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The purpose of this study was to assess the training needs of William Beaumont Army Medical Center's medical staff and to determine a strategic plan for transition to Diagnosis Related Groups (DRG's). This study hopothesized that DRG knowledge was dependent upon five constructs. Four additional variables were considered. Two open ended questions assessed staff input and contributed to the development of the strategic plan. Item analysis followed by analysis of variance demonstrated high levies of both construct and content validity. The Center's medical staff results however, indicated poor item discrimination evidenced by high group means. Staff input was, however, useful in determining a strategic plan comprising four initiatives-strategic planning, training, assessment, and restructuring (STAR). STAR is an executive strategic planning tool designed to aid the commander in implementing a DRG budget allocation system.

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A Study To Assess

The Training Needs of William Beaumont Army Medical Center's Medical Staff And To Determine A Strategic Plan For Transition To Diagnosis Related Groups

A Graduate Management Project

Submitted to the Faculty of Baylor University

in Partial Fulfillment of the

Requirements for the Degree

of

Master of Health Administration

by

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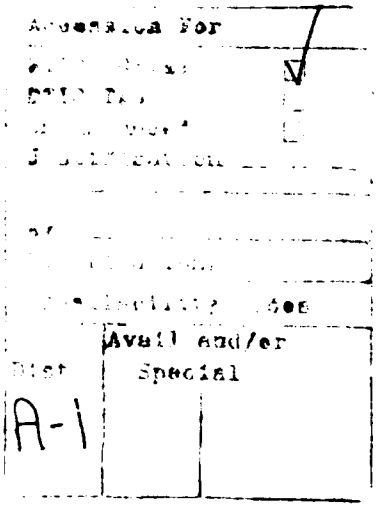

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Abstract

This purpose of this study was to assess the training needs of William Beaumont Army Medical Center's medical staff and to determine a strategic plan for transition to Diagnosis Related Groups (DRG's). This study hypothesized that DRG knowledge was dependent upon five constructs identified as general knowledge, impact, documentation, case-mix, and cost containment. Four additional variables were considered: age, time in service, type of provider and military rank. Two open-ended questions assessed staff input and contributed to the development of the strategic plan. The research design used parametric and nonparametric analysis to determine the relationship between the dependent and independent variables. A pilot survey was tested on 33 Army Nurse Corps Officers who indicated the survey was understandable and measured their DRG knowledge. Item analysis followed by Analysis of Variance demonstrated high levels of both construct and content validity and an acceptable reliability coefficient. It was expected that the survey will reveal similar results on the Center's medical staff. Results indicated poor item discrimination evidenced by high group means, however, staff input was useful in determining a strategic plan comprising four initiatives- strategic planning, training, assessment, and restructuring (STAR). STAR is an executive strategic planning tool designed to aid the commander in implementing a DRG budget allocation system.

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CHAPTER I

INTRODUCTION

Introduction

In response to legislative instruction, the Department of Defense (DOD) has directed military health care facilities to implement a Diagnosis Related Groups (DRG) based system of measuring workload and allocating budgetary resources for all patient care settings. Altering the method by which we measure workload and allocate resources in the provision of care to federal beneficiaries represents an attempt to provide continued access to health care, to ensure quality, and most importantly, to contain costs. The major change in the method of reimbursement from a retrospective to a prospective based budget allocation built on DRG's is designed to enable military hospitals to increase their control over their own costs.

DRG's classify patients by demographic and diagnostic variables into clinically comparable groups with similar lengths of stay and intensity of resource consumption. Originally developed for medical utilization review activities in the civilian sector, the DRG classification scheme has been adopted as the basis to credit workload and allocate resources within the DOD military health care system.

The National Defense Authorization Act, PL 99.661 Title 10, U. S. Code, Chapter 55, Section 1101, dated November 14, 1986, mandated the use of DRG's as the primary criteria for the allocation of resources to the facilities of the Uniformed Services (Memorandum to the ..., 1986). This requirement generated a number of investigational studies to develop methods by which data could be captured to compare present methods of reimbursement to proposed changes. As of this time, no concrete DOD study has surfaced which identifies the impact on the educational and

training needs required during implementation of this system. Moreover, no Health Services Command (HSC) wide strategic plan appears to be forth coming.

A number of papers and initiatives have been proposed which would determine and explain varying weighted methods by which military hospitals could be budgeted and resourced. Others explain the development of a case-mix index (DRG's: background..., 1989; IPDS Coding Conference, 1989) however, a review of the literature fails to reveal transitional strategies which would assist HSC to develop a strategic plan for command wide implementation.

Conditions Which Prompted the Study

William Beaumont Army Medical Center (WBAMC) is located in El Paso, Texas. The facility is a full-service medical and surgical teaching hospital currently operating 396 beds. WBAMC provides 21 percent of all hospital care in the El Paso area. An average of 2,407 patients are seen daily in 74 outpatient clinics. Additionally, William Beaumont has one of two trauma centers in the area.

Implementation of DRG's will impact on current medical practice patterns; but more importantly, will significantly tax the training resources required to usher in a smooth transition from the old system to the new reimbursement (budget allocation) system. Noteworthy is the lack of a command wide strategic plan for carrying out this restructuring effort. DRG information will be applied to identify a hospital's case-mix index, clinical treatment patterns, allocation of resources from HSC and to maintain records of operating effectiveness. Thus, the staff will be required to have a working knowledge of the DOD proposed system.

WBAMC will have the responsibility to train its staff prior to implementation and

during transition to the DRG reimbursement system. However, training the medical staff will prove to be arduous and time consuming. Presently, WBAMC has systems in place which can be used to assist during the transition period. The Hospital Information System (HIS) is an automated system designed to improve the efficiency of admitting and tracking the treatment of inpatients. The basic objective of the system is to enhance patient care by maintaining medical records electronically and by improving interdepartmental communications and operations (Schodt, 1987).

A Computer Information Center (CIC) has been established to provide training which is generally self-paced. Newly assigned health care personnel spend several days training on the HIS database system, practicing input of admission diagnosis, requesting pathology and radiology procedures, and ordering nursing care. Thus, it would appear that this existing training capability could be enhanced to include a DRG based software tutorial system. Crafting a strategy for implementing DRG's into WBAMC's existing HIS should make full use of this automated system, but must take into account an organizational wide implementation plan.

The literature reveals that the civilian medical profession incorporated DRG based information gleaned from inservice training programs into the organization's implementation plan. Furthermore, initial inservice programs were directed at the clinical departments and consisted of brief overviews of new federal regulations, the type of data to be gathered, the scope of the case-mix program, and the type of reports planned to be produced over the first year (Weinraub, 1985).

Effective implementation of DRG based payment systems proved to be dependent upon the development of extensive educational programs resulting from an

organizational wide planning effort prior to initial implementation of the DRG system (Thompson, & Grazier, 1984). The task was characterized as a massive effort, not only because of the problems associated with "unlearning" the old system and the relative complexity of the new system, but because of the size and heterogeneity of the learning bodies. Conner (1981) noted that the key to ensuring successful implementation of any DRG system was the careful analysis of current knowledge beforehand.

Therefore, all efforts at WBAMC must first be channeled towards assessing the staff's DRG knowledge base in an effort to identify the specific strategy to be developed that will bring about the successful implementation of this mandated requirement.

Problem Statement

The problem is to assess the training needs of William Beaumont Army Medical Center's medical staff and to determine a strategic plan for transition to Diagnosis Related Groups.

Review of the Literature

The watchword phrase used in today's military health care system is cost containment. Gone are the days when individual military treatment facilities (MTF's) could count on receiving additional funding at the end of the fiscal year to meet budget short falls. From a historical perspective, health care costs have been rising at an alarming rate. In 1982, the hospital inflation rate was triple that of the nation's economy. The total bill for health care in the United States was $322 billion, amounting to a tab of $1,400 for every man, woman, and child in America.

By 1984, the figure was 11 percent of the gross national product (Shaffer, 1984). The nation attempted to come to grips with this situation and made an effort to develop a mechanism whereby cost containment systems could be implemented.

Historically there have been various regulatory proposals aimed at controlling costs. During the 1920's, the advent and development of antibiotics and technological advances led to improved surgical techniques and better delivery of health care services. These improvements in turn, contributed to a rapid growth in demand for health care.

With the growing demand for health care, especially physician and acute hospital care, concern emerged over the availability of resources to meet this demand. As early as 1924, research results indicated that demand for physician services was increasing while per capita physician supply was declining (Mayers & Harrison, 1924). As a result, a private committee conducted a comprehensive study of the nation's health care economics. The committee found health care was not sufficiently affordable and available to middle-income families because of limited health care supply and resultant high cost (Committee on the Cost of Medical Care, 1936).

During the 1930's, the federal government became more involved in satisfying many basic social needs. As a result, President Franklin D. Roosevelt appointed the Committee on Economic Security whose task was to examine the many problems facing the American people. One of the committee's recommendations was the extension of public health services.

In this same time period, the Federal Social Security Act (Public Law 271) was

passed. Issues concerning access to health care continued to receive the attention of the federal government. The 1940's saw the passage of the Hospital Survey and Construction Act commonly referred to as the Hill-Burton Act (Public Law 725). This major piece of legislation provided federal funds for hospital construction and planning. It also called for further study of hospital care access problems.

The 1950's saw the rise of private health insurance as consumers attempted to deal with the increase in health care cost. Studies conducted during this period reported that many consumers were continuing to experience problems related to access and increasing acute hospital care (Coring, 1969 ; Garbarino, 1960). The government also began to hear complaints that the elderly and the medically indigent lagged behind other age groups in hospital coverage (Anderson, Collette, & Feldman, 1963).

Thus, in 1961, President John F. Kennedy attempted to expand social programs to care for the poor, the aged, and the disabled. As a direct result of his efforts, amendments to the Social Security Act were passed. Beginning with the Kerr-Mills Act and culminating with the Social Security Act Amendment of 1965 (Public Law 87-97), medical aid to the elderly was provided under Medicare (Title XVIII) while aid to the poor was provided under Medicaid (Title XIX) (Dobson & Bialek, 1985).

The 1970's and early 1980's saw the government's health care expenditure rise from $2.5 billion to $9.6 billion, an annual rate of change of 31 percent (Freeland & Schendler, 1983). Attention was now focused on methods to reduce costs. One of the earliest studies addressing cost containment approaches was conducted by the Presidential Commission on Health Manpower. The commission recommended the use

of physician extenders and nurse practitioners as a method to improve hospital efficiency and reducing over utilization of hospital services (Flook & Sanazaro, 1973).

Many additional federal programs enacted during this period attempted to further reduce the rising cost of medical care. This period saw the rise of alternative services offered by agencies such as Health Maintenance Organizations (HMOs). Improved access to care by the elderly and poor also occurred during this period. By 1977, these consumers accounted for 29 percent of the federal health care expenditure (Davidson & Marmor, 1980). During this same period the federal government sought to enact legislation which introduced the concept of rate setting and reimbursement based on reasonable costs. However, the cost of providing care to all Americans continued to rise.

Under the old reasonable cost reimbursement system, the health care industry had what has been commonly referred to as the "open checkbook phenomenon" (Dobson, & Bialek, 1985). All health care services deemed to be appropriate, and medically necessary, were reimbursed following the patient's discharge. This method of reimbursement, known as cost plus, did not foster sound management practices. As a result, length of stay and the number of ancillary procedures increased under this system.

New systems were being developed as a response to the cost based reimbursement systems. The DRG concept was an early attempt at a prospective based payment program. The idea behind this program served as an attempt to prospectively offer a payment system to give hospitals and their physicians an incentive to treat patients more economically, and thus reduce health care costs.

This new reimbursement method was mandated by Congress and represented an opportunity for hospitals to make money by saving money rather than spending it (Shanko, 1984).

The prospective payment system, in effect, helped to contain costs because it told hospitals they would be paid up front for treating specific types of patients based on their diagnosis. Thus, hospitals were encouraged to treat patients within preestablished guidelines because any cost of treatment exceeding these guidelines would be borne by the hospital.

DRG's were implemented into the federal Medicare program in the early 1980s. This implementation had its roots in the state of New Jersey (Grimaldi & Micheletti, 1983). New Jersey had a long tradition of enacting legislation geared towards regulating hospital costs which served the best interests of the public. The tradition went back to 1938 when the state legislature enacted laws requiring regulation of payment rates to assure reasonableness and adequacy of hospital charges to major carriers. Throughout the next 50 years, New Jersey was successful in establishing advisory committees to analyze and keep track of health care costs (Caterinicchio, & Warren, 1982).

During the 1960's and mid-1970's, researchers at Yale University Center for Health Studies were interested in defining expected lengths of patient's stay for quality of care studies. It was here that the DRG concept was first defined. The primary objective in the construction of DRG's was a definition of case types, each of which could be expected to receive similar amounts of services from a hospital. Length of stay was used to measure the expenditure of hospital services.

Consequently, DRG's were a research tool intended as a method for improving utilization review activities (Shaffer, 1984; Shanko, 1984).

In 1983, the U. S. Congress passed a law instituting the prospective pricing system (PPS) for inpatient care of Medicare patients. Hospitals were to be reimbursed at a preset rate for each patient admission; and in the implementation, DRG's were selected as the prospective payment mechanism. Since that time, hospitals have begun to respond to prospective pricing with a variety of cost-saving strategies. Among them are improving Management Information Systems, involving physicians in administrative operations, and adjusting staffing levels to reflect case severity. Recently, there has been much discussion in the literature to substantiate the need for the continued training and updating of the medical staff's DRG knowledge as a method of increasing reimbursement (Bishop, 1989; Trofino, 1989). In addition to medical staff education, some authors advocate patient and ancillary staff education both as a means of reducing medical costs and improving the quality of care (Green, 1976; Ginzberg, 1983).

Bartlett (1988) in an extensive patient educational strategies study under prospective pricing, found as pressures mounted to shorten the length of stay, patient educators undertook more activities to teach patients the elements of cost containment before and after the patient was hospitalized. Additionally, his study indicated these programs could achieve substantial savings in hospital costs, while at the same time maintaining or even improving the quality of care. A key player in this educational effort is the medical or nursing professional who many times is the sole source of information for the patient. All of these studies shared one key

factor- a total and sustained planning effort aimed at assessing problem areas and identification of a strategy to arrive at solutions.

Health care professionals as a group, have many tasks to accomplish, often within a limited time frame. Physicians provide guidance not only to patients, but to other health care providers as well. The introduction of prospective payment through DRG's creates an incentive to limit the patient's length of stay and, therefore, may increase the patient's need for education (Rosevear & Gary, 1989).

Cost containment programs have also spurred technologic advances in an attempt to shorten the length of stay. These trends in health care have increased the demands for provider knowledge both with respect to resource utilization in the health care delivery process and to assist the patient in understanding the significance of the DRG payment system.

Other authors (Duffy & Fairchild, 1989) state that barriers to effective patient supervision and education may be present when supervisors lack educational preparation related to clinical content and consequently, reimbursement areas. This is especially true when these same providers are not cognizant of the relationship between health care costs and the reimbursement mechanism because of a lack of a definitive strategic plan. Few physicians have adequate educational preparation in areas related to fiscal reimbursement issues. Physicians, having a direct influence on the financial viability of the organization, must ensure they have a fundamental knowledge of the organization's reimbursement system. Hence, assessing the physicians DRG knowledge is a significant variable in determining the strategy that will be required for transition to a new reimbursement system.

Theoretical Model

Epictetus who lived in the first century noted that education is the forerunner of freedom, the freedom of choice; the freedom to influence one's outcomes. This basic maxim, "Only the educated are free", provides the rationale for educating health care providers (qtd. in Smith, 1987). As participants in determining the health care goals of the consumer, health care professionals must be educated in order to make intelligent decisions of whether or not to follow the facility's cost containment guidelines and treatment modalities. Educating all health care providers allows them to become full partners in the total health care delivery system.

The present cost containment era requires the medical staff to practice quality care for all types of patients efficiently and accurately. Hence, it is imperative that the hospital's administrative staff identify the provider's DRG knowledge deficit in order to develop an effective strategy to support transition to a DRG system.

Knowledge deficit is defined by Carpenito (1983) as the state in which the individual experiences a deficiency in cognitive knowledge or psychomotor skills. Furthermore, knowledge has been linked to four learning domains. They include the cognitive, psychomotor, affective, and perceptual domains (Kopper, 1987).

The cognitive domain was the first to be described. It was the work of Benjamin Bloom along with a group of psychologists that began in the 1940's (Bloom, Englehart, Furst, Hill, and Krathwohl, 1956). The cognitive domain describes knowledge, comprehension, application and thinking skills; it is the model on which the pilot survey's questions were structured.

Purpose of the Study

The purpose of this study was to assess the training needs of William Beaumont Army Medical Center's medical staff and to determine a strategic plan for transition to DRGs. This study thus had a dual purpose- **knowledge assessment and development of a strategic plan** for transition to DRG's. Canvassing the knowledge deficit enabled the researcher to make recommendations and to identify a strategic planning process. Four initiatives comprise this planning effort and form the bedrock by which WBAMC will transition to a DRG based budget allocation system. A major objective was to assess the medical staff using a highly structured survey. Assessing the respondents' knowledge provided the commander and his administrative staff with a starting point for determining the type and intensity of strategic plan required in support of implementing DRGs. This study culminates with a strategic proposal by which WBAMC and other military hospitals can successfully transition to DRGs. Additionally, it is hoped that HSC integrates this proposal a command wide strategic plan as developed by the researcher.

CHAPTER II

METHODS and PROCEDURES

Research Questions and Hypotheses

Various definitions of knowledge include an awareness or familiarity with a subject matter and the experience or education gained following a formal training program. In today's increasingly dynamic and competitive health care environment, WBAMC must identify those subject areas to successfully implement critical training requirements. The development of a formal strategic planning process prior to and during transition to a DRG system will make this task easier. To accomplish this, WBAMC must first assess the knowledge deficit of its medical staff members.

Many individual questions contribute to the specific expression of individual DRG knowledge. Therefore, the research questions posed by this study were as follows: What is the medical staff's general knowledge of DRG's?; What is the awareness of the impact of DRG's?; What is the knowledge of documentation issues?; What is the staff's familiarity with the organization's case-mix index and the cost-containment issues? Moreover, what crucial elements must be identified in order to successfully implemente a DRG system? What does the staff consider to be the global requirements in the development of a formal strategic plan. **Given answers to these questions, the strategic planning implications for WBAMC were determined.** In order to test the validity of these questions, five domains were proposed and thus, formed the corresponding sections in the DRG survey developed for this study.

Operational Definitions

Dependent Variable (Y) = DRG knowledge score

Independent Variable (X) = X1, X2, X3, X4, X5, X6, X7, X8, X9.

X1 = General Knowledge.

X2 = Impact of DRGs.

X3 = Documentation issues.

X4 = Case-Mix Index issue.

X5 = Cost Containment issues.

To test the construct domains of DRG knowledge, the following null hypotheses were developed:

1. How one scores on the DRG survey is not dependent on general knowledge.

   Ho: Y $\neq$ f (X1 or general knowledge).

2. How one scores on the DRG survey is not dependent on knowledge of impact of DRG issues.

   Ho: Y $\neq$ f (X2 or impact)

3. How one scores on the DRG survey is not dependent on knowledge of documentation issues.

   Ho: Y $\neq$ f (X3 or documentation).

4. How one scores on the DRG survey is not dependent on knowledge of case-mix index issues.

   Ho: Y $\neq$ f (X4 or case-mix index).

5. How one scores on the DRG survey is not dependent on knowledge of cost containment issues.

   Ho: Y $\neq$ f (X5 or cost containment).

In addition to testing these hypotheses, demographic variables formed additional hypotheses as follows:

X6 = Age

X7 = Time in service

X8 = Type of provider

X9 = Rank

The corresponding null hypotheses were thus:

6. How one scores on the DRG survey is not dependent on a respondent's age.

   Ho: Y $\neq$ f (X6 or age).

7. How one scores on the DRG survey is not dependent on a respondent's time in service.

   Ho: Y $\neq$ f (X7 or time in service).

8. How one scores on the DRG survey is not dependent on the type of provider.

   Ho: Y $\neq$ f (X8 or provider).

9. How one scores on the DRG questionnaire is not dependent on a respondent's rank.

   Ho: Y $\neq$ f (X9 or rank).

The corresponding alternative hypotheses were:

1. How one scores on the DRG questionnaire is dependent on general Knowledge of impact issues; knowledge of documentation issues; knowledge of case-mix index issues; knowledge of cost containment issues; respondent's age; time in service; type of provider; and rank.
2. Ho: Y = f (X1, X2, X3, X4, X5, X6, X7, X8, X9,).

Subjects

The subjects selected for this study were comprised of the medical staff assigned to the Departments of Medicine and Surgery. These direct health care providers were selected because they represented the two departments which were responsible for the most Medical Care Composite Units (MCCU's) generated at WBAMC (see Table 1). MCCU's are a unit of workload measurement expressed "average daily" used by the Army Medical Department in medical treatment facilities. It must be noted that although the Department of Obstetrics and Gynecology (OB/GYN) reported a significantly higher admission figure, many of these admissions resulted from one day admissions in the Antepartum Diagnostic Clinic (ADC). Many of the patients admitted through this clinic are routine obstetric patients who are being evaluated to rule out complications.

According to LTC Akien Chief, Resource Management Division, this department would stand to lose the value of MCCU's generated from these admissions because these services could be delivered through an outpatient facility and under DRG's the ADC workload would be reimbursed in an outlier capacity. This department was therefore excluded from this study. Current budget allocation practices reimburse all Army Military Treatment Facilities (MTF's) based on the number of MCCU's generated by the MTF's. At the present time, MTF's are reimbursed 75% for MCCU's and 25% for supply costs. These percentages will change once DRG's are implemented.

The Med 302 Report is prepared by the Patient Administration and Resource Management Divisions. It details monthly workload statistical data. The information

is based upon workload data conducted on DOD beneficiaries and other clinical/department statistics. Information gleaned from the Med 302 Report revealed that the Department of Medicine was responsible for generating a total of 5,370 admissions for Fiscal Year 1989, while the Department of Surgery admitted a total of 5,662 patients during this same time period (see Table 1).

Table 1

ADMISSIONS by CLINICAL DEPARTMENT

CLINICAL DEPT	Year to date 88	Year to date 89
DEPT of MEDICINE	5571	5370
DEPT of SURGERY	5672	5662
DEPT of OB/GYN	8255	8119
DEPT of PEDIATRICS	2730	2654
DEPT of PSYCHIATRY	290	306
RES TREATMENT FAC	553	522

These two departments were also responsible for 2,67[illegible] and 2,801 occupied bed days, respectively (see Table 2). This data was also consistent with the numbers of outpatient visits generated by these departments.

Table 2

OCCUPIED BED DAYS

CLINICAL DEPT	Year to date 88	Year to date 89
DEPT of MEDICINE	2681	2678
DEPT of SURGERY	3036	2801
DEPT of OB/GYN	1488	1253
DEPT of PEDIATRICS	978	1002
DEPT of PSYCHIATRY	334	439
RES TREATMENT FAC	968	1049

The Department of Medicine averaged a length of stay of 6.93 days, while the Department of Surgery had an average length of stay of 6.66 (see Table 3). The Department of Psychiatry and the Residential Treatment Facility had longer lengths of stay; however, they generated fewer MCCU's. Although these two latter departments appear to gain more through supply dollars, under a DRG system, they would lose dollars because of a reduction in the length of stay. A reduction in the length of stay would also decrease the amount of supplies required to support these patient diagnostic classifications.

Table 3

LENGTH of PATIENT STAY

CLINICAL DEPT	Year to date 88	Year to date 89
DEPT of MEDICINE	6.51	6.93
DEPT of SURGERY	7.10	6.66
DEPT of PEDIATRICS	3.95	4.06
DEPT of OB/GYN	2.24	2.07
DEPT of PSYCHIATRY	17.62	15.00
RES TREATMENT FAC	21.74	23.11

Accordingly, a detailed review of the Med 302 Report allowed the researcher to quickly identify the Departments of Medicine and Surgery as being responsible for the bulk of the hospital admissions and therefore were the logical departments to participate in the study. These two major MCCU producing departments were targeted as potential representative subject areas in order to assess WBAMC's current DRG knowledge; to identify weaknesses or strengths in the study; and to determine a strategic plan for implementing DRG's into the organization.

Study Design

Construction of the Pilot Survey

A pilot survey (Appendix J) was developed to assess the requirements needed during transition to DRG's. This survey was modeled upon five domains representing a DRG knowledge construct. Bloom's cognitive domain of knowledge was used as a model (Bloom, Englehart, Hill, & Krathwohl, 1956). Identifying the medical staff's DRG knowledge base was sought to help determine the type and intensity of training and other planning efforts required during implementation of the DOD mandated system.

The medical staff's response on a highly structured survey was crucial to assessing the planning effort needed in support of a strategy designed to facilitate management under a budget allocation system. The questions were developed with consultation provided by subject matter experts (SMEs) at the Academy of Health Sciences and the Veterans Administration Hospital in San Antonio. To test the five constructs, the survey asked for qualitative judgments in response to specific questions marked true/false. This methodology was used because it represented an efficient and economical means of assessing current DRG knowledge.

Various references were consulted during the development of the test items. Notter (1988) notes that the advantage of this type of test is that it can be used with subjects at a distance without greatly increasing the cost and time involved. It is most useful in surveys of large groups of people. Shields (1965) reports that true/false items should be written only for statements that are either completely true or completely false. For this reason, the true/false item was determined to be best

suited for measuring knowledge of specific facts. Similarly, the Army's Organizational and Effectiveness Center and School's Reference Book was consulted during the development of the test items (U. S. Army Organizational Effectiveness.., 1983). Questions were then designed using the format proposed by the reference book.

An independent test of this nature (true/false) was desired because it created a situation whereby the subject responded freely to each item. The subject was, therefore, given a range of two possible responses from which he could then choose only one correct answer. According to Kerlinger (1986) other advantages included the applicability of using most statistical analyses to these responses. Each item was designed to provide maximum information. Finally, each item would contribute to the total variance.

The purpose of the pilot survey was: (1) to determine the reliability and validity of the survey, (2) to identify and correct any problems associated with administering the survey, (3) to elicit feedback concerning the questions asked, and (4) to effectively reduce the number of questions contained in the pilot survey. Determining reliability and validity was deemed to be tantamount to the successful refinement of an instrument to be used on WBAMC's staff. Reliability refers to the consistency and stability of the average score made by the respondents. Kerlinger (1986) notes that reliability is the accuracy or precision of a measuring instrument. More definitively, reliability is the proportion of error variance to the total obtained variance yielded by a measuring instrument subtracted from 1.00, the index 1.00 indicating perfect reliability.

Conversely, validity refers to the accuracy and sensitivity of the data gathering tool. Cronbach (1970) argued that construct validity is one of the most significant advances of modern measurement theory and practice. It is a significant advance because it links psychometric notions and practices to theoretical notions. It is indispensable because it provides the researcher a method for reducing a large number of measures to a small number by discovering which ones "go together" and the relations between the clusters of measures that go together. Nunnally's (1978) approach to construct validation was employed to the extent that each survey item was analyzed to ensure that each measured the same thing as the total score. To that extent, the item was determined to be valid.

Construction of the Staff Survey

In a effort to improve reliability in the staff survey, three major initiatives were implemented during the construction of the pilot survey. First, all items were screened for ambiguous wording. Second, a large number of items of equal kind and quality had been added. Adding more items increased the probability that any individual's total score would be close to his true score. Kerlinger (1986) notes that few items, offers a greater chance of error, while having more items, decreases the chance of error. Therefore, more items had been originally added to the pilot survey in an effort to increase the probability of accurate measurement. The ultimate goal was to effectively reduce a large amount of items to a smaller more accurate and more appealing number. These items would then be included in the staff survey. Third, clear concise instructions were given and were administered under well controlled conditions. Statistical testing of the pilot survey allowed the researcher

to significantly reduce the number of survey items from 60 to 20. Wording changes were made, however, the addition of two open ended questions (Appendix K) significantly captured staff input.

Data Collection

Pilot Survey

As noted earlier, the pilot survey consisted of 60 questions marked true/false. The items addressed the constructs; (general knowledge, impact issues, documentation issues, case-mix issues, and cost containment issues); eight questions addressed demographic and further predictor data. Appendix J contains the pilot survey which was administered to 36 Army Nurse Corps Officers during the May 1989, time period. thirty six students in the first phase of the U. S. Army Nurse Corps Anesthesia Program were requested to provide responses to this survey. The students were advised that their confidentially and anonymity would be protected. The researcher collected the surveys immediately after completion. Of the 36 surveys, 33 were returned, representing a 92 percent return rate.

Staff Survey

Departmental secretaries assigned to medicine and surgery were tasked to identify a departmental listing of all staff, residents, and interns for inclusion into the study. They were informed that all physicians were to be included. Exceptions were made however, for physicians on rotations to hospitals outside the El Paso area. The researcher then constructed a convenience sample of eight staff, residents, and interns each from the departmental lists provided by the secretaries. One additional physician was selected to complete an N-size of 25 per department. This sampling

was not random and generalization of results was impaired. This method of sampling was necessary because of availability of subjects. This method of selection assured a proportional sampling of physicians from the respective departments. The researcher assisted both departmental chiefs in handing out and explaining the purpose of the study. To ensure compliance, the subjects were asked to forward their surveys through their respective departmental chiefs.

After consultation with Dr. Finstuen, assistant professor, U.S. Army-Baylor program, it was decided that 50 additional surveys should be given to the nursing staff to allow the researcher to compare the responses. Nurses were chosen following the same procedure as described earlier in the selection of physicians.

Prior to handing out the surveys, all respondents were given directions and informed that their confidentiality and anonymity would be protected. They were then asked to reply to the questions in terms of all previous and current duty assignments. A total of 100 surveys were distributed to a proportional body of physicians and nurses within the departments of medicine (N = 25), surgery (N = 25), and nursing (N = 50). All of the surveys were returned.

<u>Statistical Analyses</u>

The next step in the research study was to select and apply the statistical analysis. The alpha probability level was set at .05 and both descriptive and inferential statistics were chosen to analyze the data. Analysis of variance (ANOVA) tests using randomized blocks was selected for the pilot survey in an effort to choose the best items for inclusion into the staff survey. T-tests followed by ANOVA and nonparametric tests were selected for statistical analyses of the staff

survey.

CHAPTER III

RESULTS

Results of Pilot Survey

Descriptive Statistics

Thirty three out of 36 students returned the pilot survey. One was a Major, 29 were Captains, 2 were 1st Lieutenants, and 1 was a 2nd Lieutenant. According to LTC Sherner, Chief Anesthesia Branch, Academy of Health Sciences, these demographics resemble the typical nurse anesthesia course. Table 4 displays the means and standard deviations for each domain. This table represents the means and standard deviations for each domain's total scores and represents the results of the 60 item survey. Individual domain means ranged from 8.06 (documentation) to 10.81 (cost containment), with standard deviations falling between 1.51 (documentation) to 2.32 (impact).

Table 4

Means, Standard Deviations for 60 Item Pilot survey

Domain	Items	Mean	Standard Deviation
General Knowledge	12	8.42	2.15
Impact	12	9.03	2.32
Documentation	12	8.06	1.51
Case-mix	12	8.45	1.62
Cost Containment	12	10.81	2.17

Assessment of Validity and Reliability

Whole-part correlation coefficients (Pearson's r), based on 60 responses, were computed between the dependent variable of total scores and each of the 60 individual item responses. Construct validation was accomplish by correlating individual scores with the total domain scores. When this technique is utilized the

total score is assumed to be valid (Nunnally, 1978). Each individual item was then compared to the total domain score and served as tests of hypothesized construct validity. Thus, each item was examined for its relative contribution to the total domain score (Kerlinger, 1986).

Table 5 depicts the 5 domain coefficients which were positive and served as statistically significant predictors of the total domain score. The strongest individual items were then selected to best represent the 5 domains which were then used in the WBAMC staff survey. They are shown in Table 6 and represent the top 4 items per each domain. Case-mix items appeared to have the lowest comparisons, ranging from .28 (Item M9), to .56 (Item M11), however, all contributed to the total domain score. The strongest individual comparisons were from among the cost containment domain followed by the impact and documentation domains.

Table 5

Domain Correlation Validity Coefficients

Domain	Pearson's r *
General Knowledge	.73
Impact	.80
Documentation	.65
Case-Mix	.52
Cost Containment	.82

* Whole-part validity correlations (domain score versus total contribution to other domains) are all statistically significant from an r of zero.

Moreover, individual item scores added to the whole or domain validates. Total domain scores were significantly correlated with total item scores. Contributions from cost containment and impact were strong with r = .82 and .80 respectively

(Table 5). The validity coefficients for the domains were grouped a little closer to unity than the individual item validates. While this greater validity displayed in the domain scores would be expected, it also demonstrates the proper resultant scores, and the strength of the domains as predictor factors.

Table 6

Whole-Part Validates of Top 4 Questions

Domain	Item No.	Item Validity	Total Validity
General Knowledge	G-5	.59	.54
	G-6	.43	.54
	G-7	.54	.51
	G-11	.51	.45
Impact	I-1	.61	.55
	I-9	.67	.66
	I-10	.41	.63
	I-12	.72	.57
Documentation	D-3	.57	.43
	D-4	.35	.52
	D-7	.64	.45
	D-9	.43	.56
Case-Mix	M-4	.31	.58
	M-6	.42	.46
	M-9	.28	.51
	M-11	.56	.32
Cost Containment	C-1	.73	.73
	C-2	.62	.54
	C-4	.87	.80
	C-12	.73	.73

This finding made it possible to evaluate DRG knowledge by individual item and by domain. More importantly, it made it possible to evaluate knowledge by domain with even greater confidence of accuracy. These validity results indicated that all reduced items (20 item reduced survey), and especially items grouped as domains,

were positively and significantly associated with the overall domain scores (see table 9).

The survey's reliability of measurement could have been computed by a number of methods. Kerlinger (1986) outlined two excellent methods using results obtained from the randomized blocks ANOVA table. Utilization of this method provides an estimate of internal rating (see Figure 1).

Figure. 1

Reliability Coefficient

$$r_{tt} = 1 - \frac{\text{(error variance)}}{\text{(error from individual differences)}}$$

or

$$r_{tt} = 1 - \frac{V_e}{V_{ind}}$$

Source: Kerlinger, F.N. (1986).

Using the analysis of variance table it was possible to calculate both V_e and $V_{individual}$. Analysis using this method yielded the following variances: Between items, between individuals, and residual or error. This methodology also yielded the measurement of excess variance, which resulted from individual differences in what was measured. Measurement following this methodology was directed at capturing true individual scores (Kerlinger, 1986). Following this approach, this instrument was indeed accurately measuring the true scores of the individuals and was therefore, reliable (see Table 7).

The demonstration of reliability and computation of reliability coefficients could have also been obtained utilizing a procedure known as Cronbach's Alpha (Cronbach, 1970). Figure 2 outlines this formula. Both methods yielded complementary results. Utilizing method 1, calculated coefficients of .82 and .88 (60 item versus 20 item survey) confirmed that this instrument was quite accurate.

Figure. 2

Reliability Coefficient Cronbach's Alpha

$$= 1 - \frac{1}{F_{rows}}$$

or

$$= 1 - \frac{1}{MS_{rows\ blocks}}$$

Source: Kerlinger, F.N. (1986).

Table 7 demonstrates the reliability coefficients for each of the 5 domains. The cost containment domain (.72) represented the highest coefficient, while the documentation domain had the lowest coefficient (.20). A comparison across all domains yielded a coefficient of .82*. This was very acceptable and provided assurance that the consistency of measurements of the 60 item instrument was quite high and would be expected to remain so in future uses.

Table 7

Pilot Reliability 60 Item Survey

Domain	No. of Items	Reliability Measurement
General Knowledge	12	.60
Impact	12	.68
Documentation	12	.20
Case-Mix	12	.28
Cost Containment	12	.72
Total	60	.82*

Reduction of the Pilot Survey

Having determined reliability and validity, the 4 most significant questions were then selected from each domain to be used on WBAMC's staff. Accordingly, the 60 item survey was reduced to 20 reliable and valid items. This was done because it was felt that the medical staff would be more receptive to a shorter survey. Hence, all steps were employed to determine a highly structured survey following sequential statistical procedures. Overall results indicated that the pilot instrument demonstrated highly acceptable levels of reliability as shown in Table 7. Table 8 reflects no loss in reliability following the reduction of the 60 item survey. Total reliability coefficient (.88*) of this magnitude proved to be more acceptable, and further demonstrated the consistency in testing DRG knowledge using a shorter and thus, more effective instrument.

Table 8

Pilot Reliability 20 Item Survey

Domain	No. of Items	Reliability Measurement
General Knowledge	4	.46
Impact	4	.70
Documentation	4	.60
Case-Mix	4	.49
Cost Containment	4	.85
Total	20	.88*

Table 9 represents the top 4 items from each domain, reflecting both individual item descriptive statistics and validity measurements. Noted earlier was the researcher's assumption that WBAMC's staff would be more willing to respond to a shorter survey, therefore, following statistical analysis and validation, the reduced (20 item) survey was utilized.

Table 9

Reduced 20 Item Survey Following Item Analysis

Domain	Mean	S.D.	Validity
General Knowledge			
G5. DRG's have little or no role outside a financial system	.78	.41	.59
G6. Once a fully costed DRG system becomes available, questions of clinical inefficiency will be resolved	.81	.39	.43
G7. DRG's can serve as a foundation for ongoing quality assurance and utilization review programs	.81	.39	.54
G11. Because military facilities are not concerned with profits, DRG's have no applicability in our system	.87	.33	.51
Impact			
I1. DRG's can provide administrators and clinical staff useful management information	.87	.33	.61
I9. DRG's will cause department managers to develop skills to forecast departmental needs more accurately	.84	.36	.67
I10. Because of financial constraints, management will be required to emphasize departmental productivity	.87	.33	.41
I12. Data derived from DRG's will not provide nursing departments considerable information about the cost, revenue and profitability of nursing care	.72	.45	.72
Documentation			
D3. DRG's do not require more accurate documentation in providing patient care	.78	.41	.57
D4. DRG's will require less attention to clerical notation, particularly with respect to the completion of patient' records	.93	.24	.35

D7. Providers can expect administration to question their notes under a DRG system	.69	.46	.64
D9. DRG's will place additional emphasis on accurate and fully documented secondary diagnosis	.93	.24	.43
Case-Mix			
M4. An estimated two years of development time may be required to set up a cost accounting system for case-mix analysis	.93	.24	.31
M6. DRG's attempt to describe patterns of resource consumption in terms of the similarities among and differences between patients	.90	.29	.42
M9. Case-mix by DRG holds the physician as well as the administrator accountable for the cost of medical care	.81	.39	.28
M11. One of the first uses of the cost accounting data produced by a case-mix system will be to verify the case-mix index	.75	.43	.56
Cost Containment			
C1. DRG generated information can be used to develop financial profiles for clinical programs to assist administration in evaluating clinical programs in terms of types, volume, and cost	.96	.17	.73
C2. DRG's will not benefit administration in determining how much of the hospital's resources are being consumed	.87	.33	.62
C4. DRG's help the hospital identity, plan for and assign resources to the sets of treatment services offered to its patients	.93	.24	.87
C12. Military administrators must know their hospital cost per DRG and how those costs compare to DRG Price levels established by The Department of Defense	.96	.17	.73

In summary, these results indicated an understandable instrument which adequately measured the subjects knowledge. The pilot survey was effectively reduced to 20 items which were determined to be reliable, valid, and more appealing to direct health care providers. Many subjects commented they did not feel comfortable with the issues of reimbursement based on DRG's. Others felt much was needed in the way of training and planning before the implementation of a DRG based reimbursement payment system.

Results of WBAMC's Staff

A sample of the staff assigned to the Departments of Medicine, Surgery and Nursing at WBAMC was surveyed during the November 1989 - December 1989 period. The results are reported in three main parts for ease in explanation. The first part includes the results of the descriptive statistics on the background (demographic) items, followed by comments clustered by the researcher and obtained from the open ended questions. Part two reports the results of the inferential statistics comparing the three groups and finally, the third part concludes with a discussion of the survey's inability to discriminate item resonses analyzed across all twenty items.

Descriptive Statistics

The staff's age group ranged from a low of 22 years to a high of 52 years of age. Rank ranged from Captain to Colonel, Majors comprised the median. Years of service (YRSSVC), ranged from a low of one year to a high of 23 (see Table 10).

Table 10

Categorical Descriptions

	Mean	Standard Deviation	Range
AGE	34	6.43	22-52
YRSSVC	8.75	6.46	1-23

Responses to the open ended questions were analyzed subjectively and grouped along a frequency distribution forming four major taxonomies. An overwhelming number of physicians and nurses were both receptive as well as responsive to the introduction of DRG information. The majority of the comments reflected that not enough was being done to educate the staff and that a comprehensive plan was needed to implement a DRG based system. The four major taxonomies were summarized and clustered as follows:

(1) **Workshops.** Comments consisted of methods related to seminars, conferences, lectures, and small group (professional specific information) instruction.

(2) **Computer Assisted Instruction.** Comments here centered on the utilization of patient management scenarios, hands on teaching using computers in conjunction with patient's charts and other computer generated "what if" scenarios comparing DRG versus MCCU budget allocation methods.

(3) **Written literature.** Many subjects stated that they would prefer the use of handouts, syllabi, case analysis, programed text and pocket code books to augment DRG instruction.

(4) **Personnel.** There were many comments related to the use of specifically trained personnel to assist physicians and other staff members in determining

a DRG training program.

In summary, the largest number of comments centered around the use of skilled personnel to assist the staff in documentation of proper DRG codes and revenue producing diagnosis followed by instruction and training methodologies.

Inferential Statistics

Frequency distributions for the five domain scores are displayed in Table 11. A valve of 0 indicates an incorrect score while a value of 4 indicates that all items were answered correctly. The means and standard deviations are reported in Table 12.

Table 11

Frequency Distribution

Domain Value	Gen. Know	Impact	Document	Case-Mix	Cost Containment
0		2		1	
1	1	1		0	
2	7	7	7	7	5
3	27	22	20	31	9
4	65	66	72	54	84

Table 12

Domain Means, Standard Deviations

Domain	Mean	Standard Deviation
G Total	3.56	.67
I Total	3.52	.84
D Total	3.66	.61
M Total	3.47	.73
C Total	3.81	.51

Table 12 displays little variation among domains means indicating the subjects had a rather easy time with the survey. Inferential statistics revealed no significant difference between total scores for physician and nurses, therefore, the physician group was further divided into two distinct groups, physician-surgery and physician-medicine.

An ANOVA utilizing a between subjects design was performed to distinguish between group significance. The three original groups surveyed; physicians-surgery, physician-medicine and nurses constituted a between subjects factor. The dependent variable was the total survey score derived by summing the scores across the twenty items. As noted in Table 13, the differences among these three groups was not statistically significant, $F(2,86)$, $p < 0.3640$.

Table 13

Total Score A Posteriori

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	8.15	4.07	1.02	.36
Within Groups	86	342.74	3.98		
Total	88	350.89			

Finding no significance among these original groups, an additional a posteriori hypothesis was tested regarding whether masters or bachelors level nurses might represent different populations, and score significantly different on the survey. Accordingly, a posteriori statistical analyses were performed to test for differences between masters and bachelors prepared nurses and how theses two groups differed in turn from physicians. One of the nurses held a doctorate degree while another one possessed an associates degree. These two individuals were not included in any of these a posteriori analyses, reducing the total sample size by two. The lack of significant differences between the two physician groups in the previous analysis provided a justification for pooling the two physician groups (Hays, 1981).

The same statistical analyses which were selected and agreed to in the original proposal called for testing differences among the original three groups. These tests were used again to test for differences among the three newly created groups labeled (1) Masters level nurses (2) Bachelors level nurses and (3) Physicians (combined). Due to concerns whether all of the assumptions of parametric tests were met, nonparametric tests were performed as these concerns were not anticipated. The analyses agreed to in the proposal are reported with a note of concern regarding

their meeting all of the assumptions of parametric tests. A report of the nonparametric results are also noted. Nonparametric tests were employed because not all assumptions had been met (Siegel, 1956).

An ANOVA utilizing a between subject design compared the three newly defined groups while holding the total score labeled ALLTOTAL as the dependent variable. ALLTOTAL represented the combined total scores of each subject group. The intent was to determine significance as a function of group membership. The ANOVA indicated a significant difference in the total scale score as a function of membership among the three groups, $F(2,84) = 3.4650$, $p < .0358$ (see Table 14).

Table 14

ALLTOTAL ANOVA

Source	D.F	Sum of Squares	Mean Squares	F Ratio	F Probability
Between Groups	2	26.59	13.29	3.46	.03
Within Groups	84	322.30	3.83		
Total	86	348.89			

Three t-test comparisons were then performed on the total scale score (ALLTOTAL) to determine which of the 3 groups significantly differed from each other. Routine homogeneity of variance tests, performed as part of the SPSS t-test program for each of the three t-test comparisons indicated statistically significant differences (heterogeneity) between the variances in two of the three pairings; masters level versus bachelors level nurses ($F = 7.51$, $p < .005$) and masters level nurses versus the combined group of physicians ($F = 8.58$, $p < .004$); but not in the comparison between bachelors level nurses and physicians ($F = 1.14$, $p < .670$). For

the two t-test comparisons in which there were significant differences between the two variances, the appropriate SPSS separate variance estimates were used rather than the normal pooled variance estimates.

Resulting t-tests comparing the differences between group means revealed masters level nurses scored significantly higher on the total scale score than both bachelors level nurses $t(34.96) = 4.96$, $p < .001$, and physicians, $t(36.73) = 3.58$, $p < .001$. As indicated in Table 15 a contributing factor appeared to be the standard deviation of the masters level nurse group. This was approximately one-third (.726) the standard deviation of each of the other two groups (2.12, 1.99). Note, two-thirds of the subjects reported a perfect score of 20.

Table 15

ALLTOTAL Group Means, S.D., Standard Error

	No. Cases	Mean	S.D.	Standard Error
Masters level nurses	9	19.55	.72	.24
Bachelors level nurses	31	17.93	2.12	.38
Physicians	47	17.68	1.99	.29

Note: descriptive statistics for total scale score (ALLTOTAL) as afunction ofmembership in the newly defined groups.

Table 15 also denotes a difference in N size between the masters level nurse group (N = 9) and the N sizes of the other two groups; bachelors (N = 31) and physician (N = 47), respectively. Accordingly, it should be noted that the absolute value of these statistically significant differences in knowledge (master's nurses mean minus bachelor's nurses mean and master's nurses mean minus physician mean) is only 1.88 and 1.62 ; less than two survey scale items of DRG knowledge.

As noted earlier, there were concerns that the not all of the assumptions of parametric testing were being met, therefore nonparametric tests were also performed. The Mann Whitney test was employed for the three analyses of the two independent groups each. A normal approximation to the binomial distribution was used with a Z score as a test statistic. Results following this test were largely consistent with earlier t-tests summations. The masters level nurses again scored significantly higher than both bachelors level nurses, $Z(N = 40) = -2.27$, $p < .0231$ and significantly higher than physicians, $Z(N = 36) = -3.21$, $p < .0013$. The level of significance was now less than the t-test summations reported earlier. However, the difference between the masters and bachelors nurses was not statistically significant $Z(n = 78) = -7948$, $p < .4268$.

Non-parametric tests were subsequently performed for the same three group comparisons in an attempt to find statistical difference among the three groups compared along the five knowledge domain scores. For the reader's convenience, the fifteen different sets of analyses are summarized in a manner indicating degree of significance in Table 16.

Table 16

Knowledge Domains Nonparametric Tests

Group	Gen. Know	Impact	Document	Case-Mix	Cost Containment
Mas RN vs Bac RN	.0928	.8123	.0906	.0304*	.1408
Mas RN vs Physicians	.0393*	.4443	.0202*	.0457*	.2077
Bac RN vs Physicians	.5379	.1289	.1710	.6729	.6686

Note: *p < .05 Mann Whitney test probability of significance comparisons among the three newly defined groups.

Table 16 also reveals that masters level nurses versus physician comparisons were statistically significant at the .05 level for the general knowledge, documentation and case-mix domains, but only one of the masters level nurses versus bachelors level nurse comparisons was significant (case-mix domain). None of the five bachelors level nurses versus physicians comparisons were significant.

Discrimination

The final test employed consisted of an analysis of item discrimination collapsing all 20 survey items. Of the 20 items, 11 (55 %) were answered correctly by more than 90 % of the subjects. Eighteen (90 %) of the items were answered correctly by at least 80 % or more of the subjects. Only two of the 20 items (10 %) were answered correctly by 70-79 % of the subjects. None of the items were answered correctly by less than 70 % of the subjects. One of the items was answered correctly by all 100 subjects. The percent correct mean was 89.5 while the standard deviation was 6.7, indicating that the survey failed to discriminate among any of the subjects taking the survey.

Table 17

Survey Discrimination

Item	Percent Correct
G-1	84
G-2	93
G-3	89
G-4	90
I-1	94
I-2	86
I-3	92
I-4	78
D-1	89
D-2	100
D-3	80
D-4	96
M-1	72
M-2	89
M-3	92
M-4	88
C-1	97
C-2	90
C-3	95
C-4	96

Table 17 clearly displays the survey was unable to distinguish differences among the 20 survey items. The actual survey items are listed as percent correctly answered. The lowest scored item at 72 % was M-1 (An estimated 2 years of development time may be required to set up a cost accounting system for case-mix analysis). Item D-2 (DRG's will require less attention to clerical notation, particularly with respect to the completion of patient's records) at 100 % represented a correct answer by all subjects.

In summary, an unexpected result was the finding of significance between masters prepared nurses and physicians. Noteworthy, was the failure of the survey

in it's ability to discriminate among subject responses and therefore, to effectively determine knowledge deficit. Additionally, the questions appeared to be too generic and therefore, quite easy. This is evidenced by the subject's responses (see Table 17).

CHAPTER IV

DISCUSSION

A review of the literature failed to reveal studies whereby any organization in the civilian health care industry had assessed their staff's DRG knowledge prior to the implementation of a DRG system. The military health care literature was likewise devoid of any studies. Thus, this study exemplified an attempt to refine a survey in order to assess current DRG knowledge levels at WBAMC. Exploring the current awareness of this mandated budget allocation system, by way of a survey instrument it was hoped that predictive variables would be identified. Once these predictors had been identified, then a proposed strategic plan could be determined. A formalized study was developed to achieve this objective. Additionally, hypotheses were developed and tested.

This study hypothesized that DRG knowledge was dependent upon five constructs identified as general knowledge, impact, documentation, case-mix, and cost-containment issues. Four additional variables were also studied; age, time in service, type of provider, and military rank. Two open ended questions were designed to obtain input for the strategic plan. The research design was descriptive and correlational, utilizing parametric and nonparametric testing to determine a relationship between the dependent and independent variables.

A pilot survey was developed and tested on 33 Army Nurse Corps Officers who indicated that the survey was understandable and measured their DRG knowledge. Reliability and validation testing was conducted prior to application on WBAMC's staff. Item and analysis of variance testing demonstrated high levels of construct validity. In order to establish more than just face validity, content validity was determined through the assistance of subject matter experts at the Academy of

Health Sciences and through consultation with an administrator at the Veterans Hospital in San Antonio, Texas. The researcher was thus able to stratify the pool of questions into 5 distinct domains. The final survey format was modeled upon Bloom's cognitive theory of knowledge.

As noted earlier, it had been hypothesized that this study would answer the following questions: What is the medical staff's general knowledge of DRG's? What is the staff's awareness of impact issues? What is the staff's knowledge of documentation issues; of familiarity with WBAMC's case-mix index; and, cost-containment concerns? Raw predictive scores failed to define adequate trust in the survey instrument as utilized in this study. Because the groups means were so similar and variance was so closely grouped together specific null hypothesis could not be rejected.

Comparisons made between the nurse (combine group) and physician (combine group) groups failed to reveal any statistical significance. Breaking out two physician groups into physician-medical and physician-surgical while compared to the nurse group, failed to reveal any statistical significance. When nurses were also broken out into two distinct groups labeled masters level and bachelors level, while compared to the physician group, differences began to be identified. This proved to be an unexpected finding because as was noted earlier, the nurse group had been added for purely comparative reasons. Analyzing the data following a planned and logical methodology revealed interesting differences between masters level prepared nurses and physicians. Clearly the masters prepared nursing group began to demonstrate differences as evidence by their higher scores displayed in Tables 14

through 16.

Although those differences became more evident when the domains were examined by group comparisons (see Table 14), they failed to significantly reject the null hypothesis. Table 17 demonstrates that the survey was not sufficiently discriminatory since it failed to differentiate between subject responses. It also failed to separate those having knowledge from those not having knowledge as defined by the researcher.

Although the overall effect of assessing knowledge of resource allocation based reimbursement was not documented by this study, the researcher gained invaluable knowledge in determining a visionary strategy for transition to DRG's. Thus the secondary purpose was achieved, that being to determine a strategic plan for implementing training and planning needs during transition to DRG's.

Many of those surveyed voiced concerns with how the military would eventually implement a DRG system. Many health care providers felt that their practice patterns would be drastically altered. Others felt that nothing was currently being done to teach newly assigned practitioners to work under a DRG based system. The nursing group was concerned that they would not be included in this system and that nursing resources would be overlooked during the transition period.

A theme common to all groups was the identification of integrating DRG's with current information systems, and with the quality assurance program. Also common was the need to integrate DRG's with the current management structure and with the graduate medical education, as well as with the medical records section. Many comments focused on the need to ensure executive management's role during

transition. During the data collection period, many conversations between the researcher and those surveyed consisted of the need to educate patients on cost containment efforts. Some felt that incentives should be given to departments saving dollars under a DRG system. Many of these thoughts formed the bedrock on which the strategic implementation plan was based.

Surveying WBAMC's staff contributed to the many other questions which had arisen. New insights were brought to light for use in establishing a proposed strategy for transition to a DRG system. Major strengths and weaknesses were noted during the adherence to a thorough and detailed methodology. Each step in the process was designed to build upon the previous step. A major weakness was the lack of discrimination in the survey instrument.

Additionally, the researcher underestimated the degree to which the subjects were knowledgeable concerning DRG's. Serveral assumptions became apparent: (1) Many of the subjects read many medical journals and therefore were well read on this subject. Some subjects in fact stated that many of their journals always had at least one article concerning cost containment efforts. (2) The subjects may have guessed very well. (3) Further test formulation skills were required by the researcher, this was demonstrated by the statistical analysis.

Numerous attempts were made to determine statistical significance from the survey. The results of the statistical analysis demonstrated that the survey instrument was not able to clearly assess DRG knowledge deficit. This study did, however, accomplish its intended purpose- knowledge assessment and development of a strategic plan. Various conclusions and recommendations follow. Although

conclusions can not be made about true knowledge deficit, the researcher is able to offer a substantial strategic proposal to WBAMC for implementing DRG's into current delivery systems with implications for HSC's command wide efforts.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The results of this study identified a fairly high gerneral knowledge of DRG's, their impact, documentation issues, case-mix implications, and cost contatinment aspects. It suggested the need for more specific DRG knowledge in support of a viable strategic implementation plan. This study attempted to assess and develop training needs required during transition to a DRG system by first assessing knowledge deficit. The final outcome was to support a strategic implementation plan for DRG's at WBAMC. The need to develop a coherent institutional strategy to prepare for managing under DRG's was furthered identified.

To improve the planning process and to expedite the implementation of DRG's at WBAMC, the following recommendations are made:

Recommendations

(1) Establish a DRG committee assisted by a DRG coordinator and health care analyst to identify and guide implementation actions.

(2) Focused studies examining the impact of DRG's on the medical, nursing and administrative staff may be required to achieve optimal implementation of DRG's.

(3) An aggressive continuing educational program must be developed to acquaint staff with DRG's and the implementation plan for WBAMC, as it is developed.

(4) Teach concepts and implications of practicing military medicine under a DRG based system.

(5) Involve physicians and gain their support in future planning scenarios.

(6) Adjust the methods by which health care is delivered where clinical

indication and cost management demonstrate it is appropriate, as a part of the effective implementation of DRG's.

DRG reimbursement has been in effect in the civilian health care sector since the mid 1980's and has resulted in significant changes in the way hospitals deliver health care. Many hospitals were able to adapt and thus were successful in remaining viable while others were not able to alter their organizations to effectively deliver health care based on this method of reimbursement. Military health care facilities are now bracing themselves to manage under DRGs. Now is the time for these hospitals to craft a vision which will determine fiscal viability in the immediate future.

Crafting input into a strategic planning process to achieve this vision for WBAMC and hopefully HSC, is the final objective of this study. As a result of this study, the researcher has identified and categorized four major initiatives which properly utilized, will effect a change process within the organization, and among the participants of health care. Strategic planning under DRG's must increasingly focus on the development of a sound plan. It will require results oriented training, continual organizational assessment, and restructuring of current methods of health care delivery systems. Implementation must encompass all participants in the military health care model-staff, patients and executive leadership alike.

HSC is beginning to examine military treatment facilities relative to their standing with other similar sized facilities, thus establishing a competitive position analysis. If military hospitals are to perform efficiently and effectively under a DRG system, the staff and most notably, physicians will have to assume greater fiscal

responsibility. The essence of this responsibility and increased involvement will be to ensure costs remain in line with DOD rates utilizing a sound strategic plan.

Hospital staff education must emphasize the significance of reimbursement based on DRG's. Hospital executive leadership, in conjunction with other key players, must effectively define cost containment and case-mix management strategies that meet the needs of WBAMC, while the medical staff preserves the quality of medical care that our beneficiaries have come to expect.

The specifics of a DRG based budget allocation system which will confront military executive leaders will produce incentives that are significantly different from those found in the current system. This new budget allocation system will increase the degree of managerial responsibility, increasing the potential for either severe losses or substantial gains. The DOD directed DRG system expands the scope of managerial responsibility, holding management accountable for operational matters beyond those areas that have traditionally been within their purview. Accordingly, adaptive management strategies are required to respond to these dynamics and incentives. The Strategic, Training, Assessment and Re-structuring (STAR) proposal is an important concept for WBAMC's executive staff to embrace.

Commanders must examine their organization's mission while demonstrating keen leadership during the next few years. To remain competitive, the military health care community must be able to demonstrate to Congress a sense of accountability. Utilization of the STAR proposal will guide military organizations into the future and help them to better serve patients. No matter what strategies WBAMC or other hospitals devise in response to the implementation of DRG's, each institution must

foster interdepartmental collaboration in order to improve efficiency and productivity while maintaining quality of patient care. The STAR proposal provides a method by which this initial step can be expedited.

Final Comments

The statistical portion of this paper demonstrated evidence that many of WBAMC's professional staff are already cognizant of the basic elements of DRG's. What was not assessed however, was the knowledge deficit of other members of the staff. The statistics provide evidence to support the conclusion that there is a good representation of the nursing and medical staff who are capable of leading an implementation effort.

From these findings, it may be concluded that WBAMC is well positioned with basic knowledge to support and to seize upon the opportunity to be proactive by implementing the proposed strategic plan.

CHAPTER VI

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APPENDIX A

DEFINITIONS

DEFINITIONS

ANTEPARTUM DIAGNOSTIC CLINIC- Many of the patients admitted through this clinic are routine obstetric patients who are being worked-up and evaluated to rule out complications. Many of these patients are routinely admitted for one day.

ANALYSIS OF VARIANCE- A technique whereby the total variation present in a set of data is partitioned into several components. Associated with each of these components is a specific source of variation, so that in the analysis it is possible to ascertain the magnitude of the contributions of each of these sources to the total variation.

ASSUMPTIONS, STATISTICAL MODEL- The conditions which must be met to make parametric tests appropriate and therefore gives the researcher confidence in rejecting the null hypothesis. The fewer or weaker the assumptions, the more general are the conclusions.

CASE-MIX- The relative proportion of the different types of illnesses or injuries a hospital treats. It is directly influenced by the length of stay, intensity, cost and scope of the services provided by the hospital.

CASE-MIX INDEX- The case-mix index is obtained by weighting each discharge by some standardized relative weight, summing the weighted discharges, and dividing the total obtained by the number of discharges. Properly scaled for similar peer groups of hospitals would yield an average CMI of 1.00. A CMI of 1.25 would indicate WBAMC's inpatient load 25% more complex than average, while a CMI of 0.80 would imply a 20% less complex case-mix.

COMPLICATION- A condition that arises during the hospital stay that prolongs the length of stay by at least one day in approximately 75% of the cases.

CO-MORBIDITY- A preexisting condition that will, because of its presence with a specific principal diagnosis, cause an increase in length of stay at least one day in approximately 75% of the cases.

COMPUTER INFORMATION CENTER- A resource center established to provide training which is generally self-paced. Newly assigned health care personnel spend one to several days training on the HIS database system, practicing input of admission diagnosis, ordering pathology and radiology procedures, and ordering nursing care.

CONTENT VALIDITY- The representative or sampling adequacy of the content. The substance, the matter, the topic of a measuring instrument.

DIAGNOSIS RELATED GROUP (DRG)- A case-mix methodology that classifies inpatients into over 400 mutually exclusive categories having similar clinical characteristics (e.g., diagnosis, type of surgical procedure, age, co-morbidity). Each DRG is expected to reflect groups of patients who consume products and/or services and, consequently, incur similar costs. DRG's is an index number which reflect the degree of resource consumption by similar cases.

HOSPITAL INFORMATION SYSTEM- The HIS is an automated system designed to improve the efficiency of admitting and tracking the treatment of inpatients. The basic objective of the system is to enhance patient care by maintaining medical records electronically and by improving interdepartmental communications and operations.

ICD-9-CM- International Classification of Disease, Clinical Modification. A system for classifying diseases and operations to facilitate collection of uniform and comparable information. A reference which yields diagnosis and procedure codes used by the coding section to code a medical record.

LENGTH OF STAY- The average length of stay of hospitalization of inpatients discharged during the period under consideration.

MEDICAL CARE COMPOSITE UNIT- A unit of workload measurement expressed as "average daily" used by the Army Medical Department in medical treatment facilities. The MCCU is comprised of the following performance factors:

* Hospital Admissions
* Occupied Beds
* Live Births
* Clinic Visits

MEDICAL CORPS LIFE CYCLE TRAINING- A comprehensive training strategy specifically for Medical Corps officers. It is designed to provide Army physicians instruction for specific clinical, academic, research, and operational jobs they may encounter throughout their career. Training strategy focuses on providing relevant, sequential and progressive training. It provides for reduction of resident training time, promotion of exportable training and consideration of total Army Medical Department (AMEDD) force requirements.

MED 302 REPORT- The Med 302 Report is prepared by the Patient Administration and Resource Management Divisions and details monthly workload statistical data. This information is based upon workload data conducted on DOD

beneficiaries and other clinical/department statistics.

OUTLIER- Atypical cases which have an extremely long or short length of stay when compared to most discharges classified in the same DRG.

PEER GROUPS- Groupings of medical treatment facilities who exhibit similar attributes of bed size and case-mix complexity in the case of hospitals or similarity in location, size, and outpatient service complexity in the case of clinics.

PRIMARY DIAGNOSIS- That diagnosis which accounts for the bulk of a hospital day. This is the condition which after discharge is chiefly responsible for occasioning an admission and is the condition that consumed the most hospital resources.

REIMBURSEMENT, COST BASED- The amount of payment based on the costs to the provider delivering the services. The actual payment may be based on any one of several different formulas, such as full cost, full cost plus an additional percentage, allow able costs, or a fraction of costs.

REIMBURSEMENT, PROSPECTIVE- A system of payment in made in advance for a product or service provided by the hospital before services are rendered and are based upon expected classes and volumes of patients. The DRG system is a prospective payment system.

RELIABILITY- A reliable instrument is one which accounts for almost everything that effects the issue being measured and thus can repeatedly give the same results. It is the accuracy or precision of an instrument. This study expressed the reliability coefficient as r_{tt}.

RESIDENTIAL TREATMENT FACILITY- A major patient treatment division

within WBAMC which treats substance abuse patients both active duty and civilians. This facility also sponsors several Alcoholic Anonymous, Narcotics Anonymous, and Adult Children of Alcoholics meetings attended by members of the Fort Bliss and El Paso community.

VALIDITY- A valid instrument is one which measures what it is supposed to measure and is epitomized by the question: Are we measuring what we think we are measuring?

APPENDIX B

CURRENT SITUATION

CURRENT SITUATION

William Beaumont Army Medical Center, like other military medical treatment facilities, is faced with the requirement to implement a budget allocation reimbursement system based on DRG's. Current initiatives do not call for the addition of personnel to accomplish this tasking. Various initiatives have been discussed at the HSC level. A recent initiative calls for methods to weight varying resource inputs to create a truly unique Department of Defense DRG system. However, the author is not aware of a command wide strategy which will address the impact on the existing infrastructure, on human resources, and on the educational and training requirements that will be needed. Many questions remain the answers however, do not appear to be forthcoming.

William Beaumont, like other hospitals, is awaiting answers by way of command guidelines and directives. A strategic plan for implementing a DRG based system would have to consider command wide implications. A plan of this magnitude would also have to be flexible enough so that smaller hospitals could adapt the plan to meet their needs. The STAR proposal meets this requirement. Hospital commanders need a strategic plan now. One that will involve all participants responsible for the provision of health care. STAR was developed with all concerned groups in mind. The author believes that fully involved and concerned groups are crucial to the smooth transition of not only WBAMC but HSC through this difficult period. Implementation of the STAR proposal should aid this arduous process. The anticipated benefit for WBAMC utilizing this proposal is exemplified by the following

organizational goal and vision.

STAR GOAL

The goal of the STAR proposal is to effectively restructure the organization towards providing constant quality and satisfying care for patients while faithfully safeguarding the resources trusted to WBAMC.

VISION STATEMENT

WBAMC is a unmatched health care facility, poised to deliver tertiary patient care services through the collaboration of patients and staff while adapting organizational structure in the continual pursuit of quality care.

The next few pages will detail the STAR Proposal (implementation plan), for WBAMC during transition to DRG's. The author predicts the successful transition of a prospective payment system utilizing this plan. This should not be construed to mean that problems will not occur, nor that transition will be smooth, rather it is a original effort where there presently exist no other initiatives. The plan will be considered viable upon command approval and will be considered a dynamic process requiring constant feedback.

The STAR Proposal is submitted with the hope that HSC will integrate it into the HSC Strategic Plan for all Army military treatment facilities. Simultaneously, WBAMC's command group should analyze all facts leading to the decision to adopt the organizational requirements proposed in this plan. The proposal will require changes in personnel as well as in educational efforts design to facilitate an

efficacious and timely transition. The author proposes that WBAMC be used as a Beta site for the plan.

The STAR concept is depicted in the figure 3. The figure reflects the relationship between HSC and WBAMC or other military hospitals. The STAR proposal represents a deliberate step in improving the decision processes and accountability structure in military health care to provide continued quality care to our beneficiaries. It is thus the author's attempt at crafting a vision for continued fiscal viability in an era of dwindling resources where no plan presently exists.

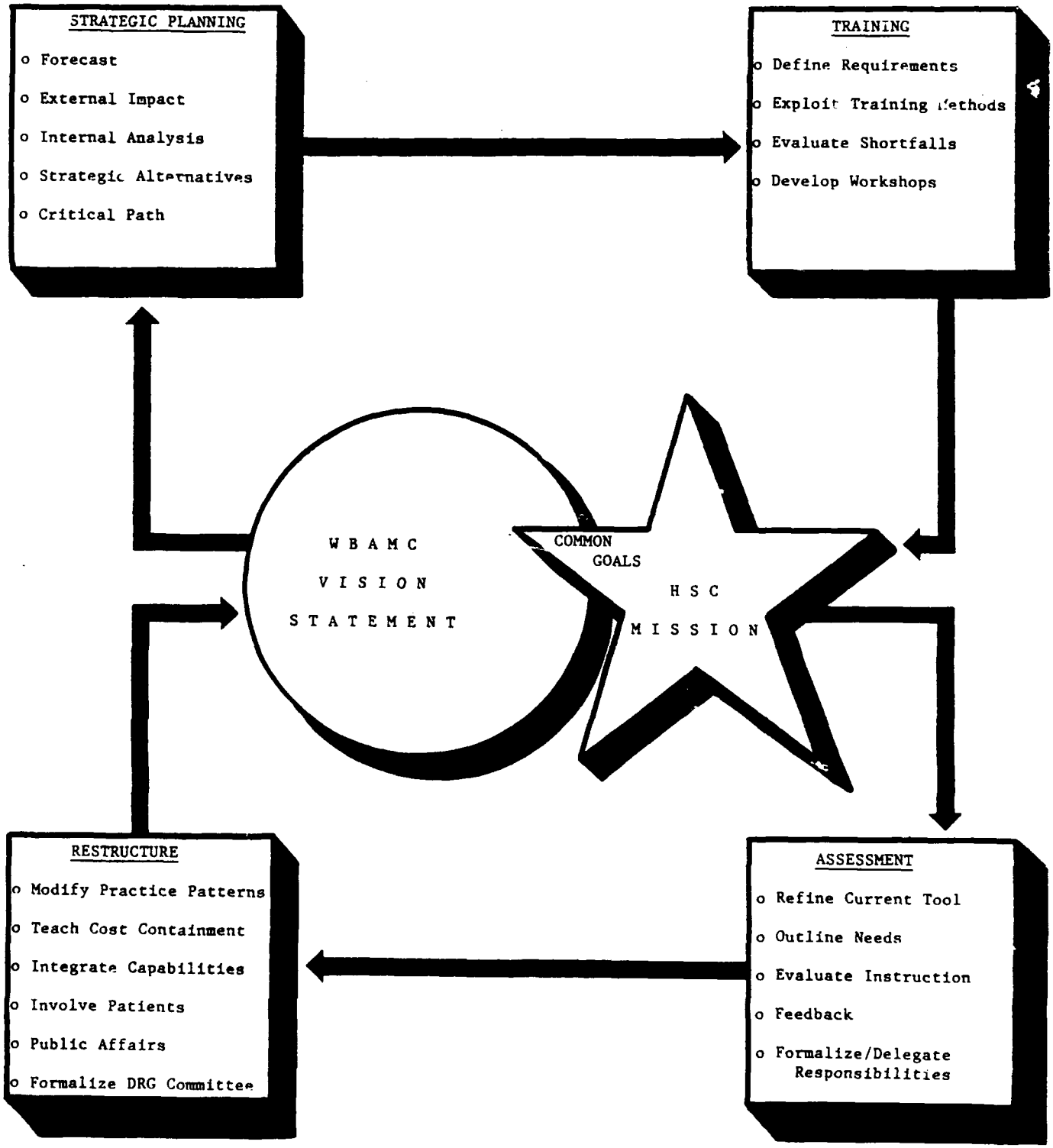

Figure.3 The HSC/WBAMC DRG Strategic Plan Relationship

APPENDIX C

THE STAR CONCEPT IN SUPPORT OF

WILLIAM BEAUMONT ARMY MEDICAL CENTER's

TRANSITION TO DRG's

STAR CONCEPT

This concept serves as a model by which WBAMC can prepare the staff prior to, during, and after the successful implementation of DRG's. It is designed to make efficient use of the organizational structure located within WBAMC. All that is required is the co-opting of all staff members to achieve the desired goal.

The STAR concept embodies a joint venture within the command to create an environment which is reflective of the organization's strengths. Clearly stated, it says **"this is the direction we've chosen to go"**. It calls for the participation of physicians in ensuring the organization's fiscal viability. It calls on nurses to fully document contributing illnesses and for other ancillary staff to report conditions which impact on the patients ability to meet an anticipated discharge date. Finally, it calls for administrators to not alter medical practice patterns but rather to guide and teach medical fiscal responsibility and accountability.

The STAR plan when fully implemented creates a "Center of Excellence" where patients are treated with dignity representative of modern military medicine. To accomplish this, the plan calls for institutionalization of the following major initiatives:

1. **Strategic Planning**- The goal here is to craft a vision which produces a solution for transition to a DRG system. It includes a preliminary medical staff plan and a sagacious reimbursement scheme. It should maximize structure, process, and outcome. At a minimum the vision must include the following:

A. A review of WBAMC's mission and long-range goals.

B. External environmental analysis, including Congressional directives.

C. Internal organizational analysis, examining all revenue producing departments and services.

D. Development of strategic alternatives for transition to DRGs.

E. Selection of strategic scenarios for the successful implementation of the plan.

F. Development of a critical path model detailing mandatory actions to ensure successful implementation.

2. **Training**- This initiative provides alternative methodologies for educating present staff members. It allows for inclusion of future training proposals. It calls for innovative strategies in concert with the introduction of "tried and true" teaching methods. WBAMC must encourage cooperation and resource sharing to foster a climate in which the hospital is willing to "take chances" to exploit the use of training methods which offer the promise of meeting mission requirements. As a result of the researcher's study the following educational techniques were grouped into four major teaching clusters.

A. Structured workshops. This was furthered broken down into seminars, conferences, lectures and small group (specific information) instruction.

B. Computer Assisted Instruction. This cluster consisted of patient management scenarios, hands-on teaching utilizing patient's charts, and other what-if scenarios consisting of DRG's versus MCCU's.

C. Written literature consisting of a syllabus containing case analysis,

programed texts, pocket codebooks and the use of videotapes to augment handout material.

D. Innovative methods using personnel who's expertise is teaching the impact of prospective reimbursement to the Center's staff. This includes the formalization of a DRG Coordinator, and clerks assigned to assist clinicians in documenting appropriate DRG's. Finally, the formation of a multidisciplinary DRG advisory committee to advise the Commander on the delivery of patient services.

3. **Assessment**- The goal here is to evaluate existing technology and organizational structure to deliver training and instructional design techniques to facilitate transition to DRG's. Long term needs assessment rather than quick fixes should be emphasized. The resultant information should reflect WBAMC's mission, perceived training needs, current and previous efforts at DRG training, and detailed responsibilities of planning committees. Assessment methodology will consist of the following:

A. Current situation will be assessed through the use of staff surveys canvasing current knowledge base and expected training requirements during transition.

B. Develop an initial list of typical training tasks validated through open ended questions located on the survey.

C. Allow the DRG Coordinator and Advisory Committee to make real decisions concerning the delivery of patient care activities. They should establish a mechanism whereby evaluation and proactive feedback systems are institutionalized within WBAMC.

D. Assess the HIS to determine specific clinical and decision support information to optimize the delivery of care throughout the transition period.

4. **Restructure**- This last initiative is the most radical and calls for effecting a change in the entire military health care system. Rather than drastically altering practice patterns, we should restructure and begin to teach cost containment throughout all levels of our soldier medic courses. Restructuring requires that we integrate current organizational resources (marketing, patient education, patient assistance advisers, information systems, health benefit advisers, and the catchment area concept) to optimize the delivery of care. Restructuring will have to occur at the HSC level and then be passed on down to all Army hospitals. The following areas will require major restructuring.

A. Executive development - HSC must study and issue a directive calling for implementation of a DRG strategic plan which trains and rewards effective Hospital Commanders. Infuse proven strategies into local hospital strategic plans. Hospital Commanders need not wait for this initiative, however, there must be command wide "corporate push" which alters the current method of executive development.

B. Middle management - Infuse current and future soldier medic curriculum with cost containment issues. Begin with the basic 91 MOS series and continue throughout the Medical Corps Life Cycle Training level. Implement fiscal accountabi ity/responsibility at all levels of formal and exportable training packages. Exploit advanced technology through computer simulation to aid middle management decision making.

C. Patient management - Study methodologies to develop ongoing reeducation efforts aimed at current active duty soldiers who are to become future retired beneficiaries. Current retired and dependent beneficiaries will require a massive and sophisticated educational strategy which will detail the effect of a prospective payment system on their current and future care. The hospital's individual subsystems must be brought together to create a collective system to educate patients in reporting fraud and waste of hospital resources.

APPENDIX D

WILLIAM BEAUMONT ARMY MEDICAL CENTER's

DRG STRATEGIC PLAN

DRG STRATEGIC PLAN

PURPOSE:

The purpose of the William Beaumont Army Medical Center is to provide health services to support the missions of Health Services Command and the Army.

VALUES:

Within the medical service area of William Beaumont Army Medical Center are the soldier medics ensure the delivery of quality medical care. They work, serve and contribute to the mission accomplishment of the Nation, Army, Health Services Command and William Beaumont Army Medical center. As members of William Beaumont Army Medical Center, we credit the following values in the delivery of quality patient care.

Integrity- We hold to the highest standard of personnel and professional ethics. We combat fraud, and report waste and abuse.

Forcefulness- We are decisive and forceful, to the point of being confrontational in the delivery of quality patient care and in the attainment of mission goals.

Dependability- We get back to our customers, our patients and our staff as promised. We show up at assigned meetings and are prepared to move WBAMC forward.

Innovativeness- We foster an organizational climate where participative management techniques are encouraged. We foster active staff and patients involvement programs aimed at the delivery of quality patient care, products and

services.

Diligence- The work we do results from a constant pursuit of proven excellence and the successful implementation of programs designed to increase the provision of health services.

MISSIONS:

Plan for and be prepared to implement all strategic, training, assessment, and restructuring (STAR) requirements needed to transition to a budget allocation system.

Provide comprehensive health services within available resources. Strive to improve the delivery of health care services utilizing a systems approach through statistical processes and proven management practices.

Create a center of excellence whereby optimal work conditions exist for the provision of health care; Where patients and staff members collaborate and encourage innovation and improvement of processes designed to deliver health care.

GOAL:

To develop a corporate philosophy that positions the commander and staff to serve the needs of the military community by utilizing the STAR concept to effectively restructure the organization towards providing constant quality and satisfying care to patients while faithfully safeguarding trusted resources.

GOAL MONITOR: Deputy Commander for Clinical Services (DCCS) and Chief of Staff (COS).

OBJECTIVES:

1. **Strategic plan:** To develop a vision which produces a solution for transition to a DRG system. It includes a preliminary medical staff plan and a sagacious reimbursement scheme. It should maximize structure, process, and outcome.

2. **Training:** To maintain present educational training programs and develop alternative methodologies for educating staff members during transition to DRG's.

3. **Assessment:** Evaluate existing technology and organizational structure to deliver training and refine instructional design techniques to facilitate transition to DRG's.

4. **Restructure:** Develop concepts, organizational culture, and doctrine to effect change in the delivery of military health

care.

OBJECTIVE 1. VISION: To develop a vision which produces a solution for transition to a DRG system. It includes a preliminary medical staff plan and a sagacious reimbursement scheme. Maximize structure, process, and outcome.

DCCS/COS **Continuous** **Priority I**

TASKS

1.1 Forecast and assesses those factors which will impact on WBAMC's mission.

1.2 Forecast external impact including Congressional directives.

1.3 Perform an internal analysis to identify potential revenue producing departments and services.

1.4 Develop strategic planning alternatives during transition to DRGs. Select scenarios for successful transition.

1.5 Develop a critical-path detailing mandatory actions required to ensure

successful implementation.

OBJECTIVE 2. TRAINING: To maintain present educational training programs and develop alternative methodologies for educating staff members during transition to DRG's.

DCCS/COS **FY 92** **Priority I**

TASKS

2.1 Define educational requirements resulting from the strategic planning process.

2.2 Encourage cooperation and resource sharing; exploit current and future training methods.

2.3 Evaluate critical educational shortfalls and infuse those areas with DRG expertise.

2.4 Develop DRG workshops, establish computer assisted instruction programs, develop and dispense DRG literature.

OBJECTIVE 3: Assess existing technology and organizational structure to deliver training and instructional design techniques to facilitate transition to DRG's.

DCCS/COS **FY 92** **Priority I**

TASKS

3.1 Refine an assessment tool to determine training effectiveness.

3.2 Outline future training needs.

3.3 Ensure a clear understanding of external mandated instruction.

3.4 Gather resultant information and feedback to WBAMC's mission.

3.5 Formalize and delegate detailed responsibilities to planning committees.

OBJECTIVE 4: Restructure- Develop concepts, organizational culture, and doctrine to effect change in the delivery of military health care.

DCCS/COS **FY 92** **Priority I**

TASKS

4.1 Determine the need to, and modify physician practice patterns to reflect consistency with the DRG implementation process.

4.2 Restructure to teach cost containment throughout all levels of the soldier medic curriculum.

4.3 Examine and where necessary integrate organizational capabilities to ensure the maximization of available resources.

4.4 Develop a patient education program and involve them in efforts to reduce costs.

4.5 Create a fact sheet and public affairs release detailing the STAR concept.

4.6 Formalize a DRG committee assisted by a DRG coordinator and a health care analyst.

APPENDIX E

DRG COMMITTEE

DRG COMMITTEE

The DRG committee should be a interdisciplinary group representing each of the functional areas of WBAMC affected by this payment methodology. Two key elements should be considered in developing this committee:

1. The chairperson of the DRG committee represents a key individual around whom the committee and WBAMC will develop and exercise knowledge and expertise to manage under DRGs. The individual selected should encourage participation and interdepartmental cooperation while at the same time demonstrate strong leadership qualities needed to mold this diverse group into a working team. The American Hospital Association states that, "The selection of a respected, action-oriented chairperson with broad institutional perspective and high-level access is an important step in making the committee effective (American Hospital Association, 1983)."
2. The size and composition of the committee are also very important elements. Obviously, every area cannot be represented, however, subcommittees which may encompass other departments could be invited as needed to assist in the committee's effective operation. Members from the following basic areas should form the nucleus of the group:

A. Deputy Commander for Clinical Services.

B. Chief, Resource Management Division.

C. Chief, Patient Administration Division.

D. Chief, Information Management Division.

E. Chief, Department of Nursing.

F. Chief clinical department (i.e. Surgery, Medicine).

G. Quality assurance/risk management representative.

H. DRG coordinator.

Function of the committee

Under the chairperson, the DRG committee will in a staff capacity, having strong advisory responsibilities. It will formulate specific recommendations to the commander.

Major specific responsibilities

The chairperson will make maximum use of all components of the STAR plan in an manner which fully exploits the spirit of providing quality health care, during the transition to DRGs. Utilizing the four major initiatives outlined in the STAR plan, the committee will:

1. Develop educational programs and disseminate information to all departments/services.
2. Ensure the timeliness and accuracy of information from the medical records department, including abstracting and physician attestation.
3. Oversee the development of necessary information systems to augment present capabilities found at WBAMC and plan for the installation of a case-mix management reporting system.
4. Ensures utilization management programs concurrently reviews and captures excessive resource consumption.

5. Ensures that changes in patient treatment patterns and policies are accompanied by appropriate staffing adjustments and support services.
6. Facilitate the integration and involvement of the nursing department in all key questions that affect resource consumption and patient care.

APPENDIX F

DRG COORDINATOR

DRG COORDINATOR

The DRG coordinator will be primarily concerned with the continual transition of WBAMC's medical staff to DRGs. The DRG coordinator will act in a staff capacity to the DRG committee. The DRG coordinator will collaborate with administration and the clinical staff to improve productivity and manage resource utilization. Moreover, the coordinator will correlate those functions and projects under the DRG's committee direct control.

Major specific responsibilities

Will coordinate departmental clinical efforts to function within DRG's. The DRG coordinator will establish good working among the diverse group of direct health care providers. This individual may serve in an administrative and clinical capacity relative to the implementation and monitoring of the procedures and systems necessary for WBAMC to operate successfully under DRG's. Specific responsibilities will include:

1. Liaison between administration, resource management, clinical services, medical records, and other departments directly affected by DRG's.
2. Coordinate information flow between WBAMC and regulatory agencies.
3. Monitor the preparation and submission of DRG related reports.
4. Prepare educational materials for in-service training for WBAMC's staff, and beneficiaries.
5. Monitor physician medical records attestation.

APPENDIX G

HEALTH CARE ANALYST

HEALTH CARE ANALYST

Under the direction of the Deputy Commander for Clinical Services and working in the quality assurance office, the health care analyst will act in the capacity of advisor to the DRG committee. Moreover, the analyst will coordinate statistical reports and projects that the committee determines to be essential to managing under DRGs.

Major specific responsibilities

This individual will be extremely crucial during early implementation efforts. Therefore, the analyst must be involved in evaluating, analyzing and monitoring current systems operating at WBAMC to determine quantitatively and qualitatively, methods by which WBAMC can transition to DRGs. To accomplish this the analyst will be responsible for:

1. Compiling and analyzing medical records data.
2. Establishing statistical formats and reports for trend analysis.
3. Identifying problems areas within WBAMC's patient care delivery system.
4. Discerning problems clinicians cause from those that are caused by inadequate systems.
5. Monitoring comparative data (length of stay, principle diagnosis) with Department of Defense guidelines.
6. Collecting data for special WBAMC resource consumption and utilization studies.

APPENDIX H

FACT SHEET

S T A R

Strategic Training Assessment Restructuring

What is STAR ?

STAR is a planning strategy emphasizing existing systems within WBAMC to position the hospital during and after implementation of DRG's. STAR maximizes the management process to focus on the participants involved in the delivery of health care by providing the commander and middle management decision assisted tools necessary to examine the way DRG reimbursement will alter current and future resource allocation planning.

Will STAR impact the entire organization ?

Properly implemented and utilized, STAR will improve the DRG planning process because it commits the entire organization to serve the needs of the regional military community by restructuring the hospital towards provide quality care within available resources.

Will the use of STAR really make a difference ?

Because STAR was developed using input from the hospital's staff, STAR fully exploits the use of structure, process, and outcomes. It calls for the effective utilization of internal and external analysis and the development of strategic options to assess DRG knowledge deficit, to develop scenarios to teach DRG's and to identify actions to restructure the organization to manage under a budget allocation system.

How can we ensure that STAR will work ?

For STAR to work it must receive command commitment. Top commitment is the most essential principle underlying implementation of STAR.

Who will be selected to ensure implementation of STAR ?

Departmental chiefs and key physicians will need to be co-opted into the planning effort and must have a voice in shaping the desired output.

What comes next ?

The STAR concept calls for the establishment of new key players such as the DRG committee. This committee will then craft the vision by which the organization will bring the best minds and services to bear on this significant undertaking.

APPENDIX I

PUBLIC AFFAIRS RELEASE

WBAMC IMPLEMENTS STAR

Strategic planning, training, assessment, and restructuring (STAR) is a key strategic response at William Beaumont Army Medical Center for the 1990's. Current cost containment and dwindling resource issues within the military health care environment has prompted this initiative. STAR is a corporate strategy derived from a vision that states " this hospital is a unmatched health care facility, poised to deliver tertiary patient care services through the collaboration of patients, and staff while adapting organizational structure in the continual pursuit of quality care."

BG Proctor, the MEDCEN Commander is committed to improving the delivery of health care services at WBAMC during the present resource containment era. Implementation of this concept will involve methods to effect a change in current practice patterns, a reduction or limited issue of medical supplies, a reduction in the amount of refill medications and restructuring of current resources required to conduct daily patient care activities.

Articulating everyone's responsibility in accomplishing this concept is tantamount to the successful implementation of STAR. The entire WBAMC community-physicians, administrative and ancillary staff, and patients, are enjoined towards optimizing medical care delivery at WBAMC. POC for additional information is MAJ henry Hernandez at 569-2450.

APPENDIX J

PILOT SURVEY

DRG Assessment Questionnaire

Dear Respondent: Please help us by taking a monent to complete and return this questionnaire. The purpose of this survey is to assess your knowledge of DRG's. Please provide the information requested below. Do not write your name anywhere on the survey form. In responding to the questions, please place an X in the black that is provided. Please answer all questions. All responses will be kept confidential. The data collected in this survey will be used to assist in recommending future training requirements in transition to DRG's. Your cooperation is greatly appreciated.

1. How old are you?

   Less than 25 years of age _____

   More than 25 years of age but less than 30 _____

   More than 30 but less than 40 _____

   More than 40 years of age _____

2. What is your sex? Male _____ Female _____

3. What is your principle duty position? _____

   Department/Section Chief _____

   Superviser/Headnurse _____

   Staff nurse _____

   Other (specify) _____

4. My present nursing position is:

   Administration _____

   Supervision _____

Intensive care _____

Ambulatory care _____

Community health _____

Operating room/Anesthetist _____

Other (specify) _____

5. Highest educational level:

Bachelors _____

Masters _____

Doctoral _____

6. Time in active federal service as a nurse?

Less than two years _____

More than two years but less than five years _____

two years but less than five years _____

More than five years but less than 10 years _____

More than 10 years but less than 15 years _____

More than 15 years _____

7. My current rank is:

Colonel	_____
LTC	_____
Major	_____
Captain	_____
1st Lieutenant	_____
2nd Lieutenant	_____

8. Geographic area in which basic nursing curriculum took place:

North	_____
South	_____
East	_____
West	_____
Other (specify)	_____

Each question has only one correct answer. Do not omit any questions. In responding to each question, please circle on answer.

General Knowledge

1. DRG's stand for Diagnostic Resource Groupings.

   True or False

2. The major components used in determining DRG's are principal diagnosis, principal and other procedures, age, sex, discharge status and number of acute care days.

   True or False

3. DRG's were originally developed by researchers at Yale University as a method to improve utilization review efforts.

True or False

4. A major disadvantage of DRG's are that they group patients into categories asserted to be homogenous on the basis of length of stay.

True or False

5. DRG's have little or no role outside a financial system.

True or False

6. Once a fully costed DRG system becomes available, questions of clinical inefficiency will be resolved.

True or False

7. DRG's can serve as a foundation for ongoing quality assurance and utilization review programs.

True or False

8. Inliers are patients who have atypically short or long length of stays, while outliers are those patients who have typically short length of stay.

True or False.

9. The federal government adopted the DRG system for Medicare patients in the early 1980s.

True or False.

10. The intellectual origins of the DRG methodology are in industrial management.

True or False.

11. Because military facilities are not concerned with profits, DRG's have no

applicability in our system.

True or False.

12. Congress mandated that DRG's be implemented in the Armed Services by October 1, 1988.

True or False.

Impact

1. DRG's can provide administrators and clinical staff useful management information.

True or False.

2. Under DRG's, adequate support staff patterns will be identified.

True or False.

3. DRG's may discourage the acquisition of advanced technology.

True or False.

4. The staff is likely to Increase after the DRG system is implemented.

True or False.

5. DRG generated data will shed new light on the costs of alternative treatment regimens.

True or False.

6. DRG's may yield information useful in the prosecution of malpractice claims.

True or False.

7. Under DRG's hospitals will have to reexamine their goals, priorities, and strategic plans.

True or False.

8. Under DRG's military current medical practice patterns are expected to change.

True or False.

9. DRG's will cause department managers to develop skills to forecast departmental needs more accurately.

True or False.

10. Because of financial constraints, management will be required to emphasize departmental performance.

True or False.

11. A hospital's ability to respond to DRG's will depend on the ability of administration to transmit prospective payment system incentives to attending physicians.

True or False.

12. DRG-based statistical output will not provide nursing departments considerable information about the cost, revenue and profitability of nursing care.

True or False.

Documentation

1. Once the principal diagnosis has been determined alterations in treatment plans will have minimal impact on the hospitals reimbursement.

True or False

2. DRG's generated data can assist infection control programs.

True or False.

3. DRG's do not require more accurate documentation of resources consumed in providing patient care.

True or False.

4. DRG's will require less attention to clerical notation, particularly with respect to the completion of patients' records.

True or False.

5. DRG's makes it more imperative for nurses and physicians to complete their charts in a timely and accurate manner.

True or False.

6. Providers can expect administration to question their notes under a DRG system.

True or False.

7. Under DRG's efforts to identify, measure and contain costs will be hampered by the absence of appropriate information.

True or False.

8. DRG's will place additional emphasis on accurate and fully documented secondary diagnosis.

True or False.

9. Providers who suspect that medical records are incomplete or inaccurate will not be expected to confer with attending or consulting physicians.

True or False.

Case-Mix Index

1. The development of a case-mix index is an intricate and complex task.

True or False.

2. To ensure full financial collection, hospitals must not alter their data collection systems.

True or False.

3. DRG's are organized in a hierarchical manner so that the terminal diagnostic groups can be collapsed into fewer categories.

True or False.

4. DRG's result in an unmanageable number of diagnostic categories.

True or False.

5. DRG's attempt to describe patterns of resource consumption in terms of the similarities among and differences between patients.

True or False.

6. Case-mix provides a "common language", merging patterns of actual clinical management with identifiable costs.

True or False.

7. The goal of a case-mix system is to avoid grouping patients whose care requires dissimilar resources.

True or False.

Cost Containment Issues

1. DRG generated information will be used to develop financial profiles for clinical programs which will assist administration to look at clinical programs in terms of types, volume and cost of treatment programs.

True or False.

2. DRG generated information will not benefit administration in determining how

much of the hospital's resources (laboratory, radiology, respiratory therapy) are being used for each DRG.

True or False.

3. DRG's represent a continual provider effort to minimize costs and to conserve resources.

True or False.

4. DRG's help the hospital identity, plan for, and assign resources to the sets of treatment services offered to its patients.

True or False.

5. Hospitals fail to gain from cost containment efforts through receipt of incentive payments when length of stay is lower than average.

True or False.

6. Hospitals experience dis-incentives when costs exceed the standard.

True or False.

7. The military DRG system will have a significant impact on current resource funding.

True or False.

8. Under DRG's the Department of Defense will only reimburse medical treatment facilities a fixed amount of money to treat a certain category of patient.

True or False.

9. The new system was developed in response to rising health care costs to Department of Defense.

True or False.

10. DRG's represent an attempt to give medical treatment facilities an incentive to treat patients more economically and thus reduce costs.

True or False.

11. Medical treatment facilities will be grouped with other hospitals utilizing similar resources, and staffing requirements, but may be located in different geographic locations.

True or False.

12. Military administrators must know their hospital costs per DRG and how those costs compare to DRG price levels established by the Department of Defense.

True or False.

Thank You For Your Support.

APPENDIX K

STAFF SURVEY

DRG ASSESSMENT QUESTIONNAIRE

Dear Respondent:

Please help us by taking a moment to complete and return this questionnaire. The purpose of this survey is to assess your knowledge of DRG's. Please provide the information requested below. Do not write your name anywhere on the survey form. Please answer all questions. All responses will be kept confidential. The data collected in this survey will be used to assist in recommending future training requirements during transition to DRG's. Your cooperation is greatly appreciated.

Survey Instructions

DO NOT WRITE YOUR NAME ANYWHERE ON THE SURVEY FORM.

All responses will be in the form of TRUE or FALSE except for responses in the area titled Demographic Data, which require that you place an X in the blank that is provided. In responding to all other questions, please circle the correct answer. Each question has only one correct answer. Your cooperation is greatly appreciated.

PLEASE ANSWER ALL OF THE QUESTIONS.

Demographic Data

1. How old are you?

years _____

2. What is your sex? Male _____ Female _____

3. What is your principle duty position?

Staff _____ Nurse _____

Resident _____

Intern _____

4. Highest educational level:

Bachelors _____

Masters _____

Doctoral _____

5. Total Military or Federal Service in years ?

_____

6. My current rank is:

Colonel _____

LTC _____

Major _____

Captain _____

1LT/2LT _____

7. Geographic area in which basic college degree was obtained (U.S. or specify other).

North _____

South _____

East _____

West _____

Other (specify) _____

8. Have you recently attended a workshop or seminar dealing with any aspect of the DRG system ?

yes _____ No _____

Each question has only one correct answer. Do not omit any questions. In responding to each question, please circle on answer.

G-1. DRG's have little or no role outside a financial system.

T F

G-2 Once a fully costed DRG system becomes available, questions of clinical inefficiency will be resolved.

T F

G-3 DRG's can serve as a foundation for ongoing quality assurance and utilization review programs.

T F

G-4 Because military facilities are not concerned with profits, DRG's have no applicability in our system.

T F

I-1 DRG's can provide administrators and clinical staff useful management information.

T F

I-2 DRG's will cause department managers to develop skills to forecast departmental needs more accurately.

T F

I-3 Because of financial constraints, management will be required to emphasize departmental productivity.

T F

I-4 Data derived from DRG's will not provide nursing departments considerable information about the cost, revenue, and profitability of nursing care.

T F

D-1 DRG's do not require more accurate documentation of resources consumed in providing patient care.

T F

D-2 DRG's will require less attention to clerical notation, particularly with respect to the completion of patients' records.

T F

D-3 Providers can expect administration to question their notes under a DRG system.

T F

D-4 DRG's will place additional emphasis on accurate and fully documented secondary diagnosis.

T F

M-1 An estimated 2 years of development time may be required to set up a cost accounting system for case-mix analysis.

T F

M-2 DRG's attempt to describe patterns of resource consumption in terms of the similarities among and differences between patients.

T F

M-3 Case-mix by DRG holds the physician as well as the administrator accountable for the cost of medical care.

T F

M-4 One of the first uses of the cost accounting data produced by a case-mix system will be to verify the case-mix index.

T F

C-1 DRG generated information will be used to develop financial profiles for clinical programs which will assist administration to look at clinical programs in terms of types, volume and cost.

T F

C-2 DRG's will not benefit administration in determining how much of the hospital's resources (laboratory, radiology, respiratory therapy) are being consumed.

T F

C-3 DRG's help the hospital identity, plan for, and assign resources to the sets of treatment services offered to its patients.

T F

C-4 Military administrators must know their hospital costs per DRG and how those

costs compare to DRG price levels established by the Department of Defense.

T F

What method of instruction would you recommend for teaching DRG skills for health care professionals?

Commitment and involvement is a first and most essential principle underlying transition to DRG's, therefore what elements/initiatives do you consider important in shaping the transformation process?

Thank You For Your Support.