The Advantages Of Computerized Diagnosis
Related Groups In Health Care And Medical
Record Administration

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THE ADVANTAGES OF COMPUTERIZED DIAGNOSIS RELATED GROUPS IN HEALTH CARE AND MEDICAL RECORD ADMINISTRATION

A THESIS SUBMITTED TO THE DEPARTMENT OF MEDICAL RECORD ADMINISTRATION IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR ACADEMIC HONORS WITH A B.A. DEGREE IN MEDICAL RECORD ADMINISTRATION

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APRIL 1, 1985
This thesis for honors recognition has been approved for the Department of Medical Record Administration.

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March 3, 1985

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ACKNOWLEDGEMENTS

I would very much like to thank my thesis director, Sister Rose Agnes Louk, and my readers, Susan Dean and Philip Rose for taking their time to help me with this project. I know they were all very busy and I appreciate their sacrifice.

I would also like to extend a word of thanks to Sister Carmela Trujillo for giving me the initial motivation to begin this project, and to Ron Higgins for his never-ending encouragement in helping me to see it through.
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CHAPTER I

THE EVOLUTION OF PROSPECTIVE PAYMENT

In 1965, Congress passed legislation to provide health insurance for the aged and disabled. This legislation, also known as Public Law 89-97 or Medicare, became effective on July 1, 1966. This act of Congress has had a very extensive effect on the administration of health care since its initiation. Administered by the Social Security Administration and officially titled "Health Insurance for the Aged," it is estimated that this program provides financial assistance to over 25 million people.\(^1\) Provisions for this program are contained in Title XVIII of the Social Security Act. Under this program, hospitals provided care to Medicare patients and were subsequently reimbursed by the government through fiscal intermediaries such as the Blue Cross Association. This traditional method of payment was patterned after the cost-based retrospective reimbursement used by Blue Cross and other private insurance agencies.

In order to be licensed for Medicare, hospitals must meet certain requirements outlined in Regulation Number 5, Federal Health Insurance for the Aged. For example, hospitals must be accredited by the Joint Commission on
Accreditation of Hospitals and must meet certain "Conditions of Participation" in order to be eligible for Medicare funds.

Since the Medicare legislation was implemented, numerous provisions have been put into effect regarding reimbursement. In 1972, the Social Security Administration was given the authority to "engage in experiments and demonstration projects in order to determine the advantages and disadvantages of making payments to Medicare providers on a prospective basis." This same piece of legislation also authorized the Administration to set prospective cost limits on services rendered to Medicare patients.

During this same year, the United States National Committee on Vital and Health Statistics developed a basic data set to be used by hospitals in the collection of patient information upon discharge of the patient. The Uniform Hospital Discharge Data Set (UHDDS), as the list of items is called, is routinely collected by hospitals and contained in the patient's medical record. (Figure 1)

A system of numerical codes for classifying illnesses has been available since as early as 1900, but a major revision of this International Classification of Diseases (ICD) was begun in 1979. A year later, in 1980, the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) was put into effect in the United States for statistical purposes. (Figure 2)
FIGURE 1

ELEMENTS CONTAINED IN THE UNIFORM HOSPITAL DISCHARGE DATA SET

Upon discharge of the patient, the medical record is completed and summarized onto a medical record abstract which contains minimally the following variables:

- Hospital identification
- Patient's chart number
- Date of birth
- Sex
- Race
- Locality of residence
- Admission date
- Discharge date
- Diagnoses
- Procedures performed and their dates
- The expected payment source
- Physician codes
- Disposition of the patient
531 Gastric Ulcer

Includes: erosion (acute) of stomach ulcer (peptic)
prepyloric pylorus stomach

Use additional E code, if desired, to identify drug, if drug induced

Excludes: peptic ulcer NOS (533.0-533.9)

The following fifth-digit subclassification is for use with category 531:

0 without mention of obstruction
1 with obstruction

531.0 Acute with hemorrhage
531.1 Acute with perforation
531.2 Acute with hemorrhage and perforation
531.3 Acute without mention of hemorrhage or perforation
On September 3, 1982, a further revision of the Medicare legislation was signed into effect. Public Law 97-248, or the Tax Equity and Fiscal Responsibility Act was proposed to set the payment rate per Medicare discharge rather than on a per diem basis. Finally, on April 20, 1983, the President signed Public Law 98-21 which provides for Medicare reimbursement on a prospective payment basis rather than on a retrospective cost basis. Under the new prospective payment system, the reimbursement rate is determined by diagnosis of the patient at discharge. "All discharges are classified according to a list of diagnosis related groups (DRGs). This list contains 470 specific categories."³ A fixed national price has been set for each DRG, adjusted according to whether the hospital is located in an urban or a rural area. The DRG-based system became effective on October 1, 1983 and will be phased-in over a 3-year period.

This profound change in the Medicare payment system has been the most fundamental alteration that health care institutions have experienced since the Medicare legislation became effective on July 1, 1966. Why the change and why the development of the DRG system? An explanation of the evolution and the proposed intent of DRGs will help answer these questions.

The design and development of DRGs began in the late 1960's at Yale University. The initial motivation for their creation was "to create an effective framework for
monitoring the quality of care and the utilization of services in a hospital setting." The DRG system was first applied on a large scale basis in the late 1970's in New Jersey and has undergone several revisions since then.

Payment to hospitals based on DRGs depends largely on the hospital's case mix. The case mix of health care institutions was determined through the use of a national data base from the Commission on Professional and Hospital Activities:

A quota sample of 332 hospitals was drawn to achieve a proportional representation of the universe of hospitals (7,187 institutions) from the 21,000 institutions participating in Professional Activities Services (PAS). The resulting file contained 1.4 million discharge records. A subsample of 394,318 records was used for the development of DRGs, with the remaining records data used to verify the statistics of the groups defined from the subsample.5

The prospective payment system provides an operational means of defining the complexity of the hospital's case mix, therefore helping to determine the impact that the facility's case mix has on the actual costs incurred through the administration of services. The hospital's case mix is defined as an "interrelated but distinct set of patient attributes" which include the following:

1. **Severity of Illness** - relative level of loss of function and mortality normally caused by a particular illness.

2. **Prognosis** - probable outcome of an illness, including the likelihood of improvement or deterioration in the severity of the illness, the likelihood for recurrence, and the probable life span.
3. **Treatment difficulty** - patient management problems that a particular illness presents to the health care provider. Some of the problems may include an illness with no clear pattern of symptoms, illnesses that require sophisticated and technically difficult procedures, and illnesses that require close monitoring and supervision.

4. **Need for intervention** - relates to the consequences in terms of severity of illness that lack of immediate or continuing care would provide.

5. **Resource intensity** - volume and types of diagnostic, therapeutic, and bed services used in the management of a particular illness.

Thus, a hospital's case mix complexity is determined by the condition of the patients treated and the treatment difficulty associated with providing care.

The purpose of DRGs is to relate a hospital's case mix to the resource demands and associated costs experienced by the hospital. Therefore, if a hospital has a complex case mix from a DRG perspective, it means that the hospital treats patients who require more hospital resources, but not necessarily that the hospital treats patients with greater severity of illness, greater treatment difficulty, poorer prognosis, or greater need for intervention.

The actual process of defining each of the 470 DRGs began with the division of all possible principal diagnoses into 23 areas known as major diagnostic categories, or MDCs. (Figure 3) Each MDC was chosen to correspond to a single organ system or etiology, similar in fashion to the specialty divisions of medical education. Since clinical care is usually delivered according to the affected organ system rather than etiology, this approach was considered more appropriate. The major diagnostic categories
FIGURE 3

THE TWENTY-THREE MAJOR DIAGNOSTIC CATEGORIES

1. Diseases and disorders of the nervous system
2. Diseases and disorders of the eye
3. Diseases and disorders of the ear, nose, and throat
4. Diseases and disorders of the respiratory system
5. Diseases and disorders of the circulatory system
6. Diseases and disorders of the digestive system
7. Diseases and disorders of the hepatobiliary system and pancreas
8. Diseases and disorders of the musculoskeletal system, connective tissue
9. Diseases and disorders of the skin, subcutaneous tissue, and breast
10. Endocrine, nutritional, and metabolic diseases and disorders.
11. Diseases and disorders of the kidney and urinary tract
12. Diseases and disorders of the male reproductive system
13. Diseases and disorders of the female reproductive system
14. Pregnancy, childbirth, and the puerperium
15. Newborns and other neonates with conditions originating in the perinatal period
16. Diseases and disorders of the blood and blood-forming organs
17. Myeloproliferative disorders
18. Infectious and parasitic diseases
19. Mental diseases and disorders
20. Substance use and substance induced organic mental disorders
21. Injuries, poisonings, and toxic effects of drugs
22. Burns
23. Factors influencing health status and other contacts with health services
are further divided according to certain patient characteristics which have been shown to consistently affect resource consumption, such as surgical procedures requiring the use of the operating room. Consequently, surgical patients are further categorized according to precise surgical procedures performed, and medical patients are further divided according to specific principal diagnoses. Surgical classes in each MDC were developed in hierarchical order so that cases involving multiple surgical procedures are assigned to the highest class.

Since certain other variables can have an effect on the consumption of hospital resources, these factors also had to be recognized. Once MDCs had been divided into medical and surgical classes, it was necessary to evaluate each class of patients to determine whether the patient's age, discharge status, or presence of a complication or comorbidity had any effect on resource consumption. A substantial comorbidity or complication was defined as "a condition that, because of its presence with a specific principal diagnosis, would cause an increase in length of stay of at least one day in at least 75% of the patients." A comorbidity is present when the patient is admitted to the hospital, and a complication arises during the hospital stay. Patients were also classified according to age, most often in cases of patients who are older than 69 years. Discharge status became important under specified conditions in cases of death.
The actual process of forming the 470 DRGs was a very complicated one which involved the use of statistical data, clinical judgment, and individual consideration for each DRG. The result of this complex process is the 467 patient classes and 3 additional patient classes (468-470). Cases assigned to class 468 are those in which the principal diagnosis and principal procedure are unrelated. Classes 469 and 470 provide an "error trap" for all those cases involving incomplete or erroneous medical record codes.

The current DRGs were developed based on errors realized in the implementation of previous systems. At first, a system was developed in which patients were assigned to classes based solely on the principal diagnosis. The principal diagnosis was defined as "the diagnosis found after study to be chiefly responsible for the patient's admission." However, this system was not effective because performance of surgical procedures was not taken into account.

The second system, developed by the Commission on Professional and Hospital Activities (CPHA), followed a different approach. The CPHA divided all principal diagnoses into 349 mutually exclusive MDCs. In turn, each of the MDCs was further divided according to the presence or absence of a secondary diagnosis, presence or absence of surgical procedures, and five age categories. This system was ineffective because of the large number
of resulting patient classes, nearly 7000. This large number of classes was very unmanageable, and also resulted in overspecification of some categories and underspecification of others.

From these previous mistakes, research officials speculated that the system that was needed must combine physicians' judgment, statistical analysis, and verification with historical data merged into a single process. The DRG system of the present is defined as a "patient classification scheme that all-inclusively partitions short-term, general hospital inpatients into a manageable number of dynamic, comparable, statistically stable, clinically coherent, commonly reproducible, and anatomically organized partitions called DRGs which are reflective of hospital resource consumption." Specifically, the DRG system should be meaningful and practical with the following characteristics:

1. The patient characteristics used in the definition of the DRGs should be limited to information routinely collected by hospital abstract systems.

2. There should be a manageable number of DRGs that encompass all patients seen on an inpatient basis.

3. Each DRG should contain patients with a similar pattern of resource intensity.

4. Each DRG should contain patients who are similar from a clinical perspective (i.e., each class should be clinically coherent).

Each patient is assigned one and only one DRG which represents his/her hospital stay in terms of resource
consumption and services rendered. The assignment process begins when the patient is admitted to the hospital. At this time, the patient's medical record is initiated, the patient's general identifying information is recorded along with the admission date, admission diagnosis, and any comorbidities which may be present. Upon further examination of the patient, such information as diagnostic procedures, additional diagnoses, and any complications which arise is recorded. Therapeutic records and records of complications document treatment administered to the patient. After treatment is completed and the patient is discharged from the hospital, his/her discharge status is determined and recorded, the final diagnosis is determined and recorded, and the discharge date is recorded.

Most of the work in determining the correct DRG is completed after the patient is discharged. During this post-discharge period, the medical record is completed, and the attending physician must attest in writing to diagnoses and procedures used for Medicare billing purposes. The physician should be consulted in case verification of diagnoses or procedures needs to be made. The physician's signature serves as a final confirmation of the correctness of clinical information, and should be preceded by the statement:

I certify that the narrative of the principal and secondary diagnoses and the major procedures performed is accurate and complete to the best of my knowledge.

The following penalty clause does not have to appear
with the statement but must be signed once a year by each physician and kept in a file in the hospital:

NOTICE: Intentional misrepresentation, concealment, or falsification of this information may, in the case of a Medicare beneficiary, be punishable by imprisonment, fine, or civil punishment.12

Next, numerical ICD-9-CM codes are assigned to each diagnosis and procedure, and the length of stay is calculated. Then the UHDDS elements are transferred to an abstract, and the DRG is assigned to a patient, either manually or with the use of a computer program called a "grouper." (Figure 4)

The patient's DRG is found by using a set of decision trees; each MDC has a unique decision tree. (Figure 5) The branches of these decision trees may be determined by specific diagnosis, specific procedure, age, death or presence of a comorbidity or complication. The decision trees for identifying DRGs are based on the following guidelines:

1. Except for principal diagnosis, no significance is attached to the ordering of the diagnostic and surgical information on the patient's medical record.

2. Whenever possible, the initial partition of each MDC is based on the presence or absence of a surgical procedure performed in the operating room.

3. Whenever possible, the initial partition of the surgical patients is based on clinically coherent groups or procedures.

4. Whenever possible, the initial partition of the medical patients is based on clinically coherent groups of principal diagnoses.

5. Since patients can have multiple operating
FIGURE 4

PROCESS OF DRG ASSIGNMENT

<table>
<thead>
<tr>
<th>When</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Admission</td>
<td>Medical record initiated</td>
</tr>
<tr>
<td></td>
<td>Patient's general information recorded (age/sex)</td>
</tr>
<tr>
<td></td>
<td>Admission date recorded</td>
</tr>
<tr>
<td></td>
<td>Admission diagnosis determined/recorded</td>
</tr>
<tr>
<td></td>
<td>Comorbidities recorded</td>
</tr>
<tr>
<td>Patient Workup</td>
<td>Diagnostic procedures recorded</td>
</tr>
<tr>
<td></td>
<td>Additional diagnoses recorded</td>
</tr>
<tr>
<td></td>
<td>Complications recorded</td>
</tr>
<tr>
<td>Discharge</td>
<td>Discharge status determined/recorded</td>
</tr>
<tr>
<td></td>
<td>Final diagnosis determined/recorded</td>
</tr>
<tr>
<td></td>
<td>Discharge date recorded</td>
</tr>
<tr>
<td>Post Discharge</td>
<td>Medical record completed</td>
</tr>
<tr>
<td></td>
<td>Attestation statement signed by physician</td>
</tr>
<tr>
<td></td>
<td>ICD-9-CM codes assigned for each diagnosis</td>
</tr>
<tr>
<td></td>
<td>ICD-9-CM codes assigned for each procedure</td>
</tr>
<tr>
<td></td>
<td>Length of stay calculated</td>
</tr>
<tr>
<td></td>
<td>UHDDS elements transferred to abstract</td>
</tr>
<tr>
<td></td>
<td>DRG assigned manually or with the use of computer grouper</td>
</tr>
</tbody>
</table>
FIGURE 5

MAJOR DIAGNOSTIC CATEGORY 07

Diseases and disorders of the Hepatobiliary System and Pancreas—Surgical Partitioning

PANCREAS, LIVER AND SHUNT

MAJOR OR PROCEDURE

YES NO

DRG 191 DRG 192

BILIARY TRACT

TOTAL CHOLECYSTECTOMY

AGE ≥ 70 AND/OR CC

COMMON BILE DUCT EXPLORATION

DRG 193 DRG 194

> 70 cc

DRG 195 DRG 196

≥ 70 cc

DRG 197 DRG 198

EXPLORATORY DIAGNOSTIC WORKUP

DRG 199

PRINCIPAL DIAGNOSIS OF MALIGNANCY

DRG 200

DRG 201

OTHER OR PROCEDURES
room procedures, procedures were arranged in a hierarchy. Patients' assignment is based on their procedure with the highest resource intensity ranking, called the operating room hierarchy.

6. Whenever possible, all partitions based on surgical procedures and principal diagnosis will be completed before use of other variables such as age, complications, and comorbidities.

7. Partitions are as coherent as possible from a clinical perspective. Patients in the same DRG can usually be expected to evoke a set of clinical responses which results in a similar pattern of resource use.

8. If age is used in multiple places within DRG definitions for a particular MDC, then age groupings are consistent, unless there is a clinical rationale to do otherwise.

9. Death is used as a variable in the definition of DRGs.

10. Patient classes which occur very infrequently are not formed unless they require highly specialized resources or are treated in particular types of hospitals.

11. System variables, such as payment source, discharge status to a nursing home, or transfer, are not direct patient attributes and, therefore, were not used to define the DRGs. Such variables are characteristics of the health care system in which care is rendered. Resource consumption may be affected by such variables but that effect is not related to the type of patients being treated.13

Once the patient is assigned a DRG, the case may be identified as being within established "trim points," or as being an "outlier." A trim point is usually based on length of stay and refers to a predetermined fixed length of stay. An outlier is a "case that utilizes resources well beyond the expected range for a particular DRG and may be based either on length of stay or cost."14
The federal government defines cost outliers as "all cases in each DRG for which the cost exceeds two times the DRG rate or $13,000, whichever is greater." Day outliers are those atypical cases involving an extremely long length of stay compared to other cases in the same DRG. The length of stay must exceed the average length of stay by twenty-two days or 1.94 standard deviations, whichever is less, before it is considered an outlier. A case can never be a day and a cost outlier, and will be a day outlier before it is a cost outlier. All outliers should be reviewed by medical records management to double check for errors in coding which may result in lower reimbursement and loss of valuable dollars for the hospital.

The Tax Equity and Fiscal Responsibility Act of 1982 created "Utilization and Quality Control Peer Review Organizations" (PROs) to review atypical cases and validate DRG assignments. As part of the prospective payment legislation, all facilities receiving Federal payments are required to contract with a PRO. Peer Review Organizations are mandated to oversee the DRG reimbursement process. Their purpose is to review the validity of diagnostic information provided by hospitals, the appropriateness of care for which "outlier payments" are made, and the quality of care provided.

The review process is carried out by review coordinators from the PRO who go out to the contract hospitals and examine patients' medical records. Physicians are
consulted by the reviewers when questions involving medical knowledge and judgment are raised. Typically, PROs review the following types of cases:

1. **Day outliers** - the PRO reviewer checks to see that the admission was appropriate, the DRG is correct, and that the patient's entire hospitalization is reasonable and necessary. If the stay is approved by the PRO, the hospital will automatically receive day outlier payment. If the stay is not justified, the appropriate days of outlier payment will be denied.

2. **Cost outliers** - the PRO reviewer goes through the patient's record, concentrating particularly on the charges. The reviewer checks to see that the services were ordered, recorded, and properly billed. If services are found by the PRO to be necessary, the hospital may request cost outlier payment. If the services are not approved, payment will be denied for some or all of the services.

3. **Questionable admissions** - the reviewer makes sure admission was appropriate and validates the DRG.

4. **Procedure review** - this review includes all permanent pacemaker insertions and other selected invasive procedures.

5. **Transfers** - this review includes all transfers from a nonexempt unit to a hospital unit that is exempt from all new regulations, and all transfers between PPS hospitals.
6. **Readmissions** - all admissions within seven calendar days of discharge from an acute care facility are reviewed.

7. **DRG validation** - a random sample of all Medicare discharges is reviewed to assure accurate assignment of DRGs.15

Peer Review Organizations are predicted to be primarily physician organizations with only a few being fiscal intermediaries. Any organization applying to become a PRO must establish objectives which focus on reducing inappropriate admissions and unnecessary procedures, and they must be concerned with quality of patient care. Quality objectives must be established by the PRO in each of the following areas:

1. Reducing unnecessary hospital readmissions resulting from substandard care provided during the prior admission.

2. Assuring the provision of medical services which, when not performed, have significant potential for causing serious patient complications.

3. Reducing avoidable deaths.

4. Reducing unnecessary surgery or other invasive procedures.

5. Reducing avoidable and other postoperative complications.16

Regardless of the need to keep costs down and avoid wasted resources, the quality of patient care should always maintain its place as the highest priority in the health care industry.

Data generated by DRGs can be valuable in three differ-
ent areas of health care administration:

1. **Utilization review** - DRGs can be helpful in identifying differences in resource consumption among hospitals, physicians, etc.

2. **Reimbursement** - before prospective payment, hospitals were paid for every patient day and every ancillary service provided. This old system may have given hospitals the incentive to provide more services than necessary. Payment based on DRGs is fixed and predetermined regardless of length of stay, ancillary services, or cost. This system was proposed to limit the uncontrolled costs previously incurred by Medicare patients.

3. **Management** - managers in the health care field will be required to obtain a better understanding of the relationship between hospital costs and services provided. DRGs provide a mechanism for gaining a better understanding of the different resources that go into each of the different hospital products, i.e., patient days, discharges and ancillary utilization statistics.  

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CHAPTER II

THE ADVANTAGES OF COMPUTERIZED DRG SYSTEMS
FOR HOSPITAL MANAGEMENT

The change from cost-based reimbursement to prospective payment has been the most fundamental change in healthcare administration since the Medicare legislation. Hospital management professionals must be prepared to confront the changes this system has brought if they want to keep their facilities in operation.

Hospital administrators are now encountering the same problems that businesses have always faced: they must learn how to hold costs down in order to stay in business. The key to maintaining control over costs lies in the quality of information available to managers.18

Hospital administrators must keep lines of communication open continuously between management and the medical staff, nursing services, data processing department, medical record department, and billing. Open lines of communication better ensure receipt of needed information. The medical record department has become much more significant in the eyes of the administration because medical record functions, such as coding and abstracting, determine reimbursement. Also, medical record errors have a "dollar for dollar" impact on the payment amount received by the
Close monitoring of the medical staff and medical record services will be necessary so that managers can be sure the hospital is providing the highest quality of services in a cost effective manner. Under a prospective payment system, cost accounting, or accounting based on patient or diagnosis rather than by department, becomes very important because this system more accurately reflects the cost of services rendered.

Hospitals must develop better methods for reviewing physicians' use of their facilities. Working with their medical staffs, hospital managers must develop standard treatment plans for each diagnosis and must develop systems for comparing the standard with actual treatment. Systems must also be developed to examine the financial performance of each physician under the DRG reimbursement scheme.

Hospitals now have a new incentive to work under in treating Medicare patients. Instead of striving to maintain census and stay below the limitations outlined in Section 223 of Public Law 92-603, hospitals must seek to "reduce variable cost and control the base over which fixed costs are spread." This, again, requires clear understanding of hospital costs as they relate to services provided.

Under this new and complex system, computerization offers definite and obvious advantages. The record keeping alone that is required for prospective payment is so extensive and time-consuming that manual administration would require almost super-human skills. Management, also,
needs information that is timely, accurate, and complete in order to make effective decisions and to plan efficiently. With automated systems specifically designed to process information needed for prospective payment, the needs of the hospital can be met.

Major reimbursement changes will make information systems a necessity even for smaller hospitals. The record keeping involved will require computerization. Managing both case mix and utilization of ancillary services would become tremendously burdensome without computerization.²¹

Computerization of health information has been a slow process, due in part to the need for a method of transforming the "everyday" English language documented in patients' medical records into a systems language suitable for computer applications. In addition, medical institutions have been reluctant to automate health care information because of security and access concerns. The confidential nature of health data causes medical professionals to see more risks than advantages in computerization. However, the information must also be immediately accessible to authorized persons for the sake of proper provision of care. Advances in computer technology have made these requirements possible and many health care providers are beginning to see the vitality of automation, especially with the implementation of DRGs.

Much information in hospitals is still processed manually, and that which is computerized is not always accessible in the format or combination needed. When faced with case mix requirements, hospitals are finding that automation and integration of information are imperative.²²
As prospective payment replaces cost-based reimbursement, hospital officials are realizing that computers will be valuable tools in the efficient operation of health care facilities.

Management officials in the health care industry are being faced with new problem areas created by DRGs. Effective planning and monitoring of resource consumption and quality of collected data are now more crucial than ever before. Health care administrators must carefully evaluate what information is needed, what data processing alternatives are available, what case mix management information characteristics are necessary to meet their particular facility's needs, and other related considerations.

In the immediate future, administrators must gather information which helps them to:

1. Define the hospital's case mix using DRGs.
2. Analyze and compare prescribed DRG payment rates with their hospital's costs for treating DRGs.
3. Evaluate and compare the cost-effectiveness of treatment protocols for different patients in the same DRG.
4. Monitor their hospital's case mix on an ongoing basis and assess whether their case mix changes in terms of severity and/or type of cases treated.

In order for managers to effectively accomplish these objectives, they need pertinent, high-quality information. Hospitals need much more accurate information from medical records, and they must be sure that their billing and
reporting systems accommodate the requirements of prospective payment.

Looking at the future impact of DRGs, hospital managers must consider the following long-range factors:

1. Increased competition among hospitals.
2. Increased government regulations.
3. Reduced business costs, including reduced employee benefits, joining business coalitions, and preferred provider organizations.

Hospital administrators must gather more timely data on patient care so that this information can be used to monitor resource utilization concurrently with administration of care. Managers would then be able to deal with problems in time to make a difference.

To help administrators solve these problems, computer manufacturers have developed new software programs to help them obtain the information needed to make informed decisions. These case mix modeling systems are designed to present various situations to management officials in an effort to simulate the impact that different alternatives have on a hospital's case mix and resulting reimbursement.

Because the new DRG reimbursement could result in a substantial up or down swing in a hospital's revenues compared with previous years, it is important that hospital managers make some estimate of what's likely to happen to their revenues under prospective payment. To do this, hospitals must simulate what their financial results would be if, in past years, they'd been reimbursed under the new payment system. Modeling systems can be used for this purpose.
With such a modeling system, managers could help alleviate unnecessary waste of hospital resources and needlessly high costs. Expenses could more easily be kept within the limits of the expected DRG payment.

This new concept in management requires a change in the storage of computerized data from a file-based system to a data-based system. Many currently used health information systems are "file-based," which means that each application has its own file which contains all data elements needed to run its programs. If the same data elements, such as patient name and number, are needed for several different applications, the items are duplicated in each file. This provides for redundancy and wasted computer storage space.

A "data-based" management system uses one large collection of interrelated data elements that can be used by many applications through the use of a common base of software. This type of system eliminates repeated data entry or file storage. Patient data is considered part of the health delivery system and the data base is built from there. Ancillary service systems are linked to the financial system which allows administrators to consider all relevant information for making decisions under prospective payment.

A "query language" is often implemented with data-based systems. This special language is used to allow non-programming users to access and manipulate the data base.
Implementation of a query language is a further step towards putting the power of the computer in the hands of managers who need information for making decisions. Using a query language can be a drawback, however, because it uses a large amount of system time and takes away computational power from other applications using the data base.

These new demands for computer systems have sparked new methods of writing software programs. However, these demands have been hard for just one computer manufacturer to meet. Many different computer firms have, for the most part, developed systems that are specialized for use in just one area of health care, such as medical records or case mix modeling. A hospital may have to purchase systems from several different vendors in order to meet its immediate prospective payment needs. An ideal system which affords efficiency under DRGs may be years in the making. Although some companies have developed systems with multiple capabilities, these systems may be somewhat inferior to more specialized systems.

In order to be useful to a hospital, a case mix management system must be expandable and as unlimited in its capabilities as possible. The system should provide sophisticated analysis and response to changes imposed on the reimbursement process by federal regulations. The following characteristics are considered highly desirable:

1. **Integration** - a case mix management system must provide for the integration of the basic information that affects prospective
payment. The integration of this data should take place at the same time the data are reported in the database, not later when it may be too late to provide analysis that is useful or meaningful to the hospital's administration.

2. **Retention of detail** - because prospective payment calculations are subject to frequent change, the data base of the case mix management system must be retained in detail in a flexible (disaggregated) format, so that the hospital case mix analyst can request historical patient data with different DRG groupers.

3. **Ad hoc analytical capability** - the case mix management system should provide the hospital with ad hoc analyses as well as informative and well-structured standard reports.

4. **Multiple grouping systems** - a case mix management system should be able to handle the several DRG grouping systems currently used by different payers. This feature should also allow for concurrent DRG assignment and comprehensive data editing capabilities for data entry and rate tables for data analysis.

5. **Comprehensive billing support** - this feature is critical to optimize reimbursement and to determine order and mix of valid diagnoses. The system must also track certified days, covered days and charges, and flag length of stay or charge outliers. The system must hold and flag bills if the discharge disposition is not complete or the DRG is not assigned.

6. **Documentation/continuing education materials** - prospective payment has caused conversion from "functional management" to hospital "product line" management. The clarity and comprehensiveness of vendors' users' manuals and long-term education and training support, are therefore critical criteria of acceptability of any vendor's case mix system.

7. **Ease of prompt, system-wide changes** - a good case mix management system will not require repetitive data entry.
8. **Linkage to cost findings** - the best cost finding systems are those that account for costs as specifically as possible. Costs should be allocated by specialty and activity rather than by a broader category.

Additional useful features may include:

1. **Report writing** - typical reports that should be generated by the system include DRG frequency ranking, ancillary charges by MDC, total charges by physician by DRG, semi-annual comparative DRG report, and annual length of stay data by DRG. Other desirable reports include DRG analysis by patient status, DRG case listing by physician, attending physician analysis by DRG, zip code or residence code analysis by DRG, DRGs by major clinical division, DRG frequency report of charges by pay class and by hospital.

2. **Threshold reporting** - with threshold reporting, a hospital defines the threshold at which it wants a patient's length of stay or charges to be called to special attention. Such automatic notification of potential problems assists day-to-day management of remedial activities.

3. **Utilization profile** - a utilization profile simplifies data management by focusing attention on the most informative data and playing down the least informative.

4. **Use of personal computers** - PC's can be easy and inexpensive tools with which to handle aspects of case mix management. Hospitals should make sure that certain features such as multiple grouping systems are available. Hospitals should also be sure that the PC is compatible with its mainframe and/or minicomputer system.26

The prospective payment system was put into effect in October of 1983. Those hospitals putting off the automation process will soon feel the financially draining effects of an inefficiently managed DRG system. By ignoring and denying the benefits and advantages afforded by computerization, hospitals may unknowingly lose thousands of dollars
in reimbursement funds. Hospitals are better off to buy the needed equipment now in order to identify changes that need to be made to accommodate DRGs. The equipment will pay for itself in a short time and the benefits will be very apparent in the long run.

It is cheaper to buy now and pay later for updates, enhancements, or even new software than waiting and possibly losing money through daily ignorance of what patients are costing the hospital under the prospective payment system.27

Hospitals who are researching the possibility of purchasing or establishing some kind of case mix management system are greeted by a variety of alternatives:

1. In-house - the hospital purchases and controls its own computer system, and employs a professional staff to manage it. The hospital assumes responsibility for purchasing software to be integrated with the existing system.

2. In-house turnkey - for a set fee, the hospital contracts with a single vendor to set up all necessary premises, equipment, training, and supplies needed for the computer system. Once the system is established it is under the hospital's control, but the vendor remains available to answer questions and provide assistance, maintenance, and enhancements.

3. Off-site processors - hospitals send data on computer tape to off-site processors who merge data and provide a range of case mix reports.

4. Shared systems - many shared system vendors that operate billing and abstracting systems located off the hospital's premises are expanding software to provide for case mix reporting.28

With the advances in development of computer technology and the proliferation of the case mix software market, it is easy to become disillusioned with the seemingly
amazing capabilities of case mix systems. However, it is necessary to look at what case mix systems cannot do. Administrators must realize that these systems cannot provide satisfactory results with erroneous, inaccurate data. "In particular, medical records must be accurate and complete. Without reliable medical record data, case-mix management cannot be undertaken with any great confidence in the results." Case mix management systems also function inefficiently unless systems for concurrent data collection are in place. If data is collected and analyzed after the fact, little can be done to remedy any problems that are discovered. Further, computer programs which group patients into DRGs may have logic problems which could cause unfair hospital reimbursement. This can only be expected considering the often lengthy and intricate decision trees used in DRG assignment, and the complicated rules of ICD-9-CM coding. Information entered by people into the computer is subject to human error both before and during data entry. Health care professionals should not let themselves be intimidated by thinking that computers will solve all their problems. Computers are valuable tools for reducing errors, not eliminating them completely. As long as people exist, errors will also.

Implementing a satisfactory case mix management system will take time, effort, cooperation, and communication among health professionals who will be using the system.
In sum, the following steps may be useful in the development of a case data network:

1. Education of top management, middle management, and trustees in cost-per-case management concepts, emphasizing product definition and management utilization.

2. Development of a product orientation within the hospital, emphasizing product definition.

3. Evaluation of current information systems.

4. Systematic upgrading of each data system's components.

5. Integration of billing and medical records systems into a single data file.


7. Instituting corrective measures to bring data network into line with identified management needs.
CHAPTER III

THE ADVANTAGES OF COMPUTERIZED DRG SYSTEMS
FOR THE MEDICAL RECORD DEPARTMENT

Since a patient's DRG is determined primarily from information found in the medical record, the prospective payment system is primarily responsible for the increased exposure that hospital medical record departments have experienced recently. Administrators have placed new demands for information on medical record department personnel because reimbursement funds are dependent on the information collected by this department. Some experts even go as far as to say that the medical record department will "make or break" the hospital in the future.

Before the prospective payment system, the duties of the medical record department consisted primarily of:

1. Locating charts for admission of patients who had previously stayed at the hospital.

2. Abstracting medical records for all patients leaving the hospital.

3. Tracking charts currently in use by hospital personnel.

4. Determining the status of incomplete charts.

5. Management and statistical reporting for utilization review.

6. Comparison reporting to other hospitals.31
The duties and responsibilities of the medical record department will not necessarily change with the implementation of the prospective payment system. However, a much stronger emphasis will be placed on the quality of the data generated by this department in its daily operations, and a move away from manual processing of information will take place. Computerization holds many benefits for the medical record department, and automation will play a much larger role because of the new demands from management for flexible, online access to medical record data. Medical record systems help to ensure accurate DRG assignments and also help identify coding errors.

The first step to be taken by medical record personnel under the prospective payment system is to improve the quality and efficiency of internal operations. The following functions can help to achieve this objective:

1. Searching the entire medical record to gather all diagnoses to ensure accuracy of principal diagnosis.

2. Completing the face sheets, which provide medical records with both principal and secondary diagnoses, immediately upon discharge of the patient. Personnel may also be assigned to concurrently review medical records while the patient is still in the hospital.

3. Being assured that work and performance standards for medical record personnel are in place.

4. Generating hard copy audit trails of DRG assignments.

5. Performing periodic coding reliability studies to check the accuracy and consistency of ICD-9-CM coding.
6. Providing adequate backup for ill and vacationing coders.

7. Examining the quality and error rate of each coder and assigning the best coders to Medicare patient records.

8. Evaluating the interface between billing and medical records to ensure that ICD-9-CM diagnoses are sent to billing as quickly and accurately as possible.

9. Being aware of software systems available to enhance coding functions.


11. Checking on the bill as it is ready to be sent to the fiscal intermediary.

12. Working with the medical staff on such issues as diagnoses, procedures, timely completion of records, etc.32

Medical record professionals who are responsible for assigning the ICD-9-CM codes and abstracting information from the charts are feeling the greatest pressure under the prospective payment system because the accuracy of these functions has become the key to successful financial management in hospitals. Codes assigned by coding personnel will determine the amount of reimbursement funds that hospitals will receive.

Because of the great importance now placed on the coding function, only qualified medical record personnel should be assigned to complete this task. Coding and sequencing of these codes should be done according to UHDDS guidelines and the medical record should be the primary source document. The entire record should be
searched to ensure that all diagnoses and procedures have been identified. Coders may no longer simply code according to information on the face sheet, but are now responsible for thoroughly examining all information contained in the record as well. Medical record personnel should make sure that complete documentation is present in the record to support all diagnoses and procedures used in DRG assignment. It should be noted here that DRG reimbursement that is maximized in ways that do not conform to UHDDS rules and definitions is an unethical practice.

To further improve operations in the medical record department, communication lines between this department and the medical staff, business office, nursing services, and data processing should be kept open so that flow of information is faster, smoother, and more accurate. Also, quality control measures should be improved to be sure that record analysis, coding, abstracting, and DRG assignment remain consistent. A monthly peer review may be helpful in this area. Finally, new policies, procedures, and forms may help to increase the efficiency of the department. In some extreme cases, restructuring of the entire department may also be necessary.

As the DRG system is further implemented into hospitals, it will become increasingly difficult for the medical record department to provide timely, consistent, accurate data without the assistance of an automated system.
DRG assignment can be done manually, but the process is ordinarily very cumbersome and impractical. Available computer systems not only identify a patient's MDC and DRG, but they also may suggest where coding errors exist.33

The advantages of a computerized system far outweigh the disadvantages. Manual grouping is a very time-consuming and money-consuming process. The cost of the equipment needed is small compared to the cost of hiring extra technicians to manually assign patients to DRGs. With computerization, medical record personnel could concurrently assign patients to DRGs, thus allowing the hospital to know exactly where it stands in terms of services rendered and expected payment.

Assigning patients to DRGs allows a facility to know, in advance, what assignments the fiscal intermediary will make. And because each DRG carries a hospital-specific fixed price, the hospital will know how much payment it will receive.34

Another advantage of this type of system is that it also points out errors that have been made in the billing process. However, knowing in advance how much money will be received should never influence the quality of patient care. High quality services and acute care should be continued until the patient is well enough to be discharged, regardless of the financial burden placed on the facility. Helping people to get well is still the top priority in health care.

A medical record department can improve its operations to the benefit of the hospital by using three different types of systems.35 One system should be used to improve
the speed and accuracy of important daily operations such as chart location and completion, abstracting, indexing and management reporting. The other two systems should assist in the improved accuracy of coding and DRG assignment.

An encoding system is designed to assist in the assignment of ICD-9-CM codes to diagnoses and procedures. The system operates through the interaction of the computer and the coding technician. The computer prompts the coder to enter information from the medical record and then processes the information to arrive at the correct code number. The system's primary focus is to help the coder to thoroughly investigate the record so that coding is complete.

A DRG grouper system is a computer program which assigns a patient to one of the 470 groups based on the patient's principal diagnosis, all other diagnoses, procedures performed, discharge status, and age. The computer uses a unique decision tree for each DRG depending on which MDC the case falls into. The grouper begins by verifying the accuracy of the key variables on the abstract, then it determines the correct MDC based on the principal diagnosis or the principal procedure. The grouper then goes through the decision tree specific for that MDC and arrives at a DRG. Some groupers have additional characteristics which may be helpful to the hospital:
Because of the complexity of the DRG assignment formula, it's difficult to select the group of diagnoses that will optimize reimbursement. Consequently, diagnoses may be selected that produce a much smaller payment than Medicare actually should pay. This problem could be eliminated by a computer system that simulates alternatives and selects the most appropriate DRG assignment.36

Again, health professionals should be aware that intentionally misrepresenting clinical information for the purpose of receiving the highest possible reimbursement is not ethical practice. If a hospital receives more money than it spent in delivering care, this should be the result of very efficient but high quality delivery of services, not unethical reporting.

All facilities under the prospective payment system should acquire a grouper within the near future. The grouper should be programmed to match as closely as possible the specifications of the grouper used by Medicare fiscal intermediaries to ensure that the facility will receive the payment it expects. Errors in software can be traced and corrected if the grouper's results are not consistent with Medicare's results. However, errors are very difficult to trace with manual grouping because the errors are not consistent. Technicians may be following different procedures, they may be tired, or the problem may be due to countless other reasons. Computer grouping is much more adaptable than manual grouping--still another reason for hospitals to automate their DRG assignment procedure.
CHAPTER IV

EXAMPLES OF COMPUTERIZED SYSTEMS DESIGNED FOR PROSPECTIVE PAYMENT

In the short time since the prospective payment system took effect, hospitals have been greeted by an ever-expanding line of computer hardware and software products and management consulting services designed to help them get started under the new system. Since no one firm has, as yet, integrated all the needs of hospitals into one system, managers must consider the implementation of several systems to meet their prospective payment needs. Systems and consulting services are available from a wide variety of vendors, and managers have several modes of system delivery and capability options to choose from.

In order to have the capability to make decisions with timely, correct data, administrators will need a case mix management system. These systems evolved from two major requirements for information:

1. "Score keeping" to allow the hospital staff to understand their costs by DRG, physician, medical service, ICD-9-CM code, geographic area, etc.

2. "Dialogue" information to enable each hospital to productively communicate with the medical staff regarding practice patterns, treatment costs, and the hospital's overall financial well-being.37
Case mix management systems can be purchased from Big-8 accounting firms, other accounting firms, and computer firms. System manufacturers are also currently selling or developing microcomputer products since a strong demand has developed for information needs that can be performed on such systems.

Managers must use a computerized financial modeling system to accurately predict the impact that different situations have on a hospital's case mix and reimbursement. One company offering such a system is Amherst and Associates of Chicago.

Amherst's Case Mix Library (CML) is an online decision support system designed to help managers identify situations which affect the mix of patient types and the resources consumed in the diagnoses and treatment of patients. The system allows managers to simulate the decision making process and ask the question "what if?" Since the prospective payment system is new and unfamiliar, managers can have a chance to "test the water" before making important decisions which affect the hospital's financial state.

The CML allows managers to measure the effects of change in volume, case mix, or physician ordering patterns. The CML enhances budgeting and links DRGs to departments to monitor shifts in case mix. A flexible, easy-to-use report option allows generation of useful and informative reports. The system also highlights and defines exceptions for faster analysis of problems. One of the most valuable
features of the CML is its ability to merge the medical abstract file with the patient billing file.

The CML system can be delivered to the hospital in three different modes:

1. **Timesharing** - a microcomputer or personal computer in the hospital communicates with Amherst's mainframe, or central processing unit, via phone lines. This arrangement lessens the hospital's commitment in hardware, personnel, and facilities, and reduces the strain on financial resources. The hospital retains instant access to its data files and a library of programs. Maintenance and support of software are made easy, but the hospital loses some control over its data by sending it outside the facility.

2. **In-house software** - Amherst offers software applications for a hospital's or multiple hospital group's mainframe computer. The hospital then has complete use of applications under the control of the hospital's data processing operations. This arrangement helps control costs and enables the hospital to integrate with other hospital information systems and operations. System use can be better controlled, sensitive data better monitored, and management information needs can be planned more effectively.

3. **Microcomputer systems** - many products from Amherst and other firms operate on IBM personal computers. These systems are cost-effective and can be integrated with
other microcomputer software. Data can be downloaded from the mainframe to the PC in a timesharing system for analysis, reporting, and graphics. Microcomputers are especially helpful in a data-based mainframe system using a query language because the microcomputer frees valuable mainframe time. Managers also benefit because they are provided with a microcomputer for decision support right at their own desks.

Other companies marketing similar system packages include Mediflex Systems, Rush-Presbyterian-St. Lukes Medical Center in Chicago, and Wheaton Systems. Amherst and these companies also offer consulting services to further assist hospitals in coping with DRGs.

Unfortunately, most of the firms offering case mix management systems do not offer medical records systems, so hospitals must consider other vendors for these services.

Until recently, medical records were maintained manually and they contained no financial information. Medical information was delivered to the billing office several days after the patient was discharged, and any review of costs associated with the delivery of care was done retrospectively. Under this system, no timely information is available before the patient is discharged to compare costs incurred with the expected reimbursement rate. It is necessary under the new DRG system to concurrently review treatment and DRG information while the patient is still in the hospital. To provide the necessary informa-
tion, the medical record department must be equipped with computerized systems.

First, the medical record department needs a system that helps personnel perform daily operations in a timely, accurate manner. Medical records systems are widely available from many commercial vendors. One such vendor which offers a fairly complete medical records information system is Health Systems International of New Haven, Connecticut. Health Systems International was chosen by the Department of Health and Human Services Health Care Financing Administration to develop the official HCFA grouper to be used by almost all Medicare fiscal intermediaries. The founders of HSI also originally developed and designed DRGs at Yale University in the 1970's.

The complete system offered by HSI includes subsystems to assist department personnel with the master patient index, interactive DRG assignment, patient abstracting, chart location, and chart completion. The system also features a powerful and flexible report generator which provides needed management information at the time it is needed.

The system feature that has made HSI an "overnight" success, however, is the Clinical Data Editor. This sophisticated program was designed to edit and identify errors in medical record information before the DRG is assigned. The CDE evaluates the clinical consistency of medical record data to identify potential coding problems and
other errors. The user inputs the demographic information, ICD-9-CM codes for principal and other diagnoses, and surgical procedures into the CDE for processing. The computer then produces output which consists of the DRG and MDC per patient with length of stay and reimbursement value for that DRG, and a printout of the DRG.

The Health Systems International Clinical Data Editor and DRG grouper are available for use with the IBM mainframe or personal computer or MS-DOS 2.0 compatible floppy disks. The cost of these two software programs without the computer is about $6,000.38

The Code 3 Corporation of Salt Lake City has also experienced great success with its comprehensive medical record system. In particular, Code 3's CODEFINDER and DRGFINDER have proven especially helpful under the prospective payment system.

The CODEFINDER is an encoding system which prompts information from the coder based on the complicated rules of ICD-9-CM coding. The program uses a medical encyclopedia as its data base and is initiated by the entry of a keyword from the physician's statement. With the use of this system, coding is more complete and consistent because the computer follows a uniform process. The system is fast and eliminates the possible use of "favorite" codes by technicians. When the system is interfaced with an abstracting system, data is automatically transferred between systems so transcription errors are eliminated.
To ensure even greater accuracy, Code 3's encoding system can be used with HSI's clinical editing system for ensured consistency of both clinical data and codes.

Code 3's DRGFINDER is a DRG grouping system. When combined with the CODEFINDER and patient data systems, the DRGFINDER program will automatically code, group, and store patient data for future use. The system calculates hospital-specific reimbursement rates and concurrent DRG review can be done at any time. The system has print and tape interface capabilities, and runs on Data General Computers under RDOS, AOS, and AOS/VS operating systems. The CODEFINDER program software is available for about $9,000/year and the DRGFINDER software costs approximately $4,000/year. A $3,500 one-time fee is also added to the cost when the system is purchased.39

DRG grouper software is widely available for use on personal computers or mainframe systems. Many software packages have been developed exclusively for the IBM personal computer and the IBM PC/XT. However, software programs are also available for use with other equipment such as that manufactured by Apple, Data General, and Digital Equipment Corporation. Packages written in ANSI COBOL are also available. The cost for a computer grouper package for a personal computer ranges from $700 to $6,000. Some firms also charge yearly maintenance or update fees ranging from $300 to $1,500. Packages available for mainframes are basically similar but a little less expensive, ranging
from $300 to $5,000.\textsuperscript{40}

Additional firms providing DRG software include Pacific Health Resources, Commonwealth Clinical Systems, Hospital Utilization Project, and Health Micro-Data Systems. The most popular software programs are menu-driven, user-friendly, stand-alone systems.

It should be noted that encoding and grouper systems are designed for use by experienced medical record professionals. The systems are meant to be used as tools in the DRG assignment process, not as replacements for qualified personnel. The system operator should have a strong knowledge of ICD-9-CM coding procedures and rules, medical terminology, and should have access to the entire record.
CHAPTER V

FUTURE DEVELOPMENTS EXPECTED
FOR PROSPECTIVE PAYMENT

In the coming years, as the prospective payment system completely replaces the cost-based system, computer software and hardware will continue to be developed and expanded to meet the increasing demands of the health care system.

The medical record systems of the future will be more fully integrated with more specialized capabilities. Code finding and editing subsystems, particularly, will become more advanced to provide for accurate and timely assignment and review of DRGs.

Billing software of the future is expected to have more grouping capabilities. Interfacing of medical record information systems with billing systems will allow for grouping of data from medical record abstracts to determine the reimbursement rate for each case. These systems will also be further equipped with mechanisms to help the hospital legally and ethically maximize its reimbursement rate.

More decision support software is expected to be developed in order to help hospital managers determine whether or not they are losing money, and to help them explore outcomes of various decision making alternatives.
Trends are moving toward cost accounting packages to help hospitals gain a clearer understanding of the products they offer.

Systems software will also be developed to integrate financial and clinical data into one data base. Since keeping information in more than one place is both wasteful and expensive, the goal of computer software manufacturers will be to eliminate redundancy in data entry and file storage. "Health Information Systems, Inc., New York City, is developing a comprehensive patient care system that will fully integrate clinical and financial data on an IBM mainframe computer."41

Further in the future, the DRG system is expected to be refined through the use of "staging software." This software would be designed to measure the patient's severity of illness so that this factor could be taken into consideration when assigning a patient to a DRG. The software would work by assigning patients to disease stages ranging from one (no complications, minimal problems) to four (death). The system developers argue that patients at different stages of a particular DRG require different amounts of hospital resources and modalities of treatment. The firm handling the development of the software is Syste-metrics, Inc., Santa Barbara, California.42

Electronic media claims may also be developed in the future. This development involves the electronic exchange of Medicare claim information via phone lines.
directly between the hospital's computer and the fiscal intermediary's computer. This would be a phenomenal system since it would involve little or no exchange of paper between the two facilities.

Hardware needed to support DRG systems will follow new trends in the future as well. "Hospitals will move toward larger capacity machines, either by purchasing larger, in-house mainframes or by continuing to use a service bureau." 43

Microcomputers that interface to a mainframe system will also be more in demand in the near future.

As far as the DRG system itself is concerned, the American Medical Record Association recommends that it be altered somewhat as a result of the New Jersey hospital experience. In a testimony before health subcommittees of both the House Ways and Means Committee and the Senate Finance Committee, AMRA officials recommended the following changes:

1. **Data definitions** - rules need to be more clarified and the UHDDS needs to be further specified and expanded. Variables must be clearly defined so that all facilities interpret them the same way.

2. **Data collection** - data reporting should be designed to obtain data from the source document - the medical record - by medical record professionals who are trained in ICD-9-CM classification and who have access to information from attending physicians. 44

At this same meeting, AMRA officials also defined a number of cases in which no accurate prediction for
DRG consumption can be made:

1. **Death** - patients who expire consume an abnormal number of resources.

2. **Low volume outliers** - diagnoses in which occurrence is too minimal to predict a rate, such as in the case of Legionnaire's disease.

3. **Discharge status** - cases of patients leaving against medical advice or patient transfers are difficult to predict.
CHAPTER VI

CONCLUSION

The DRG system is a very significant change which will affect professionals in all areas of the health care field. Under the prospective payment system, quality of care must still measure up to strict standards but the cost of providing this care must be kept to a minimum. This new system challenges health care providers to keep costs down in order to stay in operation.

Hospital management is, for the first time, required to monitor physicians' use of facilities and resources to see that waste and unnecessary use of resources are kept under control. Administrators are required to gain a better understanding of their hospital's case mix in order to determine how the services offered at the facility compare to costs incurred in the provision of care. Physicians are pressured to reduce length of stay and unnecessary treatment procedures. Complete documentation is vital.

In order to deal with these concerns, managers need quality, useful information. Medical records hold the key to prospective payment because information generated by the medical record department, through the performance of key functions such as coding and abstracting, is used
to determine the amount of reimbursement. Managers need access to this information as soon as possible to concurrently monitor utilization of resources and length of stay. More demands are placed on the medical record department to provide the needed information, and its daily operations have become more important than ever. Uncompromising accuracy and timeliness are major factors.

With the implementation of DRGs, experts have stressed the importance of information systems for large urban hospitals as well as small facilities. Thus, the computer market has greatly expanded with the development of case mix software. Software capabilities are becoming more advanced as hospitals' needs for information grow more complex and demanding. Management systems have the capability to simulate decision making, thus helping managers anticipate such factors as shifts in case mix and physician treatment patterns. Medical record information systems eliminate the need for cumbersome, error-prone manual maintenance of medical information. Valuable time, money, and resources are saved by performing pertinent medical record tasks with the help of computer technology.

The prospective payment system holds no room for wastefulness and inefficiency. Awareness of the system, preparedness and knowledge of health care professionals, and implementation of capable information systems will mean the difference between success and failure for hospitals delivering health care services to Medicare patients.
ENDNOTES


7Ibid., p. 68.

8Ibid., p. 74.

9Ibid., p. 68.


13CHA, DRG Primer, p. 9.

14Ibid., p. 12.

\[16\] Ibid., p. 21.

\[17\] CHA, DRG Primer, p. 12.


\[19\] Sheldon I. Dornfest, "Computers Can Figure Out DRGs, if You Can Figure Out the Computer Market," Modern Healthcare, February 15, 1984, p. 136.


\[22\] Fedorowicz, "Will Computer Meet Informational Needs?" p. 497.


\[24\] Ibid., pp. 93-94.

\[25\] Dornfest, "Computers Can Figure Out DRGs," p. 134.


\[29\] Jaggar and Pugliese, "A PPS Essential," p. 73.

\[30\] Kukla and Bachofer, "Building up Reporting Systems," p. 80.

\[31\] Dornfest, "Computers Can Figure Out DRGs," p. 34.

\[32\] Joan Sourapas, quoted in "Prospective Pricing to Affect Medical Records Department," Hospitals, July 1, 1983, p. 20.
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