have impact on the overall efficiency of hospital activities. The nursing functions need to be evaluated with regard to their efficiency of staffing (number and category of nursing staff related to the number of beds, occupancy, and workload) and the effective utilization of staff (responsibilities and work performed by each category of nurse in relation to the skills).

Utilization review. Hospital inpatient utilization review is a technique for understanding, determining, and controlling professional decisions about patient care that have impact upon patients' length of stay. Current utilization review deals with patients' medical records selected according to predetermined criteria, that is, all with lengths of stay beyond X days, certain diagnoses and procedures, certain physicians, or category of reimbursement (Medicare, Blue Cross, Medicaid). Records are reviewed to determine the necessity and appropriateness of care.

The utilization review guide was directed primarily at determining the effectiveness of utilization review committees, in order to strengthen this mechanism relating to potential controls on length of stay.

Dietary. The dietary area ranks as the third largest hospital function in percentage of expense

and manpower. Auditing in this area was to test the methodologies applicable to hospital support services not directly concerned with patient care for such other areas as laundry, housekeeping, and maintenance.

Developing the Audit Guides

We first reviewed current auditing methods of management, industrial engineering, and hospital administrative groups throughout the nation. These auditing procedures were sketchy, focusing on a single aspect of hospital management such as costs or productivity. We needed more comprehensive auditing procedures. We consulted with hospital professionals in each of the functional areas for which guides were developed. We submitted our prototypes to pathologists, radiologists, hospital medical staff, physicians, and nursing administrators in order to eliminate irrelevant data collection. Their comments and our experience led to changes in the guides. Subsequently, we modified the guides further in order to facilitate comparison of audit findings with AHS and HAS costs and productivity averages for equivalent hospital peer groups. Each audit guide included evaluation summary sheets that contained categories of productivity, cost, and utilization measurements.

The final version of our audit guides provided directions for collecting information to determine who should be interviewed, what documents should be reviewed, and what data should be collected. The guide included the following procedures for (*a*) interviews with heads of the various hospital functional centers to explain the project and obtain their cooperation, (*b*) documentation of all major steps to be followed in conducting audits—responsibilities, tasks, and dates of completion of data collection—which were filled out as the audit progressed, and (*c*) presentation of findings and recommendations to hospitals and followup of hospital actions.

Field Audit Guide Results

Admitting office. The admitting offices in three of the four test hospitals seemed to lack optimal administrative control of beds. Of the total available general beds, 57 percent of the voluntary teaching hospital beds and 100 percent of the municipal hospital beds were controlled by the clinical services themselves. The clinical services made the initial bed assignments and notified the admitting office later. The admitting office had only the remaining beds for assignment. Information on patient control, such as the admitting status of physicians, was not available when patients preregistered or when reservations were made.

The potential use of mechanisms affecting length of stay related to type of admissions—elective versus nonelective. Seventy-five percent of the total admissions to the proprietary hospital, therefore, had a higher percentage of preoperative workups before admission than in voluntary and municipal hospitals with a smaller percentage of elective admissions. None of the hospitals had a preadmission testing program or prospective medical review.

Operating room. The scheduling and coordination of operating rooms between the admitting office and physicians were adequate for the proprietary and voluntary nonteaching hospitals. The municipal hospital lacked coordination between the admitting office and operating room.

Information describing the utilization pattern of hospital surgical suites, although available, was not utilized by surgical management personnel or administrators to organize and schedule operating room procedures. The data necessary to evaluate appropriate utilization of surgical suites was not readily available but could be collected to aid patient services.

Radiology department. Costs and productivity of the radiology department varied significantly among the four types of hospitals. For example: (*a*) man-hours of procedures ranged from 1.39 (proprietary) to 2.45 (voluntary teaching hospital), (*b*) the highest rate of film production was found in the voluntary teaching hospital, an average of 3.68, and (*c*) the voluntary teaching hospital had a unit cost of $19.61 per procedure compared with $8.04 for the proprietary hospital. The municipal and the voluntary nonteaching hospitals had extensive backlogs and no formal scheduling system to route patients through radiology.

Messenger services added to the confusion and delays in communicating results. For example, the voluntary teaching and municipal hospitals employed external transcribing services for typing reports. Thus, messenger services would pick up and deliver reports once a day, and these reports had no priority over regular mail. In emergency and urgent situations, the physician would be informed by telephone of the results of procedures without waiting for a formal report; however, for elective patients, the physician might not receive a report until a full day had elapsed, thus poten-

tially contributing to extended length of stay for the patient. The municipal hospital employed a central messenger service to deliver requests and results to and from 35 diagnostic examining rooms —here also delays are possible, as well as resultant confusion caused by deliveries to the wrong examining rooms.

Laboratory. Differences among the four hospitals in laboratory productivity were evaluated in terms of the degree to which each laboratory is automated. It was found that a larger percentage of tests was automated in the municipal hospital compared with the proprietary and voluntary nonteaching hospitals, and this probably accounts for the larger number of tests per technician. Nevertheless, the differences may relate to variability in the complexity of tests performed by each hospital, some of which cannot be performed by automated techniques.

Scheduling of certain laboratory procedures contributed to increased lengths of stay for patients. Special tests requiring 2 to 3 days to complete, such as microbiology specimens, were scheduled only once or twice a week in the voluntary nonteaching hospitals. Thus a patient requiring this test on an elective basis, but admitted too early in relation to performance of this procedure, had to remain in the hospital 1 to 3 additional days.

At the voluntary teaching hospital, priority "stat" tests were introduced into the normal laboratory workflow, thus interrupting continuity and decreasing total test efficiency. Assignment of a large number of such tests to a special unit of technicians might have increased efficiency.

At the municipal hospital, backlogs in laboratory testing on Mondays due to a heavy workload were carried over into the next 2 days. A system designed to coordinate admissions with laboratory capabilities might even out the distribution of workload. Also, the messenger service appeared to cause delays similar to those in the radiology department in delivery of specimens to the laboratories and the return of results back to the wards.

Nursing department. The nursing audits provided no significant instances of inefficient staffing or poor utilization of staff. However, productivity in this area is difficult to measure in a short-term audit. One must try to quantify workloads for each type of nurse within each individual hospital before concluding that all is well. A survey of tasks performed by registered nurses, licensed practical nurses, and other nursing grades in two hospitals indicated efficient distribution of responsibility in relation to formal skills.

Utilization review. The proprietary hospital had the most aggressive utilization review committee. Attendance at meetings was regular and higher, and more cases were reviewed per hour than at the voluntary teaching hospital. At the proprietary hospital, cases were reviewed with regard to appropriateness of admission, length of stay, and adequacy of services provided. The voluntary teaching hospital conducted reviews primarily for completion of the Medicare recertification requirements for patients staying longer than 30 days.

The utilization reviews did not compare Medicaid lengths of stay with those of other payment categories. To do so, it would be necessary to sample patient records in addition to performing the procedures of the utilization review guide.

Dietary. Cost and productivity dietary data were unavailable for the municipal hospital. At the voluntary teaching hospital the cost per meal per patient was $2.60, while at the voluntary nonteaching hospital it was $1.82.

Additional reviews by "specialists" will validate the findings of the initial field audit and further define specifications for needed subsequent hospital studies.

Our study analysts had to be extremely persistent in their efforts to collect data in order to complete their audit guides. In few instances were data readily accessible. Hospital personnel were reluctant to take the time to make documents available, particularly those dated before the current year. Several of the audit guides were not totally tested as a consequence of associated difficulties.

As a followup to the use of the audit guide, we must establish procedures to provide information to the hospital. For example, the audit review might recommend either (*a*) that no further audit is necessary, since no inefficiencies in cost or utilization were identified or (*b*) that further study is required by the hospital in an effort to reduce costs and length of stay and increase productivity. We shall offer assistance to the hospitals to develop these additional studies.

We shall perform subsequent followup audits to assess the value of the studies and the extent to which the hospitals implemented audit recommendations and findings. If the hospital followup response is unsatisfactory, recommendations for adjustment or disallowances in the Medicaid per

diem rate can be made to the State department of health. A potential appeal mechanism is proposed through which a peer group advisory committee would review the decisions of the followup audit and recommend action.

Discussion

As a result of Medicaid and Medicare, Federal and local governments and Blue Cross now represent the mechanism of payment for hospital care for the vast majority of insured consumers.

The following are four options to constrain costs of inpatient hospital care—these options are not mutually exclusive:

Option 1 attempts to influence physicians to exercise greater prudence, selflessness, and responsibility.

Option 2 expects that the administrators and boards of the hospitals and nursing homes will themselves provide excellence in service and efficiency in operation and simultaneously maintain prudent cost control of inpatient care.

Historical experience testified against exclusive reliance on these traditional options. It is already a truism that the method of reimbursement for both physicians and hospital services impels patients to pressure physicians to use inpatient facilities and militates against pressures from hospitals to control hospitalization and length of stay.

The broadest insurance coverage for patients continues to provide for inpatient rather than outpatient care. About half of the nation's enrollees in Blue Cross continue to have full coverage ranging from 120 days to an unlimited period of hospitalization. Physicians continue to be paid for nonsurgical patients on a hospital per-visit basis. Hospitals continue to be penalized fiscally for having empty beds. Thus, the hospital has little incentive to improve efficiency of operations and services under a formula whereby its per diem rate would decline with an increase in efficiency—nor are the abstract arguments about efficiency persuasive to hospital administrators who must agitate their boards and their medical staffs under this formula in order to achieve this efficiency.

Option 3 relies on Blue Cross and other insurance carriers to place constraints on the costs of hospital care. Past experience has documented the lack of ability or will of some carriers to optimally perform this function. The National Blue Cross Association has inherent operational difficulties—it must simultaneously serve its consumer subscribers on the one hand and its hospitals on the other.

In reconciling the imperatives that derive from two constituencies that have become progressively more adversary to one another, the National Blue Cross Association or its local affiliates have had limited success in instituting cost control programs to reduce the number of admissions or length of stay, or both, in expanding programs relating to out-of-hospital care, or in improving the efficiency of hospital operations. The primary concern of Blue Cross has been to maintain a system whereby hospitals are paid for services rendered to their subscribers. In response to the inflation has come the familiar litany of increasing Blue Cross premiums, diminishing benefits, and accelerating transmutation from community to experience rating of subscribers.

Option 4 calls for an activistic government role in hospital cost control. In view of the existing options, government today has no intelligent choice other than to abandon its traditional post facto, legitimating, and ceremonial role of controlling hospital costs, productivity, and services. With this feasibility study, the New York City Department of Health has made a tentative venture into the malphysiology of the system.

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