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Diagnosis related groups for DOD: background of a competitive strategy.

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NAVAL POSTGRADUATE SCHOOL
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DIAGNOSIS RELATED GROUPS FOR DOD:
BACKGROUND OF A COMPETITIVE STRATEGY

by

Mark Roger Munson

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DRGs are an attempt to identify outputs of a hospital's inpatient care system that consume similar amounts of resources. These outputs are clinically significant in that they are composed of similar discharge diagnoses.

Rates of reimbursement for DRGs, are predicated on the isoresource consumption nature of DRGs. The Federal government has established DRGs as the basis of a prospective reimbursement rate structure. Several state administered programs have also adopted this reimbursement policy. By establishing an expected rate of reimbursement, the paying agency has effectively provided hospitals an incentive to control costs.

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Diagnosis Related Groups for DoD: Background of a Competitive Strategy

by

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ABSTRACT

Public Law 99-661 requires that the Department of Defense(DOD) use Diagnosis Related Groups(DRG) for resource allocation.

DRGs are an attempt to identify outputs of a hospital's inpatient care system that consume similar amounts of resources. These outputs are clinically significant in that they are composed of similar discharge diagnoses.

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I. INTRODUCTION

A. GENERAL

Public Law 99-661 requires that the Department of Defence (DOD) use Diagnosis Related Groups (DRG) for resource allocation. The law stipulated that in Fiscal Year (FY) 1988 DRGs be the basis for allocation of resources for inpatient care and that by FY 1989 DOD use a similar method for allocating resources related to outpatient care.

DRGs are an attempt to identify outputs of a hospitals's inpatient care system that consume similar amounts of resources. These outputs are clinically significant in that they are composed of similar discharge diagnoses.

Rates of reimbursement for hospital outputs, DRGs, are predicated on the isoresource consumption nature of DRGs. The Federal government has established DRGs as the basis of a prospective reimbursement rate structure. Several state administered programs have also adopted this reimbursement policy. By establishing an expected rate of reimbursement, the paying agency has effectively provided hospitals an incentive to control costs. Costs for providing care for a DRG that are less than the rate reimbursed yield an increase in hospital revenues. Conversely, costs for providing care to a patient, that exceed the DRG reimbursement rate, result in a loss the a hospital.

The ability to respond to the incentives in a DRG reimbursement system are predicated on the ability of providers to take actions that will reduce the fixed and variable costs of healthcare. These actions include tradeoffs between manpower and capital, elimination of unprofitable services and facility construction.

With the passage of P.L. 99-661, Congress has again taken a direct role in shaping the national healthcare system. This intervention is grounded in the escalating costs of healthcare over the last thirty years.

What has the Federal government's role been in shaping the healthcare industry in the last thirty years? Is it possible to reconcile DOD's current information systems to the requirements of DRG management? This has been the thrust of this research effort.

B. OBJECTIVES OF THE RESEARCH

The objectives of this research were to:

1. Review the environment that has lead to the establishment of competitive reimbursement structures, such as DRGs.

2. Review the methodologies that have been developed for case-mix management.

3. Reconcile the current DOD healthcare system to the requirements of case-mix management.

C. RESEARCH QUESTION

The primary research question is: Can DRGs be an effective method of resource allocation and performance evaluation for DOD?

Secondary questions are:

1. Why were DRGs developed?
2. How were DRGs developed?
3. What assumptions, regarding cost behavior and management prerogatives are inherent in a DRG rate structure?
4. Are these assumptions valid for DOD?
5. If necessary, what changes must be made within DOD to meet the requirements to manage by DRGs?

D. SCOPE OF THESIS

This thesis is to delve into the factors surrounding the development and use of DRGs. To be considered are the political and legislative environment and its effect on the healthcare industry, the history and applications of case-mix management approaches and the factors that will determine the success of transference of case-mix management to DOD.

The author wishes to examine the behavior of national healthcare costs over the last three decades, the major pieces of legislation that have shaped the environment in which the healthcare industry now operates, the assumptions and methodologies used to create case-mix management systems, such as DRGs, in order to meet the rigors of the environment and the ability of DOD to adapt to case-mix management systems. The purpose of the effort is to evaluate the circumstances, within DOD, which must be considered before DRGs can be used for resource allocation.

This effort will not develop a specific model for determining relevant rates.

E. METHODOLOGY

The research involved in the preparation of this thesis was primarily archival in nature. Primary sources of healthcare oriented research, reports on Health Care Financing Administration (HCFA) research contracts, telephone conversations with Army and Navy members of a DRG implementation group and studies of federally managed and funded hospitals served as the basis for this study.

In the areas of DRG determination and rate structure, the experiences of the State of New Jersey, the forerunner in DRG development and use, were of primary interest. Because of the length of their experience base and the size of the system of hospitals involved, New Jersey's experience appeared to be more directly applicable to DOD.

F. SUMMARY OF FINDINGS

Because of the escalating costs of providing healthcare, the Federal government has taken an increasingly active role in creating a more competitive environment for hospitals and other health care providers. The development and implementation of DRGs, as a reimbursement tool, at the state and federal levels of government is the latest effort of government to create incentives for providers of healthcare to control costs.

Because of command, accounting and appropriation structures, it will be an extensive task for DOD to develop and fully implement the provisions of P.L. 99-661 and also create the incentives for controlling costs that this law intended.

G. ORGANIZATION OF STUDY

Chapter II is a description of the literature reviewed in undertaking this study. It provides a narrative of the primary, pertinent journals and studies examined. The sources of information are presented by major area of study. Each area of study includes sources of information reviewed, general nature of the information contained therein and its pertinence.

Chapters III and IV provide comprehensive background material germane to the major areas of study introduced in Chapter II. It provides the basis from which the research questions can be addressed.

The analysis and interpretation of the background material presented in the previous chapter, as is applies to the areas of research, is contained in Chapter V.

Chapter VI contains the conclusions and recommendations that the author has formed as a result of this study.

II. LITERATURE REVIEW

A. AVAILABLE LITERATURE

Recent and relevant literature, pertaining to case-mix management, was reviewed in researching the issue of using Diagnosis Related Groups (DRG) and Ambulatory Visit Groups (AVG) for resource allocation. Topics included in this review were the historical perspective of Congress and healthcare, the definition of case-mix by DRG, use of prospective payment by DRG to control healthcare costs, implementation of payment by DRG in New Jersey, severity of illness indexes and their use in refining DRGs and proposed methods of grouping ambulatory visits.

Telephonic conversations with a Navy representative of the DOD working group on DRG use and with Army health systems staff working on DRG and AVG issues yielded information on the status of DOD efforts to comply with P.L. 99-661. These individuals also confirmed what the author considered to be major issues requiring resolution in order to comply with both the letter and intent of P.L. 99-661 to use DRGs and AVGs for resource allocation.

B. INVOLVEMENT OF FEDERAL GOVERNMENT IN THE HEALTHCARE SYSTEM

In order to assess the environment in which the United States healthcare industry is operating, and into which the

DOD healthcare sector is being pushed, articles, published by the Health Care Financing Administration (HCFA), Department of Health and Human Services, relating to governmental entry into the healthcare industry through Medicare and Medicaid programs, were consulted. This literature examines the sociological and political reasons for federal involvement, pertinent landmark legislation, concerns with cost containment and efforts directed at the healthcare industry to reduce cost growth.

C. DRG DEVELOPMENT

"Case Mix Definition by Diagnosis Related Groups", by Robert B. Fetter, et. al. [Ref. 1] is considered the definitive reference on DRG development. The work of the Yale based group includes information concerning DRG construction, interpretation of DRGs, utilization review applications of DRG, case-mix accounting using DRGs, and DRG use in regional planning for acute care hospitals.

Other efforts in case-mix definition, such as the Kaiser Clinical Behavior Classification System were also reviewed. These early efforts at finding clinically meaningful, isoresource utilization groups, using available diagnostic coding information, served to highlight the many patient variables that can be considered in grouping categories of hospital care.

These references explain the reasoning behind Case-mix management. The aggregation of a multitude of individual

discharge diagnoses into a manageable number of clinical and isoresource consumption groups enables hospital managers and paying agencies to establish meaningful measures of hospital performance. With a definable output, standards of cost, reimbursement and utilization can be developed and used in making decisions regarding providing healthcare in an economically rational manner.

D. SEVERITY OF ILLNESS

While DRGS have proven to be statistically significant, clinically valid, classifications of resource use, the need for refinement is recognized. Variations in resources required in the treatment of a patient's illness due to the severity of illness, stage of disease process or acuity of nursing care required occur. Indexes of severity of illness (SOI) for adjusting DRG reimbursement rates have been proposed and methodologies defined. For a particular DRG, a sicker patient will require more care than a less acutely ill patient and reimbursement should reflect this.

R. H. Shachtman, et. al. [Ref. 2], Young [Ref. 3], and S. D. Horn, et. al. [Ref. 4], reported on research of SOI considerations. SOI indexing allows for the adjustment of reimbursement rates for hospitalization based upon the actual degree of illness exhibited by individual patients. This attempts to provide fairness in reimbursement by setting rates that are reflective of actual costs incurred.

E. DRG COST STRUCTURE

The basic tenet behind using DRGs for prospective payment is to provide incentives for healthcare providers to contain costs. By knowing up front, based on diagnosis, what reimbursement will be for a patient, the institution has reason to minimize the costs of that patient's care. The provider will keep the difference between payment and actual costs, if costs are less than payment or absorb the loss, if costs exceed payment.

The behavior of costs and their allocation to DRG output units is central to establishing DRG rates. The collection of ancillary, routine care, general services, indirect and capital costs and their allocation are the root of the structure used to establish DRG reimbursement rates. R. H. Davies and G. Westfall [Ref. 5] clearly outlined the assumptions of cost behavior and allocation under the New Jersey reimbursement system.

By setting up categories of cost collection pools and assumptions of cost behavior for each category, the basis for the calculation of hospital specific and statewide DRG rates is established. This methodology could prove to be useful in developing DRG rates for DOD.

F. AMBULATORY VISIT GROUPS

There is currently no generally accepted method for grouping ambulatory visits. No single method of measuring productivity or basing reimbursement by AVG has been

implemented on a widespread basis. Various approaches to developing AVGs have been proposed.

Under contract to the HCFA, Fetter [Ref. 6] has developed ambulatory patient related groups based on International Classification of Disease (ICDA-8) diagnoses. This approach is essentially similar to the methodology used to develop DRGs for inpatient care.

In attempting to group ambulatory care visits, consuming similar resources, Rogerson, Stimson, Simborg and Charles [Ref. 7] have proposed three methods of grouping. One method is based on the problem presented by the patient. The second approach is driven by major diagnostic category and secondary diagnosis. The third approach is a simplified version of the diagnosis based system. The data used in developing these AVG systems is from a study at a hospital-based primary care group at the San Francisco Veterans Administration Medical Center from 1 January 1975 to 30 June 1980. Unique to these three approaches is that they evaluate a patient's resource use over the period of one year, not just for a single visit. This approach recognizes that a single visit does not necessarily constitute a full regime of ambulatory care for a given problem.

Using the patient's reason for visit as the primary grouping variable, instead of diagnosis, D. Schneider [Ref. 8], makes a compelling argument that while inpatient care is driven by admission diagnosis, ambulatory care is based

upon symptoms presented by the patient that may not result in a diagnosis. It is not unusual to find that no disease process is ever diagnosed before symptoms disappear.

G. USE OF DRGS IN RESOURCE ALLOCATION FOR FEDERALLY OPERATED HOSPITALS

Preliminary results of a study by the Research Department of the Naval School of Health Sciences, Research Paper 2-82 [Ref. 9], have validated the use of DRGs as a measure of activity for Naval Hospitals. Additionally, this study assessed the use of DRGs by the Great Lakes, Region IV, of the Veterans Administration for resource allocation among Naval Hospitals. The study concluded that current accounting systems and performance reporting systems used by the Navy and DOD were inadequate to support resource allocation by DRG. A patient level cost accounting system was required to properly support this type of case-mix management. The advantages of using DRGs to recognize case-mix differences between medical activities and allocating resources accordingly are noted in the study's conclusions.

H. SUMMARY

Using this information, the author has attempted to trace the evolution of federal involvement in the healthcare industry over the last thirty years. In order to understand why government involvement has grown, a portion of this retrospective look necessarily involved the review of the origins and growth of Medicare and Medicaid. Out of these

programs and subsequent legislation and regulation relating to them, have come the strategies to foster cost control that DOD healthcare must now face. By understanding the basis of case-mix management, its refinements and related AVG proposals for managing outpatient care, the author was better able to assess DOD's capability to change its method of resource allocation for healthcare.

III. HISTORICAL BACKGROUND

A. RISING COSTS OF HEALTHCARE

Over the past three decades, the costs of providing healthcare in the United States have expanded dramatically. As a percentage of the Gross National Product (GNP) in 1950, total expenditures on healthcare were 4.5 percent. By 1976, 8.6 percent of the United States GNP was being devoted to healthcare. [Ref. 10:p. 203] In the past ten years, this percentage has risen to and is at 11 percent of the GNP devoted to our nation's healthcare.

Figure 1 illustrates the gap that has occurred between the changes in health expenditures and the changes in the GNP for the period 1951 through 1981. The growing gap represents the movement of resources to the healthcare sector from the general economy.

Table 1 helps place in perspective the enormity of the increase in healthcare spending for the last thirty years in terms of federal expenditures on health, national expenditures on health and GNP. Even more importantly in this era of concern over national debt and the related efforts to reduce federal outlays, it is expressed in terms of federal expenditures on healthcare as a proportion of total federal outlays.

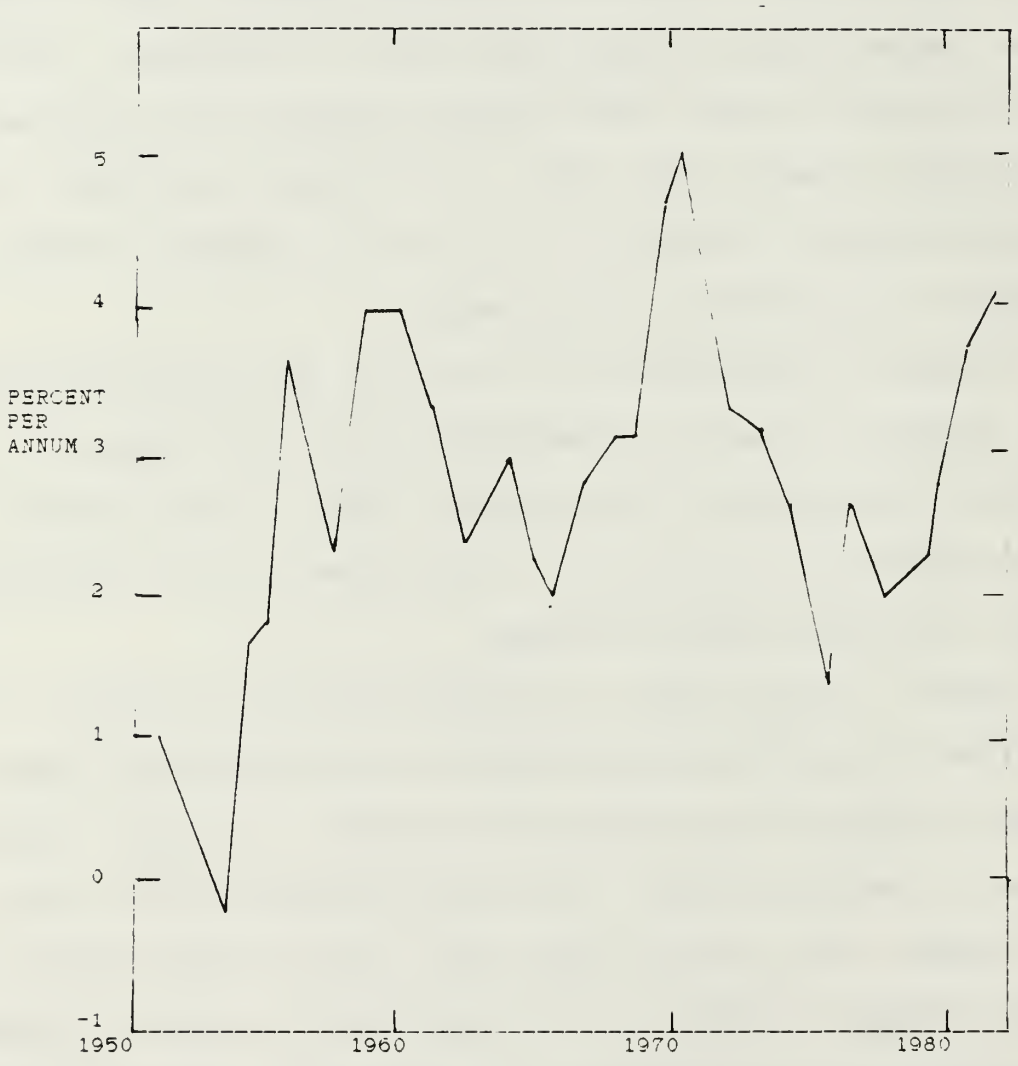

Figure 1 Difference Between Changes in Expenditures on Health and Gross National Product, 1951-1981 (Five Year Moving Average)

TABLE 1. FEDERAL AND NATIONAL EXPENDITURES ON HEALTH, TOTAL OUTLAYS AND GROSS NATIONAL PRODUCT

	1950	1955	1960	1965	1970	1975	1980
	(3-Year averages centered on selected years)						
	(Billions of 1983 dollars)						
(1) Federal expenditures on health	6	7	9	16	42	63	87
(2) National expenditures on health	52	63	84	119	176	228	302
(3) Total federal outlays	170	248	295	359	463	547	695
(4) Gross national product	1,175	1,404	1,589	2,015	2,369	2,686	3,224
(2) as percent of (4)	4.4	4.5	5.3	5.9	7.4	8.5	9.4
(1) as percent of (2)	12.5	11.2	11.2	13.4	24.2	27.6	28.7
(1) as percent of (3)	3.8	2.9	3.2	4.4	9.2	11.5	12.5

Sources: Council of Economic Advisors, ECONOMIC REPORT OF THE PRESIDENT (GPO 1984), tables B-1, B-73; Gibson, R. M. and Levit, K. R., "National Health Expenditures, 1982", HEALTH CARE FINANCING REVIEW 5 (Fall 1983): table 1

The largest component of this significant increase in the price of healthcare was in the average hospital cost per day. The average cost per patient day in 1950 was less than $16, by 1976 it exceeded $151. [Ref. 10:p. 203] In terms of the total expenditures per person on all hospital services, expenditures increased from $25 in 1950, to $179 in 1973 (DHEW 1975), to $604 in 1983 (DHHS 1985).

This alarming rise in expenditures for hospital services is significant, not only because of its magnitude, but also for the percentage of the total healthcare expenditures it represents. In 1950, hospital care represented 29.9 percent of total national healthcare expenditures. This was 1.35 percent of GNP, approximately $3.8 billion. [Ref. 11:p. 41] By 1983 these proportions had risen to over 40 percent and 4.5 percent respectively, representing $147 billion. [Ref. 12:p. 5]

There are several factors contributing to the overall rise in healthcare expenditures. Among the contributing causes are rising wage rates, facility costs, reimbursement based on cost, scope of medical practice, general inflation, supply costs and an increase in the size of the population.

From 1950 through 1967, population growth accounted for 18 percent of the overall increase in healthcare expenditures, while increases in the costs of inputs and the general inflation rate accounted for nearly half of the increase. [Ref. 11:p. 42] The period 1972 to 1982 showed an

expected decline in the effect of population growth to 6.9 percent, while inputs and inflation, as measured by the GNP deflator, accounted for 64.6 percent of the increase in health care expenditures. [Ref. 13]

Other factors, such as intensity of care (the degree of resources devoted to a course of treatment) and admissions per capita, reflecting changes in the practice of medicine, showed a decline from 33.9 percent for the period 1950 to 1967, to 28.5 percent of the increase in expenditures for healthcare for the period 1972 to 1982. [Ref. 13]

The expenditures on hospital services, which have risen to approximately 40 percent of all healthcare expenditures, seem to have stabilized, as a proportion, since the early 1970s. A large portion of the increase that had occurred in the area of hospital services, prior to 1970, is attributable to rising wage rates. Hospitals, being a labor intensive enterprise, typically experience 50 to 60 percent of total costs in the area of labor.

In 1960, hospital employees earned only 68 percent of the average hourly wage of production workers. This ratio increased to 81 percent by 1969. [Ref. 14:pp. 62-72] In addition, due to increasing the intensity of care and expanding ancillary requirements in providing hospital services, the employees per patient ratio for not-for-profit, short-term hospitals increased from 1.91 in 1950 to 3.14 in 1973. (Hospital Statistics 1973) The number of

people required to deliver the accepted standard of health care increased and they were being paid better than before.

In 1968, 4 percent of hospital related costs were attributable to construction (DHEW 1970). Population growth and increased emphasis on healthcare in a hospital setting spurred the construction of new and larger physical plants. Concurrently, advances in medical science and technology and elevation of standards for hospital facilities added to the cost and sizing requirements of hospital construction.

At the time these expansions of input costs for hospitals were increasing, reimbursement to hospitals for their services was based on their costs. Third parties, including the Federal and State governments allowed healthcare providers to pass along increased costs in their prices. Without an incentive to minimize costs, hospitals maintained their financial solvency by increasing revenues through increases in prices.

B. INVOLVEMENT OF FEDERAL GOVERNMENT IN THE HEALTHCARE SYSTEM

1. The Need for Federally Managed Healthcare Programs

The expansion of healthcare expenditures, as described, based upon an increasing population, increased costs of inputs, and increased intensity of services, could not long remain untouched by public concern.

The increasing role of the Federal government in providing for the healthcare needs of the nation, from the

early pre-Social Security programs aiding the blind, disabled and aged, to the enactment of Medicare, Title XVIII and Medicaid, Title XIX of the Social Security Act on 30 July 1965, has made the Federal government the leader in cost containment efforts directed at the healthcare industry.

More than one in five people, over 50 million, in the United States are covered by either Medicare and/or Medicaid. [Ref. 15:p. 20] By looking at these two programs, their history, and changes in these programs to foster cost containment, the environment into which DOD healthcare is being directed can be understood.

Social pressures to improve access to healthcare, to the aged, disabled and socially disadvantaged segments of American society, spawned the Medicare and Medicaid programs. Following World War II, a series of legislation redefined the Federal-State roles in health policy and put the Federal government in a role as a buyer of health services. Prior to the Social Security Amendments of 1950, 1956, and 1960, medical assistance to the aged, disabled and blind were largely within the purvey of disparate state programs. Defying American Medical Association (AMA) objections to federal intrusion into arrangements the AMA supported with local governments, Medicare and Medicaid established the Federal government as a player in the physician/hospital/patient relationship.

The following excerpt from the AMA's testimony to Congress provides, not only an appreciation of the opposition by healthcare professionals to the interjection of the Federal government into healthcare policy, but also an insight into what had been a backlash of de-Federalization following the Roosevelt New Deal era.

> The American Medical Association is vigorously and firmly opposed to this step. First, we see no need for the establishment of medical care as a fifth and separate category of Federal aid in public assistance programs. Pooling arrangements now available to the States under the existing program can accomplish more flexibly and less dangerously all the new proposals seek.
>
> Second, such a new program would burden the community with regulations and restrictions inconsistent with local problems, local laws, or local customs. As an example, amendments to the aid-to-blind program under the Social Security Act have granted to optometrists since 1952 the privilege of diagnosing pathological conditions of the eye. This privilege, until 1952, had been uniformly denied to them by state licensure laws.
>
> Third, this section is totally inconsistent with the philosophy heretofore underlying Federal participation in public assistance programs. This philosophy, as expressed in the other titles of the pending bills, presupposes that Federal participation in such programs is a temporary expedient, necessary only because the old age and survivors benefits are not yet sufficiently matured to furnish the basic protection required. As the old age and survivors benefits mature, it has always been supposed that Federal participation in public assistance would be reduced. The medical provisions of the pending bills represent an expansion in Federal participation, contrary to this established policy.
>
> Fourth, we cannot escape the conclusion that injection of medical care as a separately matched category of expenditure under public assistance is only a forerunner to the injection of medical care as a categorical benefit under old age and survivors insurance. You are aware of the overwhelming rejection by both the American people and the medical profession of this philosophy. As physicians, we must continue to oppose programs which, in the guise of improving medical care, will lead to the destruction of

the system which has produced the best medical care ever enjoyed by any people.

In summary, the American Medical Association is vigorously opposed to the proposed changes in the medical care provisions of the public assistance sections of the Social Security Act. We are opposed to those changes because they are needless, wasteful, dangerous, and contrary to the established policy of gradual Federal withdrawal from local public assistance programs. (U.S. Congress, 1956)

Of note, is that at this time in our history, the compelling ideological and political pressures to quickly provide this safety net of healthcare for the nation's aged, disabled and needy, overrode the need to consider, in-depth, the economics of alternative means by which the healthcare would be financed.

Former Congressman, Wilbur D. Mills, Chairman of the House Ways and Means Committee from 1958 to 1974, aptly described the social and political pressures for federal intervention in the healthcare delivery system in a monograph [Ref. 16:p. 3], 1985:

In 1950, we began, on a modest basis, to authorize the idea of "vendor payments" for medical care to needy public assistance recipients, an idea that Wilbur J. Cohen brought to our attention as a means of getting some experience in the medical services area. We expanded and modified this idea in 1954 and 1956 at the same time we were strengthening the social security program. In 1957, 1959, and 1960, we held hearings and discussions on the Forand Medicare bill. In 1960, we also held extensive hearings on a nationwide medical assistance proposal advocated by President Dwight D. Eisenhower and Arthur S. Flemming, the Secretary of Health, Education, and Welfare. Out of these deliberations came a revised proposal for Federal grants to the States to improve medical assistance to the needy aged. In the Senate, the House version was revised with the aid of Senator Robert S. Kerr of Oklahoma and Wilbur J. Cohen, and it became the Kerr-Mills legislation of 1960, which I sponsored as a stopgap measure for

the needy until we could obtain agreement on any further legislation.

The Kerr-Mills legislation became a controversial measure in the early 1960's because it only dealt with the needy aged, and I could see that something more would have to be adopted eventually. President John F. Kennedy and Vice President Lyndon B. Johnson were pressing strongly for a Medicare-type insurance program for all the aged. But I also could see that such a Legislative measure did not have the necessary votes at that time in the Committee on Ways and Means or in the House of Representatives. For 4 years (1951-1964), we struggled to find compromises, adjustments, and adaptations that might lead to agreement between the House and Senate. These discussions broke down in the conference on the 1964 social security legislation. I outlined some of the problems we had to resolve in an address I gave on September 28, 1964, which I placed in the CONGRESSIONAL RECORD of October 3, 1964.

With the resounding victory of President Lyndon B. Johnson in the 1964 campaign, it was inevitable that some Medicare program would be adopted in 1965. I proceeded promptly to try to develop a legislative package that could be passed.

It became increasingly clear to me, however, as I studied the programs and consulted with many interested groups, that a Medicare hospital insurance program for the aged alone was not sufficient to meet the many medical problems of the aged, blind, and disabled or the mothers and children receiving aid for dependent children. With Wilbur Cohen's help, we developed what eventually became Medicaid (Title XIX) and Medicare. Then, with the support of John W. Byrnes, the ranking minority member on the Committee, we added voluntary coverage of Physicians' services in what became Part B or supplementary medical insurance (SMI). That three-part program, enacted in 1965, has been an important and essential part of our national safety net for the past 20 years, along with social security and the Supplemental Security Income program enacted in 1972.

In the same 1965 legislation, we improved the social security program (old age survivors and disability insurance) as well as the public assistance programs. In this year of the 30th anniversary of the original Social Security Act of 1935, and the 20th anniversary of Medicare and Medicaid, I am proud of the part I played in helping to initiate, preserve, and improve these safety-net provisions.

2. Cost Concerns Relating to Medicare and Medicaid

In essence, Congress created additional demand for healthcare and provided an open checkbook to capitalize the industry's expansion. With no limits on what was considered appropriate healthcare, the healthcare industry created additional demand for services simply by providing them. The government paid for health services without consideration of what level of service was appropriate, or if those services, appropriate or not, were being provided in a cost effective manner. Utilization and peer reviews were not included in the enacted legislation. Hospitals increased their margins by increasing revenues, by providing more services, not minimizing services provided or the associated costs.

Medicare was designed as a federal program, providing to all citizens, uniform eligibility and benefits as part of the Federal Social insurance program.

Medicaid was an outgrowth of earlier social programs to improve access to healthcare to the disadvantaged. Medicaid eligibility is based upon need, tied to eligibility for welfare benefits established by the Social Security Act. It is administered by the States and supported by federal grants.

With the rocketing costs of healthcare, following the Federal government's entry into the healthcare system,

the government struggled to find ways to control ever increasing expenditures.

As described earlier, rising expenditures were a function of an increasing population, increasing cost of inputs and an increase in the intensity of services provided to consumers. Unable to control the population, in fact establishing unfettered access to healthcare as the social norm, the Federal sector first turned to develop policies promoting cost effectiveness. New reimbursement methods, limiting capital growth, were finally initiated. Efforts to create incentives to cut costs by sharing documented savings with providers were made. Legislation to withhold payment for perceived unreasonable per diem costs was enacted in the 1972 Amendments to the Social Security Act. 1971 brought the Economic Stabilization Program that introduced mandatory price controls to the healthcare industry, lasting through 1974. The Tax Equity and Fiscal Responsibility Act of 1982, reacting to continuing escalation of healthcare costs, set prospective limits on Medicare reimbursement and allowable increases in reimbursable costs per discharge. Responding to the State's dilemma in meeting the costs of their Medicaid programs, Section 2175 of the Omnibus Budget Reconciliation Act of 1981 gave the States flexibility in moving from a reimbursement system based upon cost to other methods of determining reimbursement. [Ref. 15:pp. 16,17]

Efforts were eventually made to address the issue of appropriateness of care. The 1972 Amendment to the Social Security Act included the establishment of Professional Standards Review Organizations (PSRO). The primary thrust of PSROs was to eliminate unnecessary hospital days and their related costs. All organizations caring for federally funded patients were made subject to their scrutiny.

A series of regional Health Systems Agencies (HSA) were put in place to review health planning efforts and review certificates-of-need for capital expenditures. HSAs were to preclude over-capitalization and duplication of effort within their jurisdictions.

As an expenditure reduction effort and as a means of increasing the recipient's awareness of healthcare costs, with the intention of reducing healthcare system utilization, the Tax Equity and Fiscal Responsibility Act of 1982 permitted the establishment of nominal co-payments in the Medicaid system. The Omnibus Budget Reconciliation Act of 1982, in Section 2175, even went so far as to allow States to reduce Medicaid costs by limiting beneficiary choice in selecting healthcare providers. The Federal government, in the Social Security Amendments of 1972, had also promoted the growth of Health Maintenance Organizations (HMO) as a means of decreasing hospital utilization through the inherent organizational incentives to minimize the cost of healthcare, thus increasing the organization's earnings.

3. Cost Control Strategies

Out of all of the efforts to control the costs of healthcare in general and federal outlays specifically, new strategies, new incentives for limiting cost growth have emerged. The most recent evolution has come about as the result of one state's efforts, under flexibility provided by the existing legislation.

In an effort to define elements of cost collection for inpatient care that were clinically relevant and useful as measures of product output, the State of New Jersey was involved in the development and use of Diagnosis Related Groups (DRG) for the purpose for prospective payment. New Jersey started using DRGs for prospective payment to hospitals on a limited basis in 1978. [Ref. 5:p. 234] The approach of using DRGs, as a basis for prospective payment, was evaluated by the Health Care Financing Administration. The HCFA monitored the New Jersey implementation closely.

The decision to use prospective payment for the Medicare system, starting in 1983, was based upon the incentives built into the system to minimize costs for treating a particular diagnosis.

Integral to the successful use of a DRG based reimbursement system is a peer review mechanism. The peer review organization is the means by which over-utilization is identified and precluded, while healthcare delivery is reviewed for acceptable quality of medical care rendered.

These evaluations are based upon predetermined criteria, applied to the review of medical record by Regional contract-based Peer Review Organizations. (PRO) These PROs, replaced the PSROs.

Other efforts to control costs, in and out of the Federal sector are of note. In the private sector, hospital chains have shown as increase in number and now control about 13 percent of non-Federal, acute care beds in the United States. [Ref. 15:p. 18]

This horizontal expansion of the hospital industry has been accompanied by a vertical integration within the healthcare industry. As is the case with other undifferentiated products in a competitive environment, this integration of hospital supply, acute care, long-term care and pre-paid health programs, serves to assure the involved activities of their share of the healthcare market and maintain control of input costs.

Capitation agreements, placing the risk of providing total health services for individuals for a single fee, with the provider, have grown in the current competitive environment. This is evident in the growth of HMOs in recent years. HMOs have become, like preferred provider programs and benefits packages offering different levels of coverage and deductibles, choices open to consumers. The consumer has become a player in determining how and where healthcare will be delivered.

4. Movement of DOD Healthcare into a Competitive Environment

It is into this competitive environment, focused on cost containment, that DOD hospitals are being thrust. Historically, healthcare provided within DOD facilities has been based, on providing the most care possible with the resources available. These resources, military owned facilities, military manpower, civil service manpower, capital equipment and operating funds are provided out of four separate Congressional appropriations. These appropriations are further broken down as they are divided between the services.

The mechanisms required to integrate military and civilian personnel, facilities construction and capital investment and garner maximum utility from the DOD healthcare system are lacking. Without a strong proponency in any of the appropriations funding DOD healthcare, the system, understandably, has difficulty in maintaining an efficient mode of operation. To give some idea of how healthcare fares as a portion of the total DOD budget, as reported by the Grace Commission in 1983 [Ref. 17:p. 1], the DOD healthcare budget for direct healthcare was $4.5 billion, less than 2 percent of the total DOD request. In terms of ability to handle cuts in its budget, the DOD healthcare budget is hit severely when across the board reductions in funding or manning levels occur.

The problems with lack of proponency, the appropriation structure inhibiting integration of requirements and the lack of coordination between the Army, Navy and Air Force medical communities are brought to the forefront with the enactment of Public Law 99-661.

P.L. 99-661 requires that DOD use a DRG, case-mix, based system for resource allocation for DOD inpatient treatment at medical treatment facilities (MTF) after 30 September 1987 and for outpatient visits after 30 September 1988. A tri-service Task Force has been formed to address the issues of developing such a system and implementing it in DOD. A report to Congress on DOD's plans concerning the development of a DRG based prospective payment system and the concerns that must be addressed to make such a system effective is included as an Appendix to this thesis.

C. SUMMARY

The involvement of the Federal government in the United States healthcare system has grown to a point where it is now concerned with effectiveness of care (PRO), quality assurance, appropriateness of care (utilization review), and efficiency or cost of care (DRG based prospective payment). These concerns and the methodologies for managing them have been addressed, first to the local, not for profit and private sectors of the healthcare industry, and now to the Federal (Veterans Administration and DOD) sector. DOD must now adapt/develop information systems to support the

implementation of PRO quality assurance, risk management, utilization review and prospective payment.

IV. CASE-MIX MANAGEMENT

A. DRG DEVELOPMENT

The development of DRGs is a result of the need to assess the performance of hospitals against some measure of output. The measure of a final product in a hospital setting is compounded with the numerous, intermediate products (ancillary services) provided, and the varying nature of care indicated for different medical problems. The measure of output should represent the total cost of services rendered to a patient.

In developing a series of case types, each type representing cases consuming similar services from a hospital, Fetter and his associates considered the following attributes essential to any system for grouping hospital outputs. [Ref. 1:p. 5]

> "It must be interpretable medically with subclasses of patients for homogeneous diagnostic categories. That is when the patient classes are described to physicians, they should be able to relate to these patients and be able to identify a particular patient management process for them.
>
> Individual classes should be defined on variables that are commonly available on hospital abstracts and are relevant to output utilization, pertaining to either, the condition of the patient or the treatment process.
>
> There must be a manageable number of classes, preferably in the hundreds instead of thousands, that are mutually exclusive and exhaustive. That is, they must cover the entire range of possible disease conditions in the acute-care setting, without overlap.

The classes should contain patients with similar expected measure of output utilization.

Class definitions must be comparable across the different coding schemes."

Using the information from approximately 700,000 hospital records, diagnostic, demographic and treatment characteristics were used in conjunction with the International Classification of Disease, 8th revision (ICDA-8) and HICDA-2 diagnostic codes to develop the DRGs. Table 2 outlines the strategy this Yale group took in breaking out DRGs from the original data base. The 83 Major Diagnostic Categories (MDC), into which each record was first assigned, were mutually exclusive and exhaustive groupings of ICDA-8 diagnosis that were medically related and relevant, as assessed by physician review.

Revisions to the original 383 DRGs include a minor revision adapted and used by the State of New Jersey and a second larger, 470 DRG classification, based upon ICD-9-CM codes and used by Medicare.

Research efforts at the Naval School of Health Sciences [Ref. 9] have validated the use of DRGs as a measure of performance for Navy hospitals. Performance, based on length-or-stay or cost for example, can be compared between hospitals. DRGs can be used as the basis for utilization review and quality assurance/risk assessment efforts. The DRG being the unit for which performance criteria are developed and applied.

TABLE 2

YALE ICDA-8 DRG FORMATION PROCESS

STEP 1. ASSIGN ALL PATIENT RECORDS TO ONE OF 83 MAJOR DIAGNOSTIC CATEGORIES USING PRIMARY DISCHARGE DIAGNOSIS.

STEP 2. SCREEN OUT POTENTIALLY ABERRANT RECORDS:

- DEATHS
- RECORDS WITH INCOMPLETE DATA
- EXCEPTIONALLY LONG LENGTH OF STAYS

STEP 3. SELECT SUBGROUPS OF PATIENTS USING CLINICAL ATTRIBUTES AS VARIABLES THAT EXPLAIN VARIATION IN LENGTH OF STAY:

- AGE
- PRIMARY DIAGNOSIS
- SECONDARY DIAGNOSIS
- SURGICAL PROCEDURES

STEP 4. REPEAT STEP 3 UNTIL TERMINAL SUBGROUPS (DRGS) ARE FORMED ACCORDING TO STOPPING RULES:

- SIZE OF GROUP LESS THAT 100 OR
- ADDITIONAL VARIANCE EXPLAINED LESS THAN 1 PERCENT OR
- NOT MEDICALLY MEANINGFUL TO DIVIDE FURTHER

B. DRG RATE DEVELOPMENT

Central to using DRGs for prospective payment is the method of rate setting and underlying assumptions of cost behavior. The methodology used by New Jersey in establishing its DRG rate structure will be discussed next.

Four groups for classifying cost centers were defined.

> "Ancillary cost centers: includes costs associated with radiology, laboratory, etc; defined to be 100% variable with volume; allocated to patients through charges.
>
> Routine cost centers: includes costs associated with laundry and linen, dietary housekeeping, etc.; defined to vary less than 100% with volume; allocated to patients by first being allocated to direct patient care (ancillary/-routine) or indirect cost centers on the basis of statistics furnished for each general services cost center.
>
> Indirect cost centers: includes costs associated with the physical installation such as utilities and administration; defined to be 100% fixed in the short run; not allocated to patients as part of direct patient care cost by apportioned to each DRG as a uniform percentage makeup on the direct patient care cost of the DRG."
> [Ref. 15:p. 237]

The costs are allocated only to inpatients. The costs for outpatient care are removed from the cost pools. The cost centers are then aggregated into the four groups previously described.

Under this total cost concept, general services costs are first stepped down to routine, ancillary and indirect cost centers. These are the user categories that will now be allocated on the activity bases previously define.

Next, the total activity base (charges, patient day; direct patient care cost) is summed for all patients with

valid abstracts. Patients that have died or experienced a length of stay significantly longer than average for that applicable DRG (outliers) are excluded from computations. The costs and activity base related to these aberrant cases are not used in determining DRG rates.

After establishing the cost allocation base, the direct patient care costs, ancillary costs and routine costs are allocated to patients by using the ratio of costs/unit of allocation for each direct care cost center multiplied by the units of the allocation base used by each patient.

At this point approximately 60% of the total costs have been allocated. In the New Jersey experience, indirect costs comprise about 40% of total cost. This 40% includes bad debts, capital costs and administrative costs. [Ref. 15:p. 238]

With the calculation of hospital specific direct costs per patient, construction of the DRG reimbursement rate begins. To establish an equitable standard cost per case the state of New Jersey performs an equalization of labor costs. The equalization factor for each hospital is the nonphysician direct patient care costs (prior to allocation of general services costs) at state wide average pay scales by class of labor, divided by nonphysician direct care costs at labor market average pay scales by class of labor. In New Jersey there are 11 geographic labor market areas and eight labor categories. This factor is then applied to

direct patient care costs for each hospital, the costs for all hospitals aggregated by DRG and then divided by the number of patients in that DRG. The result is an average statewide direct patient care cost per DRG. It should be noted that this process is done separately for teaching and nonteaching hospitals.

An individual hospital's DRG rate for direct patient care is then derived by taking the hospital's average actual direct patient care costs per DRG case and blending it with the average statewide average cost per DRG case. The blend is based upon the dispersion costs in forming the DRG rate. The coefficient of variation (standard deviation/mean) determines what portion of the payment rate is based upon the hospital's actual costs per DRG. The result being that the more widely dispersed a hospital's cost per DRG, the more of their costs are included in the DRG payment rate.

The indirect costs are handled in two ways. The administrative and general services costs, not previously allocated to direct patient care cost centers are screened by the State on a cost per unit of activity for each cost center against the median unit cost per unit of activity. This creates incentives for low cost providers and pressure for high cost providers to become more efficient. The indirect elements of cost related to facilities capitalization, bad debt and in some case an allowance for working

cash infusion are not screened, but are add-ons to the final payment rate for each hospital.

The Medicare reimbursement system varies somewhat from that used in New Jersey. Payment for Medicare is based on five factors:

- -An adjusted Federal standard rate
- -Adjustment of hospital costs based on regional wage indexes
- -DRG to which a discharge is assigned
- -DRG adjustment to per diem hospital cost
- -A hospital specific adjustment that ensures budget neutrality during the implementation phase of prospective payment

The adjusted Federal rate is based upon a report of national hospital costs for 1981. Applicable, allowable costs from this report are adjusted for case-mix, indirect medical education costs, the national and regional wage indexes and cost of living. After disregarding outliers and adjusting for overall budget neutrality, a standard rate per case is produced.

The hospital specific rate is determined based upon 1982 cost and discharge information for specific hospitals. After adjusting for inflation to current year dollars, a hospital specific amount per Medicare is determined. This rate is used to ensure budget neutrality at the hospital level while implementing prospective payment.

As the transition to prospective payment is completed, the Federal rate will wholly determine reimbursement. The

regional adjustment to the Federal rate and the hospital specific adjustment will no longer be used in calculating reimbursement. At that point in time hospitals will be subject to the incentives built into the prospective reimbursement strategy.

C. SEVERITY OF ILLNESS INDEXES

There are some problems identifiable with the ability of DRGs to accurately project actual cost. Among the concerns is the type of hospital (teaching, nonteaching), stage of disease process at admission, severity of illness and intensity of nursing care provided. Several proposed refinements to the development of DRG rates will be discussed.

Disease staging, developed at Jefferson Medical College by Joseph Gonnella [Ref. 18:p. 2] is a computerized system that places each diagnosis into one of over 400 conditions and subsequently assigns the case to one of 4 disease stages (5 for neoplasms). This assignment, based upon the specific diagnosis, is predicated upon clinical observations of specialists. Since disease runs its own course through its various phases and the resources consumed for a given stage of a disease are not the same as that of a different disease, over 1,700 potential classification groups of resource consumption exist. [Ref. 18:p. 2]

Severity of Illness Indexing, developed under Susan Horn, John Hopkins University is based upon the evaluation of a patient's chart at discharge on seven dimensions by trained raters. The characteristics of the patient's stay that are rated are:

-Stage of principal diagnosis.

-Complication of the principal condition.

-Concurrent interacting conditions that affect the hospital course.

-Dependency on hospital staff.

-Extent of non-operating room life support procedures.

-Rate of response to therapy or rate of recovery.

-Impairment remaining after therapy for the acute aspect of the hospitalization. [Ref. 3:p. 33]

These seven considerations of a patient's hospitalization are scored on basis of 4 levels of increasing severity. The criteria used for the severity rating are defined for the raters and the raters receive intensive training in discriminating between severity categories. Table 3 shows the relationships between the seven characteristics and 4 levels of severity.

As reported by Horn, et al., more than 95 percent of the individual raters achieved greater than 90 percent agreement on blind re-rating of a sample of charts. This was after two months of experience with severity of illness criteria. The ability to consistently rate severity of illness using this methodology was demonstrated. [Ref. 3:p. 33] An adjustment to the portion of the DRG cost attributed to

TABLE 3

SEVERITY OF ILLNESS INSTRUMENT

Characteristic		Levels			
		1	2	3	4
Stage of Principal Diagnosis		Asymptomatic	Moderate manifestations	Major manifestations	Catastrophic manifestations
Complications		None or very minor	Moderate — less important than principal diagnosis	Major — as or more important than principal diagnosis	Catastrophic — death or major permanent disability
Interactions		None or minor	Moderate	Major	Catastrophic
Dependency		Low	Moderate	Major	Extreme
Procedures (Non-operating room)		Noninvasive diagnostic or minor therapeutic	Therapeutic or invasive diagnostic	Nonemergency life support	Emergency life support
Response to therapy	Rate	Prompt	Moderate delay	Serious delay	No response
	Residual	None or minor	Moderate residual effect	Major residual effect	Catastrophic residual effect
Severity rating		1	2	3	4

Young,W.W.,"Incorporating Severity of Illness and Comorbidity in Case Mix Management", Health Care Financing Review, 1984 Annual supplement

routine care, now allocated only on the basis of patient days, could be useful in matching DRG rates to actual cost of care provided.

A direct adjustment to routine care costs, based solely upon a measure of nursing intensity has also been proposed. The difference in intensity of nursing required for different DRGs is easily understood. Take for example DRG 368, of the New Jersey system which includes third degree burns and the need for constant nursing attention and compare it to DRG 181, minor problems of the teeth, and the relatively low intensity of nursing involvement. Yet under the current unadjusted allocation base of patient days, each DRG would be allocated nursing costs on the same rate per day. Thompson advocates a nursing intensity adjustment at the DRG level, not the Major Diagnostic Category. To this end four strategies have been proposed. [Ref. 19:p. 49]

- -Special studies examining the specific amounts of nursing care patients receive.
- -Adapting current nurse staffing algorithms to estimates of nurse resources used during a hospital stay.
- -Direct assignment of nursing activities to patients on a regular basis.
- -Using nursing diagnosis to attempt to estimate care given to patients.

D. AVG DEVELOPMENT

Public Law 99-661 mandated the use of DRGs not only for resource allocation for inpatient care, but also outpatient care. There is not a nationally accepted model for

outpatient reimbursement for ambulatory visit groups (AVG). One of the primary problems facing DOD in the development of AVGs is a lack of biometrics data. Information is currently collected only for number of visits to outpatient clinics. Information related to diagnosis, symptoms, ancillary services used, treatment and follow on treatment and human resources consumed is not captured.

Several approaches to developing AVG were reviewed. Three will be discussed, Reason for Visit, Patient-Based, Time-Oriented Indexes and Diagnostic Groupings.

1. Reason for Visit Classification

The National Center for Health Statistics, Department of Health Education and Welfare started the National Ambulatory Medical Care Survey in May 1973. Now a continuous study, this vehicle is to provide national statistics on out-patient visits. Participating physicians complete Patient Record forms for samples of patients seen. One of the data elements of this form is the patients perceived need in seeking care, the reason for visit. Figure 2 provides a sample of the Patient Record form showing the data elements surveyed. [Ref. 20:p. 3] Using 200 codes, grouped into 13 classes, this system was developed to code the patient's reason for visit (RFV).

The RFV classification system is constructed of 7 modules. The modules represent the basic reasons for a patient to visit an out-patient facility. They are:

A

DATE OF VISIT

PATIENT RECORD

NATIONAL AMBULATORY MEDICAL CARE SURVEY

DATE OF BIRTH

SEX

FEMALE

MALE

4. COLOR OR RACE

WHITE

NEGRO BLACK

OTHER

UNKNOWN

5. PATIENT'S PRINCIPAL PROBLEM(S) COMPLAINT(S) OR SYMPTOM(S) THIS VISIT (In patient's own words)

a. MOST IMPORTANT ______

b. OTHER ______

6. SERIOUSNESS OF PROBLEM IN ITEM 5a (Check one)

VERY SERIOUS

SERIOUS

SLIGHTLY SERIOUS

NOT SERIOUS

7. HAVE YOU EVER SEEN THIS PATIENT BEFORE?

YES NO

If YES, for the problem indicated in ITEM 5a?

YES NO

MAJOR REASON(S) FOR THIS VISIT (Check all major reasons)

WELL ADULT CHILD EXAM

FAMILY PLANNING

COUNSELING ADVICE

IMMUNIZATION

REFERRED BY OTHER PHYS AGENCY

ADMINISTRATIVE PURPOSE

POSTNATAL CARE

POSTOPERATIVE CARE

OTHER (Specify)

9. PHYSICIAN'S PRINCIPAL DIAGNOSIS THIS VISIT

a. DIAGNOSIS ASSOCIATED WITH ITEM 5a ENTRY

(in order of importance)

DIAGNOSTIC THERAPEUTIC SERVICES ORDERED PROVIDED THIS VISIT (Check all that apply)

NONE

DRUG PRESCRIBED

X-RAY

INJECTION

PHYSIOTHERAPY

OTHER (Specify)

11. DISPOSITION THIS VISIT (Check all that apply)

RETURN AT SPECIFIED TIME

REFERRED TO OTHER PHYSICIAN AGENCY

ADMIT TO HOSPITAL

OTHER (Specify) ______

12. DURATION OF THIS VISIT (Time actually spent with physician)

______ MINUTES

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
PUBLIC HEALTH SERVICE
HEALTH RESOURCES ADMINISTRATION
NATIONAL CENTER FOR HEALTH STATISTICS

EXPIRATION DATE 12 31/75

National Ambulatory Medical Care Survey Patient Record form

Figure 1 National Ambulatory Medical Care Survey Patient Record Form

-Symptom

-Disease

-Diagnostic, screening and preventative

-Treatment

-Injuries

-Test Results

-Administrative [Ref. 14:p. 4]

The RFV classification system consists of two parts, the tabular list of categories (Table 4), and an index of specific terms for classifying lay terminology. The tabular list, broken down into the seven modules listed above, is oriented in a body system approach.

-A patient presenting with a complaint is classified by the stated concern. The outcome of this type of visit is diagnostic tests, examination or and probable diagnosis.

-If a patient should present with a diagnosis, own or another physicians, it is expected confirming tests would ensue.

-A patient presenting for tests or screening can be expected to receive the procedure indicated.

-Treatment visits are expected to result in some therapeutic process.

-A patient returning to receive test results is recorded as such

-Emergency visits, trauma, adverse responses to treatment will result in immediate care in answer to the reason for visit.

-Insurance physicals, court-ordered exams and certificates of health are examples of care coded in the administrative module.

The alphabetic index of terms and associated codes are to facilitate accurate translation of lay terminology

TABLE 4

REASON FOR VISIT CLASSIFICATION
TABULAR LIST

Module	Code number
YMPTOM MODULE	
General Symptoms	S001-S099
Symptoms Referable to Psychological and Mental Disorders	S100-S199
Symptoms Referable to the Nervous System (excluding sense organs)	S200-S259
Symptoms Referable to the Cardiovascular and Lymphatic Systems	S260-S299
Symptoms Referable to the Eyes and Ears	S300-S399
Symptoms Referable to the Respiratory System	S400-S499
Symptoms Referable to the Digestive System	S500-S639
Symptoms Referable to the Genitourinary System	S640-S829
Symptoms Referable to the Skin, Nails, and Hair	S830-S899
Symptoms Referable to the Musculoskeletal System	S900-S999
ISEASE MODULE	
Infective and Parasitic Diseases	D001-D099
Neoplasms	D100-D199
Endocrine, Nutritional, and Metabolic Diseases	D200-D249
Diseases of the Blood and Blood-Forming Organs	D250-D299
Mental Disorders	D300-D349
Diseases of the Nervous System	D350-D399
Diseases of the Eye	D400-D449
Diseases of the Ear	D450-D499
Diseases of the Circulatory System	D500-D599
Diseases of the Respiratory System	D600-D649
Diseases of the Digestive System	D650-D699
Diseases of the Genitourinary System	D700-D799
Diseases of the Skin and Subcutaneous Tissue	D800-D899
DISEASE MODULE—Con	
Diseases of the Musculoskeletal System and Connective Tissue	D900-D949
Congenital Anomalies	D950-D989
Perinatal Morbidity and Mortality Conditions	D990-D999
DIAGNOSTIC, SCREENING, AND PREVENTIVE MODULE	
General Examinations	X100-X199
Special Examinations	X200-X299
Diagnostic Tests	X300-X399
Other Screening and Preventive Procedures	X400-X499
Family Planning	X500-X599
TREATMENT MODULE	
Medications	T100-T199
Preoperative and Postoperative Care	T200-T299
Specific Types of Therapy	T400-T499
Specific Therapeutic Procedures	T500-T599
Medical Counseling	T600-T699
Social Problem Counseling	T700-T799
Progress Visit, NEC	T800-T899
INJURIES AND ADVERSE EFFECTS MODULE	
Injury by Type and/or Location	J001-J799
Injury, NOS	J800-J899
Poisoning and Adverse Effects	J900-J999
TEST RESULTS MODULE	R100-R700
ADMINISTRATIVE MODULE	A100-A140
UNCODABLE ENTRIES	U990-U999

NOTE: NEC = not elsewhere classifiable; NOS = not otherwise specified.

into a RFV classification. The system is designed for a second level of detail in coding RFV. Depending on the needs of the data user and presentation by the patient the second level may or may not be used.

2. Patient-Based, Time-Oriented Indexes

The Patient-Based, Time-Orient Indexes were developed from a study of hospital-based primary group practice at the San Francisco Veterans Administration Medical Center. [Ref. 7:p. 781] The object of this study was to classify isoresource consumption groups, organized in a clinically meaningful manner for ambulatory care. The resource consumption is based on one year's course of treatment, not an individual visit. Three approaches were taken to grouping resource use.

The first approach was a problem-oriented index. Based on the problems presented by a patient over the course of a year, the charges related to each problem are evaluated in terms of how much of the total charges of caring for that patient are related to a specific problem. The number of problems that it takes to account for 50% of a years care determines the patient's "P" rating. If the primary problem accounts for 50% or more of charges for a year, the patient is classified P-1, if it takes the top two primary problems to account for 50% of a year's charges, the patient is classified P-2 and so-on.

The second approach was diagnosis-based. It related resources to diagnosis groups. Charges for patients were first calculated. Then based upon charges the cases were grouped into 17 Major Diagnostic Groups. This approach was also modified to provide for assignment of a patient to a resource group for a primary and then a secondary diagnosis. A secondary diagnosis was included where the primary diagnosis did not account for 50% of the charges incurred for a patient year.

3. Ambulatory Patient Related Groups

Under contract to the Health Care Financing Administration, Fetter has also defined a set of Ambulatory Patient Related Groups (APG) based upon diagnosis, using the same software and criteria used in developing DRGs. These groupings of ambulatory visits possess similar clinical attributes and utilization patterns. [Ref. 16:p. 3]

The assumption that patterns of resource use are related to diagnosis through diagnostic tests required and subsequent course of treatment is central to this grouping approach.

ICDA-8 codes were divided into 14 Major Ambulatory Categories (MAC) that are exhaustive and mutually exclusive. (Table 5) A MAC is determined on the basis of organ system affected. Once assigned to a MAC the cases studied were evaluated on the basis of:

TABLE 5

LIST OF MAJOR AMBULATORY CATEGORIES

Initial Group#	Initial Group Name	ICDA8 Code	Terminal Group #
1	Infective and Parasitic Disorders	017,0171,0179-0189, 020-031,0319-0339, 035-0399,050-0619, 067-0689,071-0759, 079-0790,0792-0902, 0904-0929,095-1049, 113-1149,116-1309, 132-1349,136-1369	1-12
2	Endocrine, Nutritional and Metabolic Disorders	193-1949,226-2269, 240-2689,269-2699, 270-2731,27342736-2739,275-2799	13-24
3	Mental Disorders	290-3159,790-7902, 7930,794-7949	25-36
4	Disorders of the Nervous System	013-0139,0191,040-0469,062-0669,0940-0949,191-1929,225-2259,238,2381-2389, 320-3589,430-4389, 7720-7722,780-7308, 781,7814-7818,791-7919,850-8549	37-39
5	Disorders of the Circulatory System	0930-0939,390-4029, 404-4299,44--4459, 451,4519,453-4549, 456,4561-4569,458-4589,782-7826,7829, 795-7959,Y100	40-59
6	Disorders of the Respiratory System	010-0129,0190,034-0341,115-1159,0310, 135-1359,160-1639, 212-2129,231-2319, 450-4509,460-5199, 776-7769,783-7837	60-70
7	Disorders of the Digestive System	000-0099,014-0149, 070-0709,140-1599, 210-2119,230-2309, 2690-2691,2732-2733, 2735,452-4529,455-4559,4560,520-5779, 784-7858,Y102	71-84

LIST OF MAJOR AMBULATORY CATEGORIES (continued)

Initial Group#	Initial Group Name	ICDA8 Code	Terminal Group#
8	Disorders of the Genito-urinary System	016-0169,0192,112, 131-1319,174-1749, 180-1899,217-2239, 233-2379,403-4039, 580-6299,786-7867, 789-7899,792-7929, Y090,Y101	85-94
9	Disorders of the Skin and Subcutaneous Tissue	0170,0791,110-1119, 172-1739,214-2149, 216-2169,232,2322, 630-7099	95-102
10	Disorders of the Musculo-skeletal System and Connective Tissue	015-0159,0193-0196, 170-1719,213-2139, 215-2159,2320,2321, 274-2749,446-4479, 710-7389,787-7876, Y104	105-109
11	Accidents, Poisonings and Violence	800-8489,860-9999	110-122
12	Disorders of the Eye	0172,076-9789,0903, 190-1909,224-2249, 2380,360-3793,7810-7812,Y006,Y122	123-132
13	Disorders of the Ear	0173,380-3899,7813	133-143
14	Other		
	Special Conditions and Exam without Sickness	Y00-Y005,Y007-Y089, Y091-Y099,Y103,Y105-Y121,Y123-Y13,Y300-Y302	144-154
	Disorders of the Blood and Blood-Forming Organs	280-2899	
	Complications of Pregnancy, Childbirth and Puerperium	630-6789	
	Congenital Anomalies	740-7599	
	Certain Causes of Peri-natal Morbidity and Mortality	760-7719,7729,773, 774-7759,777-7799	
	Symptoms	7827,7828,788-7889, 793,7931,7938-7939, 796-7969	
	Miscellaneous	019,0199,195-1999, 200-2099,227-2289, 239-2399,448-4489, 457-4579	

-Age

-Presenting problem

-Secondary problem

-Primary diagnosis

-Presence or absence of secondary diagnosis

-Visit status

-Reason for visit

-Use of psychotherapy

The source of information relating to these variables was the NAMCS Patient Form. These variables were examined to determine what variable best explained the variance in resource use. All divisions were evaluated by physicians for clinical relevance. Three governing guidelines were used in creating APGs. [Ref. 16:p. 6]

-When partitioning new patients the use of the variable presenting problem was favored over the use of diagnosis because a primary diagnosis is usually established until the end of a visit.

-Non-clinical variables such as type of visit or referral were used whenever possible before using clinical variables such as diagnosis or presenting problem.

-Within a MAC attempts were made to be consistent in the way groups were formed. For example, if age is used as a partitioning variable in more than one place in the definition of the APGs for a particular MAC then the same age categories should be used.

154 APGs resulted from this process. These APGs were determined to be clinically meaningful and represent similar resource use with APGs.

V. ANALYSIS/INTERPRETATION

A. MOVEMENT OF HEALTHCARE INTO A COMPETITIVE ENVIRONMENT

Understanding the Federal government's interest in controlling the rising costs of healthcare and the incentives of competitive strategies, such as prospective reimbursement by DRG and copayments, the down-side of the competitive environment must be considered. The competitive environment has meant, larger co-payments for beneficiaries, less choice in selecting providers, fewer patient days for hospital stays, and a consideration of efficiency of care delivery with a diminished emphasis on the completeness or maximum effort delivered in caring for an individual patient.

Increasing co-payments can mean that access to health care is no longer equitable across social classes. Particularly for low income families, such as the lower enlisted rates in the military, co-payments bar free access to the healthcare system. This runs contrary to the original intent of Congress in its intervention into the healthcare system. Equitable access to all classes was a driving force in early legislation. This is an issue of which we must not lose sight.

Any changes made to the military healthcare system should insure that access is assured to all beneficiaries

and access is equitable across all user groups and quality of care is of prime concern in assessing these changes.

As a result of prospective payment and other incentive strategies, total patient days have declined from 280 million in 1981 to 240 million in 1985, nearly a 1.5 percent decrease. [Ref. 21:p. 35] While, in terms of cost, this is a positive movement, what does it mean in terms of quality-of-care? Patients are being moved out of hospitals sooner. Burdens on family and agencies providing home care are increased. Peer review may find quantifying a criterion for "well enough" to go home a difficult task. With efficiency, rather than total service, now of primary concern, the patient loses. For those who can afford to pay, the service and attention will be there, for those dependent on payment under a competitively structured rate "well enough" will have to do.

Under a competitive environment, the character of research is apt to change. Rather than forge head into new technologies that produce increased benefits to the patient and improve the quality of care, innovation is more likely to focus on the efficiency of current processes. Medicine as a science will advance less quickly, but become efficient.

B. BASIS FOR NAVY DRG RATE STRUCTURE UNDER CURRENT CONSTRAINTS OF APPROPRIATIONS AND COST ACCOUNTING SYSTEM

Using the cost center groupings employed in the New Jersey DRG rate structure model, an attempt has been made

to translate the cost center groupings and behavior of costs into an approach that incorporates the limitations of the appropriation structure that the Navy Medical Department faces.

Of note is the fact that while Operations and Maintenance, Navy (OM,N) and Military Pay, Navy (MP,N) personnel are indicated as 100 percent variable in several of the cost center groupings, they in actuality are not easily changed. The movement/loss of civilian positions/military billets is a laborious administrative process.

These elements of costs represent what the author considers to be minimum levels of consideration in determining an appropriate DRG rate structure.

C. CONCEPTUAL BASIS FOR NAVY DRG RATE CONSTRUCTION GIVEN CURRENT CONSTRAINTS OF COST ACCOUNTING AND APPROPRIATION STRUCTURE

In order to collect costs that can be used for establishing DRG rates for the Navy Medical Department and for monitoring of hospital performance by hospital management, the author proposes the collection and allocation of costs of hospital care using the following categories of cost collection pools and indicated bases for allocation:

Direct inpatient care cost center groupings

Ancillary costs (inpatient only)-100% variable

OM,N personnel
MP,N personnel
OM,N consumables and other
OM,N expense equipment <$25K

Prior to patient level accounting, allocate by weighted unit of activity to MDC or DRG. After patient level accounting, charge directly.

Patient care costs (inpatient only)-100% variable

OM,N personnel
MP,N personnel
OM,N consumables and other
OM,N expense equipment <$25K

Prior to SOI adjustment, allocate by patient day. After SOI adjustment allocate by adjusted patient day.

General services cost centers in support of direct patient care-100% variable

OM,N personnel
MP,N personnel
OM,N consumables and other
OM,N expense equipment

Allocate to cost centers by activity base of each general services cost center.

General services costs in support of administrative support cost centers-100% fixed

OM,N personnel
MP,N personnel
OM,N consumables and other
OM,N expense equipment <$25K

Transfer costs to administrative support costs

Administrative support cost centers-100% fixed

OM,N personnel
MP,N personnel
OM,N consumables and other
OM,N expense equipment <$25K

Allocate to direct patient care (inpatient and out-patient) cost centers based on application rate of administrative support costs/total direct patient care cost center.

Capital equipment costs-OP,N>$25K

Without a methodology to amortize, keep out of DRG rate. If amortized, allocate to benefitting cost center.

Capital facilities costs-OM,N minor construction and Military Construction.

Without a methodology to amortize, keep out of DRG rate structure. If amortized, allocate to benefitting cost center.

D. INFORMATION REQUIRED FOR COST CENTERS AND BASIS FOR ALLOCATION

For proper cost accounting for hospital costs and subsequent allocation of costs to benefitting cost centers, the following information must be collected as part of the integrated management control system and manipulated as indicated:

Ancillary cost centers

OM,N personnel
- filled positions
- wage rate for position
- hours worked by position
- weighted tests by DRG

Establish total OM,N personnel costs for cost element, allocate over base of weighted tests to DRG by weighted tests per DRG

MP,N personnel
- filled billets
- composite rate for person in billet
- hours worked by person in billet
- weighted tests by DRG

Establish total OM,N personnel costs for cost element allocate, over base of weighted tests, to DRG by weighted tests per DRG

OM,N consumables, expense equipment and misc.
- cost for period
- weighted test by DRG

Allocate cost for cost element, over base of weighted tests, to DRG, by weighted tests per DRG

Patient care cost centers

OM,N personnel
filled positions
wage rate for position
hours worked by position
patient days by DRG

Allocate total OM,N personnel costs for cost element, by base of patient days, to DRG by patient days per DRG

MP,N personnel
filled billets
composite rate for person in billet
hours worked by person in billet
patient days by DRG

Allocate total OM,N personnel costs for cost element, by base of patient days, to DRG by patient days per DRG

OM,N consumables, expense equipment and misc.
cost for period
patient days by DRG

Allocate cost for cost element, over base of patient days, to DRG by patient days per DRG

General services cost centers

OM,N personnel
filled positions
wage rate for position
hours worked by position
units of activity (UA) for cost centers served

Allocate total OM,N personnel costs for cost element, by base of total UA, to serviced cost centers by UA per cost center

MP,N personnel
filled billets
composite rate for person in billet
hours worked by person in billet
UA for cost centers served

Allocate total MP,N personnel costs for cost element, by base of total UA, to serviced cost centers by UA per cost center

OM,N consumables, expense equipment and misc.
cost for period
UA for cost centers serviced

Allocate cost for cost element, over base of total UA, to serviced cost centers by UA per cost center Administrative support cost centers

OM,N personnel
filled positions
wage rate for position
hours worked by position
total direct patient care cost by DRG after all other allocations

Allocate total OM,N personnel costs for cost element to DRG on a basis of percentage of cost of direct patient care applied to DRGs divided by total direct patient care costs

MP,N personnel
filled billets
composite rate for person in billet
hours worked by person in billet
total direct patient care cost DRG after all other allocations

Allocate total MP,N personnel costs for cost element to DRG on a basis of percentage of cost of direct patient care applied to DRGs divided by total direct patient care costs

The need for such detail in the OM,N and MP,N personnel cost elements is that, MP,N costs are not directly funded. MP,N costs are born by Naval Military Personnel Command, however the utilization of these people must be considered in the operation of a hospital. No hospital will have the same mix of military, civil service and contractor services. By being able to calculate the MP,N/OM,N cost ratios by command by DRG, the differences in staffing and levels of direct (OM,N) funding can be realized.

It is apparent, given the current multi-appropriation structure and lack of patient level accounting systems, that the construction of a reasonably accurate, useful, DRG rate

structure is not a reasonable expectation. Once constructed, the ability to make trade-offs in personnel (military and civilian), capital equipment and facilities, in order to achieve efficiencies, in providing care for DRG specific courses of treatment, is severely limited by the appropriation structure. Incentives to cut costs are not realizable at the activity level. Additionally, one concern of the Grace Commission's committee or the management of federally funded hospitals was the omission of facilities related capital costs from the cost accounting system. [Ref. 17:p. 68] Without some method to amortize construction and other capital investment costs in DOD accounting, this concern remains unaddressed.

E. CURRENT DOD COST ACCOUNTING SYSTEM

The Uniform Chart Of Accounts is DODs current method of cost collection. This system collects workload and expense information for six functional categories:

- -Inpatient
- -Outpatient
- -Dental
- -Ancillary
- -Support
- -Special Programs

The Ancillary and Support costs are subsequently stepped down to the other four categories.

This UCA system can serve as the framework around which a comprehensive, patient level cost accounting structure can be built. Problems with the system, as it currently exists revolve around reporting total cost. The Grace Commission [Ref. 17:p. 68] Private Sector Survey on Cost Control, Report on Federal Hospitals found what it considered two areas of concern with UCA information. The first concern is that UCA allows the allocation of costs to the Special Programs category that are in reality part of routine care operations. The second concern is the exclusion of overhead expenses relating to headquarters, malpractice, insurance, military benefits and training commands from inclusion in UCA cost data.

Other concerns relating to the usefulness of UCA data, as now compiled, are usefulness to management at the activity level and timeliness. UCA data is compiled at the activity level quarterly, summarized and forwarded to headquarters and then screened before being provided back to activities in a usable format. Because of the aggregation of statistical military pay information and capital expense information, not controlled by the activity, with the expense information from operating funds, controlled by the activity, it is extremely difficult for activity heads to determine where accountability for costs lie. Since UCA was designed primarily as a tool for DOD to report to Congress,

the information and the way it is reported are not particularly useful to individual commands.

Local commanders base their decisions primarily on OM,N funding considerations. The manner in which manpower and capital expenditures are now centrally controlled, makes the only discretionary portion of costs controllable at the hospital level, operating funds. There is no standard configuration for hospital OM,N cost reporting.

Local management philosophy and the differing capabilities of accounting systems from one location to another, dictates how cost centers are organized.

Congress introduced payment by DRG to create incentives for controlling costs. Controlling costs under DRG prospective payment assumes the ability of hospital management to identify these costs by DRG and patient and then the ability to change either the costs for care in a DRG or alter the case mix. These case mix changes would have hospitals concentrate on patients in DRGs that they can treat cost effectively.

F. SUMMARY

The lack of a patient level cost accounting system to permit proper management analysis has already been established. The inability of hospital commanders in DOD to make many of the tradeoff decisions in order to control costs has also been cited. With management of military personnel and civilian man years and control of capital

expenditures for facilities and equipment centralized at the Service level, hospital commanders and left with few ways in which to approach the issue of efficiency in providing healthcare. Given this environment, it is incumbent on higher levels of decision making to analyze the distribution of resources.

VI. IMPLICATIONS, CONCLUSIONS AND RECOMMENDATIONS

A. IMPLICATIONS

Public Law 99-661 mandates the use of DRGs as a resource allocation tool in DOD. This must happen. It is law. In order for DRGs to be used in this manner, the workload and cost allocation systems of DOD must be much more highly refined than at present.

The intent of DRGs is to promote efficiencies in providing healthcare. As identified by the Grace Commission [Ref. 17:p. 65], the lack of central coordination of DOD healthcare policy has fostered the operation of three, autonomous, service unique healthcare delivery systems. The staffing, accounting and operational aspects of these three systems differ. This has resulted in duplication of effort within geographic areas and resulted in inefficiencies in providing healthcare at the DOD level. It follows that, in order to address these issues of disparities between the services and lack of central policies, a strong central DOD organizational element must exist to create and implement healthcare policy.

B. CONCLUSIONS

Based upon research performed by the Research Department, Naval School of Health Sciences [Ref. 9], DRGs

represent a valid tool for Navy hospitals to use in resource allocation and performance evaluation. Variables relating to resources consumed, in this case length of stay, were found to correlate significantly between cases used by the Yale group in establishing DRGs and the a sample of Navy cases. However, the informations systems to support case mix management must be forthcoming in order for the benefits of DRG management to be realized.

Sensing the lack of direction and commitment at the DOD level to approach the issue of rising healthcare costs, in a proactive fashion, Congress has legislated the use of a prospective reimbursement methodology for the DOD health-care system.

In order to implement this DRG based methodology for resource allocation, DOD must address its problems in the areas of:

- -lack of standard accounting systems
- -lack of patient level accounting systems
- -lack of information system on which to base ambulatory visit resource allocation system
- -lack of flexibility in appropriation structure
- -lack of flexibility in administrative policies governing manpower issues

DOD has requested (Appendix) a phased implementation of DRG based resource allocation. This implementation would proceed as follows:

FY 1988

-integrate current cost accounting and workload data

-develop DRG resource allocation model

-develop hospital level information system to support case

-mix management

FY 1989

-allocate and budget for impatient care based on DRGs

FY 1990-1991

-refine case-mix management capability

-introduce patient-level cost accounting

FY 1992 and beyond

-address issues of appropriation process and structures of Services that affect management flexibility

Implementation of DRG based resource allocation also brings with it the use of DRGs as a means of evaluating utilization and quality assurance/risk management. The clinical communities within DOD need to be involved in the development of evaluation criteria in order that they, the link in the system that directly determines resource use at the patient level, have an understanding and appreciation for the use of DRGs in allocating resources to their hospitals.

C. RECOMMENDATIONS

1. DOD should proceed as quickly as possible to develop the needed cost and workload information systems to support resource allocation by DRG.

The problems addressed in Appendix A, in regard to the need for standardized cost accounting across the services, are a major impediment to using DRGs for resource allocation and performance evaluation. The integrated hospital information system known as the Composite Health Care System (CHCS) should include all of the elements necessary to permit case mix management by DRG and allow the development of an ambulatory visit group methodology for resource allocation and performance evaluation.

2. DOD should establish a central health entity. The Grace Commission has recommended that a central health entity be established to address issues of:

-duplication of services
-duplication of facilities
-lack of standard accounting systems among Services
-lack of standard staffing standards among Services
-underutilization of Service's healthcare facilities
-lack of planning and policy element for DOD healthcare

The creation of a central health entity and its subsequent policies regarding the issues above would provide DOD the means of getting beyond service rivalries

and service unique traditions and addressing the issues of efficiency and effectiveness of healthcare in DOD.

It is only through a strong, centrally controlled effort that the problems raised in dealing with implementation of the provisions of P.L. 99-661 and other healthcare policy issues can be effectively met. Anything less than a central health entity precludes full, timely and consistent treatment of healthcare issues by the Services.

The mandate of P.L. 99-661 to use DRGs for resource allocation has served not only to introduce a management tool, but implementation of this tool has forced DOD to look critically at its healthcare policy apparatus and information systems.

APPENDIX

A REPORT TO CONGRESS
ON THE ALLOCATION OF RESOURCES
USING DIAGNOSIS RELATED GROUPS

OFFICE OF THE
ASSISTANT SECRETARY OF DEFENSE
FOR HEALTH AFFAIRS

MAY 1987

Public Law 99-661 stipulates that a Diagnosis Related Group (DRG) based system be established as the primary basis for resource allocation within DoD medical treatment facilities (MTFs) for inpatient treatments after 30 September 1988.

Having devoted substantial staff resources toward satisfying the congressional direction regarding DRGs, we have identified many issues that must be resolved before a DRG based allocation mechanism can be initiated systemwide. Problems with the quality of the diagnoses and procedure coding and differences in the availability of data among the Services present significant, indeed insurmountable, obstacles to creating a comprehensive inpatient resource allocation methodology by 1 October 1987. Consequently, a phased implementation is proposed beginning with the development and testing of an allocation simulation model in FY 1988 and actual resource allocation by the Services beginning 1 October 1988. This approach proceeds to accomplish legislative intent as soon as is possible.

Additionally, we must conclude that the Military Health Service System (MHSS) cannot establish DRGs for outpatient services during FY 1989 because we lack both a data collection capability and a valid ambulatory visit group (AVG) methodology. Currently, there is no nationally accepted model for collecting ambulatory workload. In the May 1988 report to congress, these problems will be discussed more completely and a phased plan for implementation of an AVG system presented.

The phased plan for implementing inpatient DRGs includes activities for FY 1988-1992 and beyond. During FY 1988, the MHSS will develop the following: 1) a program to integrate financial, Medical Expense and Performance Reporting System (MEPRS), and biostatistical data: 2) a resource allocation and simulation model; and 3) MTF level information systems to support case-mix management. During FY 1989, the Services will begin to allocate and budget for inpatient resources based on DRGs. The activities in FY 1990-1991 will involve improvements in the sophistication of the case-mix management capability with the development of a patient level cost accounting system and the implementation of the Composite Health Care System (CHCS). During FY 1992 and beyond, efforts will center on evaluating the need for structural changes in the budgeting and appropriations process and within the individual Services to promote increased management flexibility.

There is no doubt that the implementation of a DRG resource allocation system represents a significant change in how the Services presently manage. Adapting a prospective reimbursement model to a military system which has limited management flexibility and receives resources through multiple appropriations presents a

challenge. We are eager to satisfy congressional intent and overcome the obstacles to implementing the system but, must point out that a considerable investment in time, money, and manpower will be required to develop the necessary MTF level case-mix management capability. Additional funds, as yet unprogrammed, are necessary for increased personnel, training programs, and enhancements to current information systems. At this stage of our efforts, we have not been able to quantify the resources required over the next several years to implement a resource allocation and management system. Until these unprogrammed resources are identified, it is not entirely clear that the anticipated benefits will justify the investment of resources.

Assuming that the Congress shares our concerns, it may wish to reconsider and revise the time frame identified in the present statutory requirements for implementation of DRGS in the direct care system.

I. INTRODUCTION.

This report informs Congress of plans within the Department of Defense (DoD) to allocate resources utilizing Diagnosis Related Groups (DRGs) in compliance with Public Law 99-661; Title 10 USC, Chapter 55, Section 1101, which stipulates that a DRG based allocation system by established for inpatient treatments after 30 September 1987 and for outpatient treatments after 30 September 1988.

The perceived benefit of implementing DRGs within DoD is supported by the national decline in both length of stay (LOS) and admission rates following adoption of DRGs by Medicare for inpatient hospital reimbursement. The cost savings that occur depend on the capability of individual civilian hospitals to respond to the efficiency incentives in the Prospective Payment System (PPS). However, unlike the separate relationship that exists between the U.S. Department of Health and Human Services (HHS) and its reimbursed provider hospitals, DoD manages and budgets for its medical treatment facilities (MTFs). Although much simpler to design and implement, it would be counterproductive to impose a DRG-based allocation scheme on the Services unless a parallel case-mix management system is also constructed. Until the investment cost required to provide a patient level case-mix management capability is determined and the expected cost savings specified, the cost/benefit of implementing DRGs remains an open question.

In addition to concerns with the cost/benefit tradeoff of adopting DRGs, the Congress should be aware of our concern over the implementation dates in the statutory language. It does not appear feasible to implement fully a DRG allocation model by 1 October 1987. Problems with the quality of the diagnoses and procedure coding and differences int he availability of financial data among the Services present significant obstacles to creating a comprehensive inpatient resource allocation model. Therefore, a phased implementation approach appears more prudent.

This report discusses the major system changes envisioned if DRGs are to be used as the primary criteria for allocating inpatient resources. Section II presents background information on the resource allocation process and MTF management system in terms of the present structural constraints to implementing DRGS; Section III discusses a proposed phased implementation plan; and Section IV deals with issues related to the unprogrammed funding for this requirement and the difficulty anticipated with developing diagnosis related groups for outpatient services.

II. BACKGROUND

Before describing our approach to implementing a DRG based allocation system, we would like to describe unique aspects of the MHSS which must be considered in adopting a civilian reimbursement system. Unlike the civilian health care arena, the major mission of the MHSS is to maintain medical readiness for wartime. Wartime demands, which are paramount, may conflict with peacetime health care considerations. As a result, decisions to support medical readiness may not appear to be cost effective when viewed purely in terms of civilian health care economics. Although Congress has excluded medical readiness requirements from allocation using DRGs, the current MHSS financial and information systems do not clearly distinguish between resources consumed by readiness demands and those consumed by peacetime requirements. In fact, the portion of hospital resources that are consumed by readiness related activities is largely speculative and, depending on how one wants to define readiness, could range from a very small portion of direct care funds to all funds spent in the direct care system. In addition, each medical department responds differently to its unique service specific mission requirements for mobilization and readiness. As a result, there exists a very different mix of military and civilian staff across Services and even within each Service depending upon the location of the MTF. All of these disparities complicate efforts to develop a uniform allocation system which is responsive to the unique medical readiness needs of each medical department.

Another unique aspect of the MHSS is the budgeting and appropriations process. Within this process are several constraints which may limit the potential effectiveness of a DRG based system. For instance, MTFs are supported by several appropriations and categories of funding many of which, such as military salaries and military construction, are controlled by program managers other than the Service medical departments. funds may not be spent for other than the purpose appropriated. For instance, funds appropriated for military salaries may not be used to purchase equipment or to hire civilian personnel nor may "procurement" funds be used to contract for commercial services. MTF commanders lack the flexibility to shift resources among appropriations in order to reduce costs or improve the quality of care. Since, in general, only the operations and maintenance appropriation can be regulated by MTF commanders, substantial resources remain outside their control.

The financial accounting systems of the three Services present another major hurdle. The medical departments obtain their accounting support from their respective Services which have independently designed each system. None of the current financial structures are capable of providing the level of detail necessary to facilitate DRG cost analysis. In order to respond appropriately to the productivity incentives inherent within a DRG allocation

model, a MTF commander must be able to manage the cost per patient case within a DRG. A case management strategy requires a high degree of sophistication in adjusting for differences among patient severity, provider practice patterns, MTF management of the case, and the quality with which the care was delivered. Case management also requires the integration of extensive clinical, management, and financial data files and the development of a patient level cost accounting system to ensure that case productivities are compared in an appropriate fashion. The developed systems must be uniform, decentralized and detailed enough to support case mix management.

Finally, the civilian DRG based reimbursement system varies significantly form the current federal allocation process for distributing funds through agencies to activities. Three key differences are evident. First, the Prospective Payment System (PPS) reimburses hospitals for care provided to patients in specific DRGs based on the average cost of providing that care. Under a resource allocation system, the military distributes a fixed budget to facilities based on the ratio of each hospital's workload to the total workload. The actual cost of providing care to individual patients is not considered.

Second, there is a major difference in the ability of the MHSS to respond to incentives. Under PPS, hospitals can improve their profitability by taking specific management actions to reduce the costs associated with care in a particular DRG and are able to keep the difference as profit. In an open, competitive reimbursement system, the savings retained by one hospital are not affected by the losses incurred at another hospital. In a closed budget system, an increase in funds for one hospital is most often offset by a decrement to another.

Third, within PPS each civilian hospital functions independently and has the option of developing or acquiring software packages to enhance utilization review and to manage clinical and financial data based on DRGs. Within the MHSS there is a requirement to allocate and manage resources across a multi-hospital system. Consequently, the need for coordination and centralized funding slows the response time for delivering systems support to our MTFs when compared to individual civilian hospitals. In responding to the new requirement for MTF level case mix management, the Defense Medical Systems Support Center (DMSSC) has already undertaken several initiatives to enhance current information system capabilities.

In summary, the use of DRGs will offer a variety of management benefits, such as the ability to evaluate provider and management practices using length of stay and cost per case. Yet, the real benefit of a prospective DRG system lies in the ability of the MTF commander to control and manage individual patient costs while

responding to incentives for efficiency and quality care. To take advantage of these incentive, the following must be addressed:

improve definitions of medical readiness and peace-time resources; investigate increased management flexibility within the appropriations process; move towards a patient level cost accounting system; and recognize the differences between a civilian and MHSS environment which limit full application of a DRG prospective reimbursement model.

III. PLAN FOR THE ALLOCATION OF RESOURCES USING DRGs

In order to provide a balance between resource allocation and MTF management enhancement, a phased approach for implementing the DRG legislation is planned. During the sort term, which includes fiscal years 1988 and 1989, the Services' databases will be refined and integrated, MTF level management software will be developed, and a resource allocation simulation model will be created for testing policy decisions. As far as actual resource shifts, FY 1988 will be a neutral year with limited allocation by the Services to begin in FY 1989. In the midterm phase, FY 1990 through FY 1991, full resource distribution decisions based on the DRG allocation methodology will be made by the Services. During the long term phase, FY 1992 and beyond, the availability of the Composite Health Care System (CHCS) will allow the MTF to link specific resource management capability at the hospital level.

It should be emphasized that a phased approach is not without precedent. The Health Care Financing Administration (HCFA) minimized the impact of DRGs in the early years by limiting the reimbursable categories, excluding certain types of care, and initiating an incremental approach for reimbursement per DRG by specifying a regional and national blend which was phased in over a four year period. The irrefutable value of a planned and tested resource allocation model argues for a phased approach. The activities to be accomplished during the three phases are discussed in further detail.

A. Short Term Phase - FY 1988 - 1989

1.0 Activities During FY 1988

1.1 Develop Integrated Data - During this year inconsistencies in the way the three Services handle and report inpatient biometrics data will be addressed. Biostatistical issues regarding the length of time to close-out inpatient records, the quality of the diagnosis and procedure coding, and how DRG reporting will be handled at the MTF level and the Service s financial systems to separate out costs associated with direct health care as well as the costs that should be explicitly excluded from resource allocation based on DRGs. A program to integrate the Services'

financial, Medical Expense and Performance Reporting System (MEPRS), and biostatistical data will be designed.

1.2 Develop Resource Allocation and Simulation Model- Development of a DRG-based allocation model involves major policy decisions that affect the design, scope, and eventual impact of the allocation system. These include computing DRG relative weights, selecting an approach to hospital grouping, excluding certain DRGs, determining the amount of resources to be allocated, and combining inpatient and outpatient allocation models.

In developing the allocation model. computation of relative DRG weights for the military is a crucial step. Initially, the inpatient weight for each disposition will be based on 1987 HCFA DRG weights refined using MEPRS data to reflect total distributed costs of operation. During FY 1988 an attempt will be made to develop DoD unique weights. Part of this analysis will include comparing DoD patient demographics and DRG distributions with data from state, CHAMPUS, AND MEDICAID payers in order to evaluate the reasonableness of DoD weights.

A set of peer groups for DoD medical facilities will be established to account for differences in cost per DRG attributable to facility uniqueness. Variables to be considered in the development of these peer groups include catchment area population characteristics, MTF condition, MTF size, location (geographical), teaching status, major mission differences, and workload mix differences (inpatient versus outpatient).

The experience of the civilian community has demonstrated that certain facilities, case types and costs are difficult to classify and should appropriately be excluded. Psychiatric, alcohol rehabilitation, and drug detoxification cases and capital and medical costs are examples. Decisions on exclusions will be made based on an analysis of the Services' data sets as well as constraints within the budget and appropriations process. Alternative allocation strategies will be developed for those costs or case types excluded from the standard methodology.

For unusually expensive cases, as well as for short-stay low cost cases, workload credit will be given on an adjusted per diem basis rather than assigning the standard weight for the disposition. An adjustment must also be determined for transfers between military medical treatment facilities and for active duty personnel being retained as inpatients due to medical separations.

The amount of resources to be allocated based on inpatient DRGs will be identified by a financial steering group composed of representatives from each of the Services and OASD (HA). Due to the current appropriations process, the inability of information systems to support case management, and the limited management flexibility at the MTF level, the initial scope of resources to be allocated will be relatively small. Regardless of the amount

initially allocated, the total cost of direct health care at a facility will require significant changes to the existing information systems before relevant data is readily available.

Since the current allocation and appropriations process does not separate inpatient from outpatient direct care, the workload and cost of ambulatory care must be included in an overall allocation model. While the inpatient portion will be based on a prospective DRG-based allocation scheme, the outpatient allocation will remain on a retrospective cost basis until an ambulatory visit group (AVG) methodology can be developed.

During development of the allocation methodology, a resource simulation model will be created to explore the financial impact of alternative policy decisions. The resource allocation effects resulting from decisions concerning the appropriate outlier values; workload credit given for zero bed day admissions; and credit for ambulatory surgery and transfers between facilities can be made by testing different scenarios. This model is essential since it provides a mechanism for identifying the effects of policy decisions that may have unintended and inappropriate adverse resource impacts.

1.3 Develop MTF Level Management Systems - In order to facilitate case management within the MTF, automated systems must be designed to support productivity and financial variance analyses. Ultimately, the system should merge clinical and financial data, link specific resource use with the individual patient, and support multiple users of the data. During FY 1988 DRG management software and related "tools" will be developed and/or procured to support MTF level decision making. The proposed case mix system contains five modules which are considered essential for the implementation of a DRG based allocation and management system.

A precertification module will provide the capability for the admission DRG to be screened against DoD, Service, or MTF criteria before the admission is authorized. Emphasis is on the inappropriate admission which, if prevented, will enhance both quality and cost effective care. Complete and sophisticated precertification also provides the capability to satisfy the majority of third party insurance payers.

An encoder module will be added to improve the coding process. The accuracy of the diagnoses and procedure coding affects the DRG assignment which in turn determines the amount of budget allocation. DoD MTFs presently do not possess the number and necessary skill mix of clinical record administrators or technicians to accurately and reliably code the medical record. While not a substitute for skilled personnel, a protocol driven encoder will provide disease process logic to assist in the appropriate coding of diagnoses and procedures. Even with an

encoder, the need for significant salary increases for clinical records personnel must be addressed.

Automated support in the form of a DRG Grouper is required to group patients into the appropriate DRG based upon diagnoses, procedures, age, sex and comorbidities/complications. The Grouper will allow on-line DRG assignment and will support DoD unique weights and codes.

To aid in the concurrent management of the patient case, an automated system will be provided. This Utilization Review "Tickler" reminds the provider staff that the patient is approaching the selected length of stay percentile for a specific DRG and, unless a discharge is not medically warranted, the patient's discharge may be anticipated.

To allow MTF personnel to examine variations in case productivity and to direct appropriate action while maintaining the quality of patient care, a retrospective case review module will be developed. This capability to conduct sophisticated case-mix analyses is vital for identifying management opportunities to reduce costs and to promote quality care.

1.4 Provide Service Guidance - DoD recognizes that the allocation of resources to the medical treatment facility level must be performed by the Services, During FY 1988, guidance will be provided to the Services to establish a uniform medical resource allocation methodology and to develop a case-mix management capability within the MTFs. Standard and optional reports will be developed through a series of work groups, meeting with professional and management specialists, and contracts with professional review organizations in order to draw on the experience of the civilian community. Emphasis will be on the creation of a bottom up reporting structure which is responsive to the needs of facility managers wile stressing the relevant aspects of efficiency and effectiveness in the provision of health care. In addition, OASD (HA) will initiate actions required to develop and deploy the standard automated systems necessary for the Services to implement the DRG resource allocation and management models. The Services ill be required to implement the standard systems and to develop and submit a resource allocation implementation plan consistent with the guidance and milestones promulgated by OASD (HA).

2.0 Activities During FY 1989

2.1 Develop Integrated Data - The definition and integration of biometrics and financial data within and among the Services will continue.

2.2 Implement Resource Allocation Model - The Services will begin to allocate resources based on the model developed during the simulation in FY 1988. Based on OASD (HA) guidance, the

Services will be required to submit budget displays for FY 1990 that incorporate DRG's.

2.3 Develop MTF Level Management Systems - The proliferation of the case-mix software will continue. By the end of FY 1989, all inpatient facilities will have the software installed.

B. Midterm Phase FY 1990-1991

The midterm phase will be one of growth and maturation. During this phase, five principal events are expected to occur.

-- First, the categories of resources allocated under inpatient DRGs and the outpatient measure will be expanded to the feasible limit allowed by the budget and appropriations process;

-- Second, the financial systems will be adjusted to meet the increased demand for a patient oriented costing system. As it may be too costly to modify the Service's accounting systems to support case-mix management at the patient level, developing or purchasing a patient level cost accounting module may be desirable and will be explored;

-- Third, there will be increased emphasis on the identification of mobilization and readiness related activities and their impact on patient care and MTFs;

-- Fourth, information and decision support systems and other management tools not presently available will evolve. Performance reporting will become refined through the use of standard and ad hoc report capabilities appropriate for each level of the organization;

-- Finally, the sophistication of the case mix management capability will be increased by adding a patient severity index, introducing more complex resource utilization data with the availability of CHCS, and developing strategies for ambulatory case management.

C. Long Term Phase FY 1992 and Beyond

The extent to which the DRG allocation process can be implemented will be constrained by the current appropriations and allocation process, the present Service financial accounting structures, and differences among the Service medical departments. During this phase the feasibility of a single appropriation or granting authority to move funds between appropriations will be evaluated as avenues to expand the resource allocation scope. Increased emphasis will be placed on identifying and resolving remaining differences among the Services that affect case-mix management.

IV. Major Issues

1.0 Unprogrammed Requirements

Implementation of a DRG resource allocation system will be costly. Additional funds, as yet unprogrammed, will be necessary for personnel increases, training programs, and enhancements to current information systems. These three areas are critical to development and implementation of a DRG allocation and management system.

It is anticipated that OASD (HA) and the Service headquarters will require additional personnel to evaluate the DRG data for trend analysis and rate construction, resource forecasting, access/quality of service analysis, and impact on the beneficiary population. Based on the experience of states that have implemented DRG systems, six staff roles will become crucial: hospital accountant, senior analyst programmer, statistician, hospital/ health policy specialist, professional in medical record coding and technology, and professional involved in active utilization review. At the MTF level, skilled personnel to code clinical records, to coordinate the DRG project, and to analyze the data will be required for effective implementation of the case mix management system.

For all MHSS personnel structured training sessions will be required for successful implementation and transition of the DRG incentives to obtain improvements in productivity within the MTFs. This requirement for training is compounded by the complexity of the management and allocation models and the extent to which it will effect all administrative and clinical areas. An intense short term training effort will be required initially to prepare the MTFs for the project. Additional training will occur as the phased expansion of the resource allocation process develops. DRG information should be added to all of the Services structured training sessions.

Lastly, before a patient case-mix management system is possible, procurement of clinical management software and extensive changes to the current financial systems are required. While the foundations of the existing automated systems can be used, the hardware and software requirements to support allocation of resources using DRGs far exceeds existing capabilities. At present, the extent to which additional hardware will be necessary is unknown.

2.0 DRGs for Outpatient Services

Unlike the model available for the inpatient setting, there is no nationally accepted methodology for classification of ambulatory workload. The Health Care Financing Administration (HCFA) has made this a top research priority and has funded several

projects in an effort to quantify resource consumption in ambulatory care. The major projects include: Ambulatory Visit Groups (AVGs), being developed by Health Systems Management Group, Yale University; Patient Management Categories (PMCs) being developed by Blue Cross of Western Pennsylvania; Emergency Department Groupings (EDGs) being developed by UCLA; and Products of Ambulatory Care (PACs) being developed under contract by the New York Health Department. In addition, an attempt is being made by the Subcomittee on Statistical Aspects of Physician Payment Systems, National Committee on Vital and Health Statistics, to refine and widely implement a Uniform Ambulatory Medical Care Minimum Data Set (UAMCMDS). No approach is emerging as a front-runner. More importantly, each project has identified the real dearth of sufficient and reliable outpatient visit data from which to develop a useful classification system and the uniform lack of automated data collection systems.

Within DoD there exists a parallel problem in capturing patient level ambulatory care data. If we interpret the legislation as requiring detailed (diangosis) and treatment specific) patient level classification of workload, there does not exist within DoD a capability to capture this data. Without this data collection capability and a tested, accepted AVG methodology, the MHSS cannot anticipate being able to establish diagnosis related groups for outpatient services soon after September 30, 1988. Currently, plans for FY 1989 center on selecting patient types, services, or procedures which require separate accounting and/or unique workload credits based on the Army's ambulatory care data base pilot study. Additional sophistication in ambulatory classification and weighting will be phased in as available automation allows.

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