How a Data Base Management System Integrates Patient Care and Financial Data to Manage Diagnosis Related Groups

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Abstract

Nationally, Medicare reimbursement has been changed effective Oct. 1, 1983. Hospitals now will receive a fixed amount for each Diagnosis Related Group (DRG). New Jersey has piloted this approach for several years. A computerized information system, operating in house in 6 New Jersey hospitals, is discussed. Functionally, it integrates inpatient demographic and medical data to assign the DRG and uses financial data to produce the reimbursement amount.

Introduction

There is little doubt that Diagnosis Related Groups (DRGs) have a high probability of being a changing force in patient care and financial management in acute care hospitals in the United States. Today it is the methodology selected for the Medicare Prospective Payment System which became effective October 1, 1983. Hospital administrators and medical staff must learn what this means to hospital administration, patient care and financial management. Some of the questions being posed are: How do you assign DRGs? How do you accumulate the data needed for HCFA cost reporting requirements? What is the required data? What are the financial consequences? How will this impact the quality of patient care? At this time of publication, July, 1983, not all of these questions can be answered as we are lacking substantial guidelines and regulations from the Health Care Financing Administration (HCFA). However, there are directions and baseline experiences which can be beneficial to hospitals as the unknowns reveal themselves over the next year.

Now the concern is with how to manage the prospective payment system. The intricacies of DRGs require complex, integrated, online, interactive and inhouse management information systems which can continuously access a broad range of patient data throughout the hospital without a redundancy of data entry.

Management has to be able to project case mix, determine reimbursement amounts, charges and costs and, on demand, perform comparative analyses of different factors and conditions to effectively manage patient care and financial affairs. Patient demographic data, medical care information, including diagnoses and procedures, and financial data must be integrated into a common data base.

Organizationaly, there must be an interactive, online exchange of data from admissions, the patient's record, the medical record and the business office to access and integrate the data elements required to determine a DRG. These elements include the patient's age, sex, final and secondary diagnoses, procedures and discharge disposition.

This presentation discusses the functions and attributes of one information management system which was designed for New Jersey DRG requirements, as defined by a pilot program with HCFA. The system is now installed in six acute care New Jersey hospitals.

Perspective

In the late 1970's the New Jersey Department of Health contracted with HCFA to implement a statewide demonstration project involving all of the acute care hospitals in the state to use this methodology. The project was phased in; all acute care hospitals are now using DRGs for patient classification, rate setting and reimbursement. The system is a reimbursement system based on patient case mix using DRGs to determine the appropriate case mix for a patient according to a number of variables.

Reimbursement is based on the hospital resources consumed to provide services for a specific diagnosis within a specific range of parameters. The intent is to pay a fixed rate for a given DRG if it falls within specific criteria concerned with type of case and a range of stay. In New Jersey there are 23 Major Diagnostic Categories (MDC) and 467 DRGs. Diagnosis and procedure codes are based on ICD-9-CM.

In mid 1982 a group of New Jersey hospitals contracted with Dynamic Control Corporation (DCC) to extend the capabilities of DCC's Hospital Patient Management System (HPMS), so that the new clinical and financial requirements specified by DRGs could be accommodated. A prime factor in this approach was that the hospitals wanted to have an in-house system that they could control, manage and adapt to the
changing regulatory environment without being dependent on outside resources.

HPMS covers Admissions, Discharge, Transfer, Census, Outpatient Registration, Patient Billing, Accounts Receivable, Order Communications and Results Reporting. It integrates its functions and data elements with the DRG Management module, which includes the DRG Grouper and with Medical Records. Grouped together in a common data base are patient demographic, medical and financial data elements to support the DRG assignment and the reimbursement amount. The integrated system operates on the IBM System/38 which has a relational data base management system architecture to enable continuous updating with flexible integration of data. The capabilities of HPMS and Medical Records have been expanded to accommodate the analysis, monitoring, reporting and billing requirements of the DFG.

HPMS design factors that facilitated the incorporating of the required functions is the relational database management and on-line interactive capability of the system. Much of the patient demographic information required to assign the appropriate DRG for a given patient is entered into the database when the patient is admitted and as patient care information is entered into the Medical Records. And that information is readily available on-line for other departments, particularly patient billing, to access.

Another by-product is that the HPMS enables service charges to be captured on the date of service as well as on the date of posting, if they are different. This is critical to aggregating charges for specific days of service for varying types of care.

The management of the DRG process is dependent on having the functions of the DRG Grouper which determines the appropriate DRG category for a given patient within specific parameters. Dynamic Control translated the DRG Grouper from the 370 Assembler language to RPG III for the System/38. The translation resulted in eliminating grouping errors which previously had to be managed manually. The System/38 DRG Grouper has increased accuracy in determining DRG assignments.

The DRG capability is integrated into HPMS and Medical Records thereby eliminating redundancy. The interactive, on-line design of the system allows a continuous flow of patient care data between the patient care departments, the medical records department and the financial departments. Automatically, "inlier" or "outlier" status is determined when the DRG for the patient is assigned. The DRG Grouper automatically collects the necessary patient care data elements required for classifying a patient into the appropriate DRG at billing time.

To facilitate this process the patient demographic and care information is available online to medical records prior to and at the time of discharge. Medical Records has the capability to monitor physicians who are delinquent with their final diagnosis which is critical for the DRG determination. Such delinquencies delay the billing and revenue producing functions of the hospital.

Another DRG management function is an online Demand Grouper which can project and model a DRG based on demographic data, diagnosis and procedure codes, and discharge data. The DRG assignment is automatically calculated, trim points are determined and the reimbursement amount is projected. This online inquiry and modeling function enables management to perform a broad range of clinical and financial projections. It is also a resource for utilization review to use in monitoring patient care and to make recommendations for continuing care. The real time accessibility of patient and financial information enables management to monitor trends on patient status, costs accrued, charges, and the relationship of this information to the projected DRG assignment and reimbursement rate.

Nightly, there is produced a pending billing list with tentative DRG assignments and reimbursement rates, so that an audit and verification for accurate and complete information can be conducted. This significantly reduces human coding errors which may be as high as 30%. In addition, there is a year end reconciliation for changed DRG assignments which enables adjustments in the reimbursement amount to be made.

Because of the table driven architecture of the system, DRG reimbursement amounts, trim points and other variables can be adjusted and maintained by the proper authorities. This enables the hospitals to remain current with the changing state regulations. When a factor is changed in a table, it is available immediately throughout the hospital to other users.

Management reports are available on demand. Decision makers can have the appropriate information when it is needed to make critical and timely decisions. In the New Jersey DRG system, there are approximately twenty standard reports incorporated into the system. Some of them are: Patient Origin Summary, Activity Report by Diagnosis, Activity Report by DRG Assignment, Activity Report by Physician, Variance by DRG, Outlier and Inlier Analysis and an extensive scope of financial reports including charges, DRG dollars and statistical reports including DRG by Financial Class Variance, Difference Between DRG Amount and Charges by Dollars and Percentages.

The utilization review function facilitates the tracking of the number of cases requiring review by Physician Advisors and it enables the review of levels of care. Another helpful tool is scanning for matching criteria through Medical Records. All cases with the same diagnosis and
procedures can be aggregated for conducting a range of studies and assessing the DRG reimbursement rate.

Management Issues From The New Jersey Experience

A major issue that arises for hospital management is medical staff involvement. DRGs, more than anything else in the history of healthcare, are bringing the medical and administrative staff closer together and the financial success of the prospective payment system is dependent on mutual cooperation.

A key strategy in gaining this cooperation is to initiate a series of educational sessions for the medical staff to understand the dynamics of the DRG program, understand how and from where the hospital is generating revenues and how the physicians medical practice, as measured by DRGs, affects the financial stability of the hospital.

From a management perspective, DRG reimbursement ties the medical side of hospital care with the financial side of hospital care. This means that the impact of physician medical practice can be measured in dollars and cents through a series of management reports. Hospitals can generate profit and loss statements by physicians and departments.

From a management perspective, strategic planning should consider analyzing outpatient services as they are excluded from DRG reimbursement. This shift from inpatient services to outpatient services has incentives built into the system. As an example, additional dollars will be paid to the hospital for doing outpatient surgical procedures which previously had been done on an inpatient basis.

Information System Requirements

Prospective payment and case mix management needs to have advanced technology data processing capabilities to monitor and analyze the cost of services and to have timely data to make adjustments in hospital service. Critical factors in the selection of an information processing system designed to provide the necessary information to manage a hospital effectively are: To have a data base management system with the DRG management system; Collect patient information at the point of the first encounter: Pre-admission or admission; To have medical, demographic and financial information collected simultaneously; To have a flexible data processing system that is able to sort, organize and relate data base elements for studies such as productivity analysis, profit and loss analysis and sensitivity analysis performed for ancillary services.

The information system requirements in New Jersey have been required to have the flexibility to respond to a fluctuating environment. During the five years that the DRG system has been operational, the system has changed several times from a management standpoint. Administration must be easily and readily able to adjust factors and variables in the system to respond to the changing environment. The national prospective payment system now has plans for changes to be incorporated annually over the next three years and probably beyond 1986.

Other issues with which hospital administrators are concerned include: What physicians have similar medical practices resulting in the same diagnosis and DRG? Fiscal Managers are interested in an analysis by department and comparison of cost center for length of stay and charges to the reimbursement amount for the cases utilizing these resources. There is a need to compare physicians by inpatients with a corresponding analysis of diagnosis and DRG assignment. There is a need for the DRG Grouper to overlay the functions of medical abstracting so that identification can be made of mis-coded information and the abstract can be verified with the DRG findings of the DRG Grouper. Other features such as system checking on procedures can be helpful to the medical record abstracting process.

Many factors need to be considered in applying the prospective payment system on a national basis, such as how to pay for indigent care or bad debts and what is the relationship of these factors to the Federal Government, the commercial carriers and the Blue Crosses. Now are the cost shifting practices that have been impacting commercial carriers and self-pay patients to be handled more equitably?

Many questions will continue to develop and change will become standard in the hospital environment as we progress with prospective payment requirements nationally.

A flexible, online, interactive database management system controlled by the hospital will enable administrators and other health care professionals to respond to the changing regulatory environment in managing financial, administrative and patient care needs.

Bibliography

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