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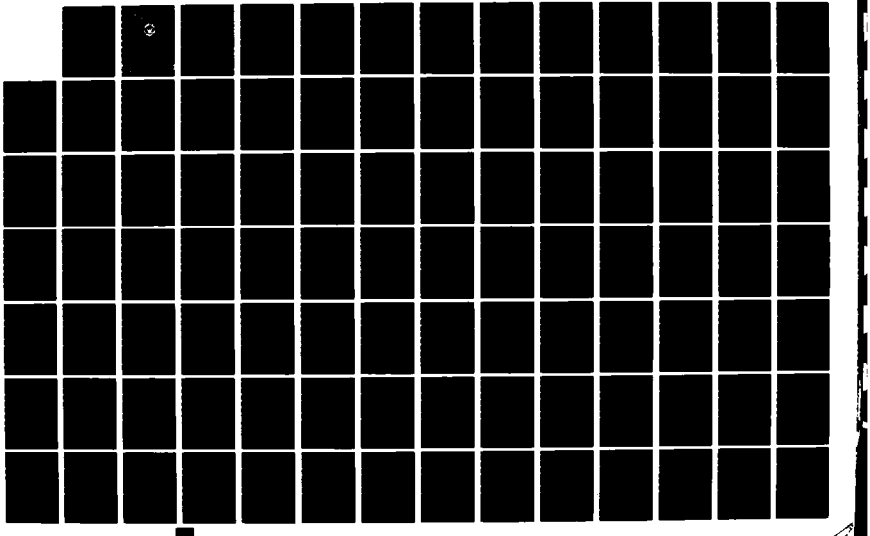

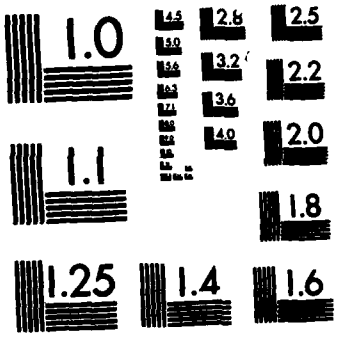

NAVAL POSTGRADUATE SCHOOL

Monterey, California

THESIS

THE UNIFORM CHART OF ACCOUNTS
AND ITS USE IN MANAGEMENT CONTROL

by
Tommy J. Little
and
John P. Taylor

October 1982

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Full implementation of the Uniform Chart of Accounts (UCA) for Department of Defense (DOD) medical operations was accomplished by DOD on 1 October 1979. Both before and after UCA implementation, managers of health care delivery activities expressed concern about two of UCA's fundamental objectives: first, over the appropriateness of using UCA generated data in making comparisons of internal, interservice, intraservice, and

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civilian sector cost performance; and second, on the use of UCA data as a mechanism for measuring efficiency of operations. This thesis is an attempt to determine whether the prescribed cost accounting process results in information that can be used for these purposes, by either managers at the activity level, or by planners and decision makers at the Assistant Secretary of Defense for Health Affairs in the fulfillment of its DOD medical operations oversight function. The major approach is a critical analysis of the data generated by UCA. The limitations of the current process are discussed and the conclusions reached on the basis of the research and analysis are provided.

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The Uniform Chart of Accounts and its Use in Management Control

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ABSTRACT

Full implementation of the Uniform Chart of Accounts (UCA) for Department of Defense (DOD) medical operations was accomplished by DOD on 1 October 1979. Both before and after UCA implementation, managers of health care delivery activities expressed concern about two of UCA's fundamental objectives: first, over the appropriateness of using UCA generated data in making comparisons of internal, interservice, intraservice, and civilian sector cost performance; and second, on the use of UCA data as a mechanism for measuring efficiency of operations. This thesis is an attempt to determine whether the prescribed cost accounting process results in information that can be used for these purposes, by either managers at the activity level, or by planners and decision makers at the Assistant Secretary of Defense for Health Affairs in the fulfillment of its DOD medical operations oversight function. The major approach is a critical analysis of the data generated by UCA. The limitations of the current process are discussed and the conclusions reached on the basis of the research and analysis are provided.

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I. INTRODUCTION

A. BACKGROUND

In December 1975, the Department of Defense (DOD), the Department of Health, Education, and Welfare (HEW), and the Office of Management and Budget (OMB) completed the Report of the Military Health Care Study [Ref. 1]. The Study, a two and one-half year examination of the military health care delivery system, was commissioned at the direction of the President in August, 1973. Areas of concern included:

1. The "anticipated physician shortage" resulting from an end of the "Doctor Draft" in 1973.

2. The "quality of systems for planning, management, and evaluation" of the Military Health Services System.

3. The "increasing overhead and support costs" associated with providing health care to the military establishment.

4. "The social equity of military medical care and compatability with national health care objectives." [Ref. 1: p. 3]

The Military Health Care Study (MHCS) contains nine major recommendations "for more effective and efficient delivery of military health care services in the continental United States (CONUS) fixed military medical facilities during peacetime" [Ref. 2: p.1-9]. The MHCS also criticized

the "lack of adequate population, workload and cost data," and the lack of "comparable information systems" among the Services [Ref. 1: p.7].

Four specific findings of the study which gave impetus to the creation of the Uniform Chart of Acounts (UCA) were as follows:

1. Separate and independent information systems and data bases are maintained.

2. Different interpretations of the definitions of common data elements are made.

3. Inconsistencies, definitional problems, and non-comparable inputs provide three divergent output modes.

4. Valid comparisons of systems operations cannot, therefore, be made. [Ref. 2: p.1-9]

The MHCS therefore recommended that data be collected and information developed in such a manner that a cost per beneficiary could be computed and used as a measure of efficiency and effectiveness. As a result of these recommendations DOD established a tri-service working group in July 1976 to develop a uniform cost reporting system. This system, the Uniform Chart of Accounts for Military Medical and Dental Treatment Facilities, was implemented at ten test sites on 1 October 1978 and throughout DOD on 1 October 1979.

The stated purpose of UCA "is to provide consistent principles, standards, policies, definitions, and requirements for expense and performance accounting and reporting by DOD fixed military medical facilities" [Ref. 2: p.1-5]. UCA was also intended to assist health care managers "in the measurement of productivity, the development of performance and cost standards," the promotion of "cost effectiveness," and the identification "of areas requiring management emphasis" [Ref. 2: p.1-7]. It was believed that these goals could be accomplished by developing common standards for measuring and reporting cost and performance data. These standards would also permit comparisons between military treatment facilities, improve the identification of medical capabilities, and improve potential areas for interservice support [Ref. 2: p.1-7].

B. PURPOSE

A considerable amount of time and effort is required at medical treatment facilities to gather and process the data required by UCA. However, its appropriate use by management at the local activity and by health care planners and decision makers at higher authority has not been fully explored. In 1979 Olson examined the UCA data generated by the ten

test sites to determine if meaningful cost-performance relationships could be developed which would facilitate comparisons of hospital performance. Several alternatives were examined and recommendations were made which, in Olson's opinion, would make such comparisons more meaningful to managers at all levels. [Ref. 3]

It is the intent of this thesis to critically analyze UCA to estimate the value of the information being generated and its appropriate role as a tool for management control and resource allocation. It is important that the fundamentals of this system be understood by managers at all levels in order to prevent the inappropriate use or application of UCA data in decision-making.

C. CONTENT

Chapter II provides a brief discussion of recognized concepts in planning and control theory and practice as they relate to UCA as well as a general overview of the objectives and processes of UCA. Chapter III examines UCA in relation to recognized principles of cost accounting and highlights the differences and similarities. The analysis in this chapter focuses on the value and appropriate use of UCA data at the activity level, using UCA data generated by

the Naval Regional Medical Center, Oakland (hereafter referred to as Oakland) as a basis for the examination. Chapter IV addresses the appropriate use of UCA data by medical planners and decision-makers at the Office of the Assistant Secretary of Defense for Health Affairs (OASD(HA)). The analysis focuses on the limitations of cost per unit of output comparisons when used as a measure of efficiency and as a tool for resource programming or allocation. Chapter V contains the conclusions reached on the basis of the research and analysis contained in Chapters III and IV. Appendices A through D present a technical framework of the UCA process providing background to the analysis conducted in Chapters III and IV.

D. RESEARCH APPROACH

As a medium for conducting this research the Commanding Officer of Oakland made his facility available as a basis for examining the system and its appropriate use by management at the local level. Several on site visits were made to Oakland to acquaint the authors with the procedures used in the gathering, processing, and reporting of UCA data. During these visits, interviews were conducted with both the developers and users of the data. In addition, an entire

year's worth of UCA data was provided, and was used extensively by the authors in the analysis of UCA at the activity level. A visit was also made to the Navy Bureau of Medicine and Surgery, Washington, D.C. Discussions were held with many of the users of UCA data and information was obtained pertaining to the current and proposed uses of the data by decision makers.

A review of the cost accounting literature was conducted to determine the extent to which the UCA process conforms to recognized principles of cost accounting. This review also provided the authors with information on the type of cost data that is considered to be most meaningful to managers at all echelons within an organization. When combined with the views and needs of management obtained from the above mentioned interviews, the authors were able to analyze and evaluate UCA information from both the theoretical and practical perspectives.

II. MANAGEMENT CONTROL SYSTEMS AND THE UNIFORM CHART OF ACCOUNTS

This chapter provides a general overview of some of the principles of management control and cost accounting as they relate to UCA. The discussion in this chapter proceeds from a general discussion of planning and control to a more specific focus on UCA as a cost accounting system, and concludes with a general description of the objectives and the process of UCA. The focus provided in this chapter will enable the reader to better understand the analysis that follows in Chapters III and IV.

A. PLANNING AND CONTROL

Regardless of the purpose, structure, or size of the organization, all managers engage in a process of planning and control. Planning identifies what the organization will do and how it will do it. Control provides a means of assuring that the results obtained are those that are desired [Ref. 4: p.2]. Three types of planning and control found in most organizations are identified by Anthony and Herzlinger:

1. Strategic Planning is the process of deciding on the goals of the organization and on broad stategies that are to be used in attaining these goals.

2. Management Control is defined as the process by which management assures that the organization carries out its strategies effectively and efficiently.

3. Operational control is the process of assuring that specific tasks are carried out effectively and efficiently. [Ref. 4: p.2]

UCA is concerned with ensuring that the objectives at each echelon of management are implemented effectively and efficiently and with bringing to management's attention those areas that may require increased management emphasis [Ref. 2: pp.1-7]. The developers of UCA recognized the need for management control, as illustrated by the following statement from the UCA implementing directive:

> managers need current, accurate, and complete quantitative data for decision making, comparing actual performance with objectives, analyzing significant deviations, and taking corrective action [Ref. 2: p.1-10].

The Uniform Chart of Accounts appears to be a management control system and attempts to provide managers with information that will aid in their ability to improve the efficiency and effectiveness of the military health care delivery system. Although not specifically designed to deal with the day to day operating decisions that are appropriately influenced through operational control, individual activities have the flexibility to design systems in support of UCA that meet their own organizational and management needs [Ref. 2: p.1-11]. This issue will be the emphasis of Chapter III.

B. EFFICIENCY AND EFFECTIVENESS

The Military Health Care Study (MHCS), the impetus for the development of UCA, identified the need to monitor the efficiency and effectiveness of the Military Health Services System (MHSS) [Ref. 1: p.88].

Anthony and Herzlinger [Ref. 4: p.5] have defined "efficiency" as "the ratio of outputs to inputs, or the amount of output per unit of input", and "effectiveness" as a measure of how well an organizational unit has met its objectives. In most cases a measure of efficiency can be developed by relating quantifiable inputs to quantifiable outputs and then comparing the results to some standard that represents the inputs that should have been incurred for the actual outputs produced. In this respect, UCA attempts to measure efficiency by computing a cost per unit of output for various inpatient, ambulatory care, and ancillary service accounts. These accounts are identified in Appendix A.

Effectiveness deals with how well the outputs of an organization contribute to the accomplishment of its objectives and in general is much more difficult to measure. In many cases it is necessarily stated in subjective and nonquantifiable terms because of the difficulty in

quantifying both the objectives of an organization and its outputs [Ref. 4: p.5]. The MHCS identified four major objectives of the Military Health Services System:

1. To maintain a physically- and mentally-fit, combat- and operationally-ready military force...

2. To ensure the timely availability of trained manpower and other health resources required to provide support to approved combat, mobilization, and contingency plans of the military forces, while maintaining a professionally viable and effective military health care system that is an incentive for the recruitment and retention of high-quality health professionals in an all volunteer military force...

3. To provide a program of health services to all eligible beneficiaries as currently authorized by law, and which has developed through practice...

4. To maintain a system of health services that function as effectively and efficiently as possible and to assure the complete and efficient utilization of all Department of Defense health resources. [Ref. 1: p.15-16]

UCA attempts to assist in the accomplishment of the last objective.

C. MANAGEMENT CONTROL SYSTEMS

Anthony and Herzlinger [Ref. 4: p.14] address four principal steps in the management control process each of which leads to the next to form a closed loop:

1. Programming

2. Budgeting

3. Operating (and measurement)

4. Reporting and Analysis

UCA is a cost accounting system that relates to the last step in this process.

During the development of UCA the designers considered the existing accounting and reporting systems as well as the "differences in the military missions, system sizes, hospital sizes, fiscal and financial structures, reporting authorities, reporting requirements, and other distinguishing factors" [Ref. 2: pp.1-9,1-10]. UCA is a management control system necessarily imposed upon structures and systems already in existance rather than being designed to meet the specific needs of each individual activity. Because of this, the process feedback loop between step 4 and step 1 identified above was not systematically developed. The limitations in trying to force the current UCA structure to complete the loop for use as a tool in programming resources will be discussed in Chapter IV.

D. COST ACCOUNTING SYSTEMS

"The essence of the management process is decision making - the purposeful choosing from among alternative courses of action to achieve some objective" [Ref. 5: p.4]. Management control systems and, more specifically, cost accounting systems such as UCA, should serve decision makers within the organization.

The proper development of a cost accounting system requires a thorough understanding of the organizational structure of the enterprise, the processes that take place within the organization, and the information requirements of all management levels [Ref. 6: p.65]. UCA is a system that took the existing financial and organizational structure of the three service medical departments and their health care facilities and assumed that their organization, processes, and information requirements were similar enough to be compatable with a common UCA concept. The impact that this assumption has upon the decision makers at both the activity level and at higher authority will be addressed in Chapters III and IV, respectively.

The majority of literature on the subject of cost accounting primarily addresses profit generating enterprises [Ref. 5,6,7]. The literature that deals with cost accounting in health care facilities addresses institutions in the private sector [Ref. 8,9,10,11]. Common uses of cost data in the private sector include: measuring profit; identifying inventory costs; assisting in the development of pricing policy; controlling costs in responsibility centers; and furnishing relevant data for decision making

[Ref. 6: pp.40-41]. In private sector health care institutions it has been observed that the major use of cost accounting information has been for establishing and setting prices [Ref. 8] and "to insure that all expenses incurred in its operation are covered by the charges to users" [Ref. 12: p.58]. Obviously, UCA data has limited application for establishing prices for health services within DOD. It is primarily intended for use by decision makers within the Military Health Services System (MHSS) in evaluating performance, measuring productivity, and ensuring the efficient use of resources [Ref. 2: pp.1-10,1-11]. Although the use of cost accounting data within the MHSS will not always be the same as that for either profit generating enterprises or private sector health care institutions, it appears that the system design concepts and the actual processes are similar.

E. THE UNIFORM CHART OF ACCOUNTS

UCA was established to provide a standard accounting and reporting system for all DOD fixed medical treatment facilities that would assist managers in making decisions concerning the operation of the Military Health Services System. To accomplish this task, six objectives were

established for UCA. Specifically, these objectives were to provide:

1. a single tri-service chart of accounts
2. common definitions of workload, cost elements, and work centers
3. a basis for management reports
4. a means of measuring performance for:
   (a) internal comparisons
   (b) interservice comparisons
   (c) intraservice comparisons
   (d) civilian sector comparisons
5. A mechanism to measure efficiency and cost
6. A common mechanism for the assignment of overhead and ancillary service expenses. [Ref. 2: p.1-13]

Medical treatment facilities were given the flexibility to design systems in support of UCA that met their individual needs, consistent with the reporting requirements of the Office of the Assistant Secretary of Defense for Health Affairs (OASD(HA)) [Ref. 2: p.1-11]. The hope was that this flexibility would provide managers at all levels with the ability to make better decisions on the operating activities of the military health care delivery system [Ref. 2: p.1-10].

UCA is a cost accounting system that identifies the total cost associated with the medical mission of DOD fixed medical treatment facilities, assigns these costs to work

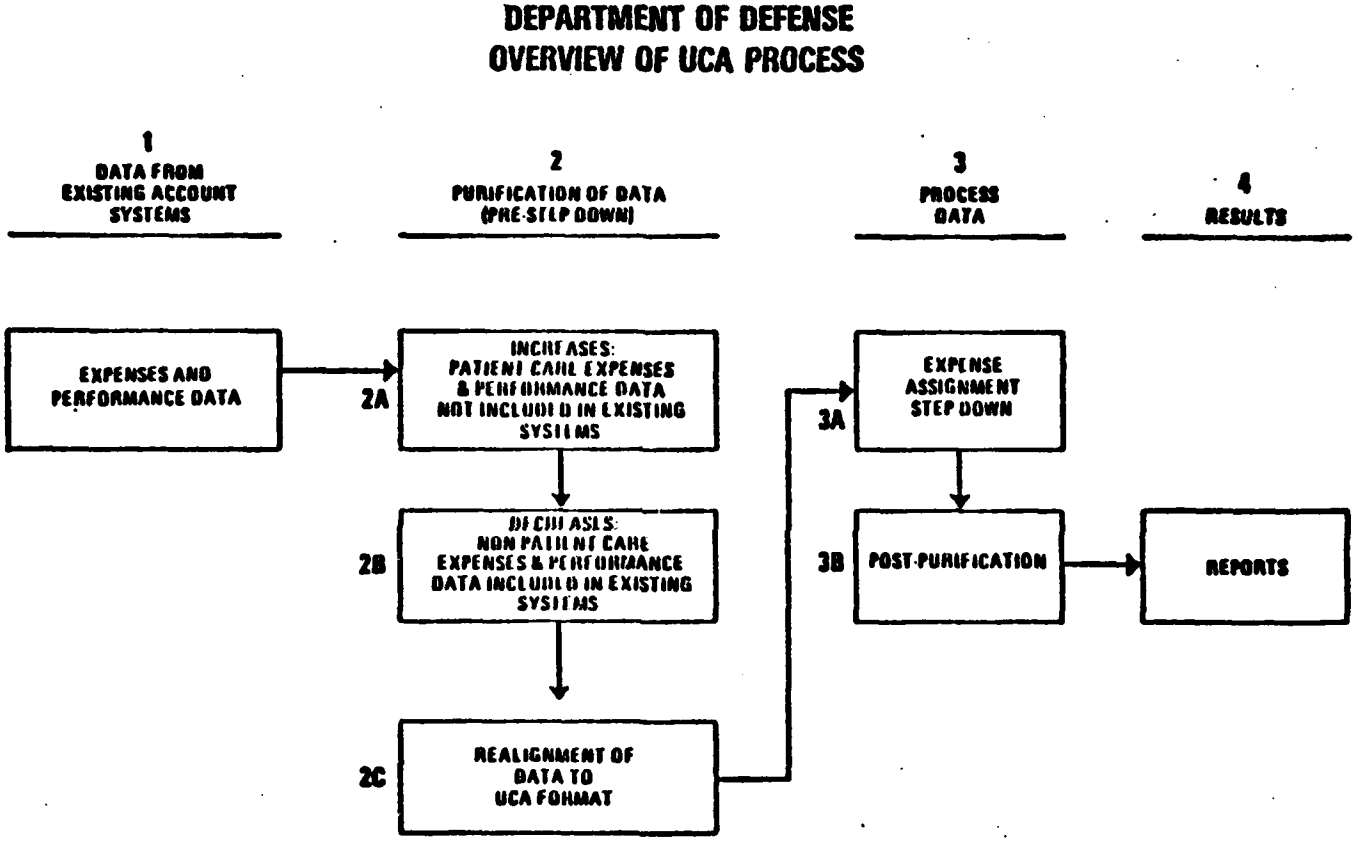
centers, and through a stepdown process further assigns these costs to a number of final operating expense accounts. UCA also identifies, in special program accounts, those costs that are associated with functions that are necessitated by the military mission of the activity but are not related to direct patient care. Appendix A provides a fairly detailed discussion of UCA and provides specific information concerning the stepdown methodology. Appendix B provides a detailed listing of UCA accounts (work centers) to which all costs must be assigned, and the performance factor which serves as a basis for workload data collection. Appendix C provides guidelines for the appropriate distribution of full-time equivalent man-months to UCA accounts (work centers). Appendix D provides the sequence which must be followed in the closing of the intermediate operating expense accounts.

"The end product of UCA is a substantial data base of information and a Medical Expense and Performance Report (MEPR)" [Ref. 2: p.1-13]. The MEPR represents a summary of the data developed during the UCA process, a copy of which is included as Figures A.2 and A.3 of Appendix A.

The UCA process consists of four basic steps as depicted in Figure 2.1 . The first step is the accumulation of workload, performance, and cost data from information systems that were already in existence prior to the implementation of UCA. Although UCA was not designed to alter the existing structures of the military medical departments and assumed that existing financial and management data collection systems were adequate to meet the requirements of UCA, systems that did not conform were expected to be "modified at the earliest opportunity" [Ref. 2: p.1-14].

The second step of the UCA process concerns the purification of the data accumulated in step one. The purpose of this step is to properly align the accumulated data so that all costs associated with the medical mission are properly recorded and, to ensure that costs not related to the medical mission are recorded in the appropriate special program account.

Step three involves the processing of the data that has been accumulated, purified and recorded in the UCA accounts described above. This step involves the allocation (step-down) of costs from support and ancillary workcenters (intermediate accounts) "to direct patient care services



[Ref.2:p.1-15]

Figure 2.1 Overview of the UCA Process.

(final accounts) and to those nonpatient care missions supported by the medical treatment facility (special programs)" [Ref. 2: p.1-14]. This process is described in detail in Appendix A.

The last step of the UCA process involves the reporting of results. As a result of the accumulation, purification, and processing of the data, a number of data displays are developed, all of which support the ability of an activity to compile the Medical Expense and Performance Report which is submitted to OASD(HA). Several of these data displays are described in Appendix A.

This brief discussion of the UCA process is intended only to provide the reader with a rudimentary knowledge of UCA. If more detail is needed or desired, the reader is referred to Appendices A through D.

III. EVALUATION OF THE UNIFORM CHART OF ACCOUNTS AT THE ACTIVITY LEVEL

In evaluating UCA within the Military Health Services System there appears to be two distinct levels of management and decision making. The first involves management processes and decisions at the activity and the second are those at higher authority. UCA is a cost accounting system that was born out of a perceived need at the top management levels within the Military Health Services System to be able to make comparisons between medical facilities both within the same Service and between Services, as a means of measuring performance and efficiency. It was also intended to aid activity managers in making comparisons between programs within their activities [Ref. 2: p.1-13].

This chapter will evaluate UCA at the activity level using data generated by Naval Regional Medical Center, Oakland, as a basis for discussion. Because the data used in this chapter is specific to UCA reporting at Oakland, the specific examples presented may not apply to all other medical facilities. However, it is believed that the principles and concepts presented are applicable to any military

health care facility that is subject to the requirements of UCA.

A. RESPONSIBILITY ACCOUNTING VS PROGRAM ACCOUNTING

Management control systems have two basic types of account structures: program and responsibility. Program accounts collect data on the programs that an organization undertakes and are designed to meet the needs of planners and analysts. The data from program accounts is generally designed for three principal purposes:

1. To make decisions about the resources that should be devoted to a program;
2. To allow comparisons of programs between organizations; and
3. To provide a basis for fees charged or reimbursement for services. [Ref. 4: pp.7,79]

Responsibility account structures classify information based upon the responsibility centers that are responsible for incurring the cost and are designed to meet the needs of operating managers. Responsibility account data is generally used for the following:

1. "Planning the activities of responsibility centers";
2. "Coordinating the work of the several responsibility centers in an organization"; and
3. "Controlling the responsibility center manager." [Ref. 4: p.7]

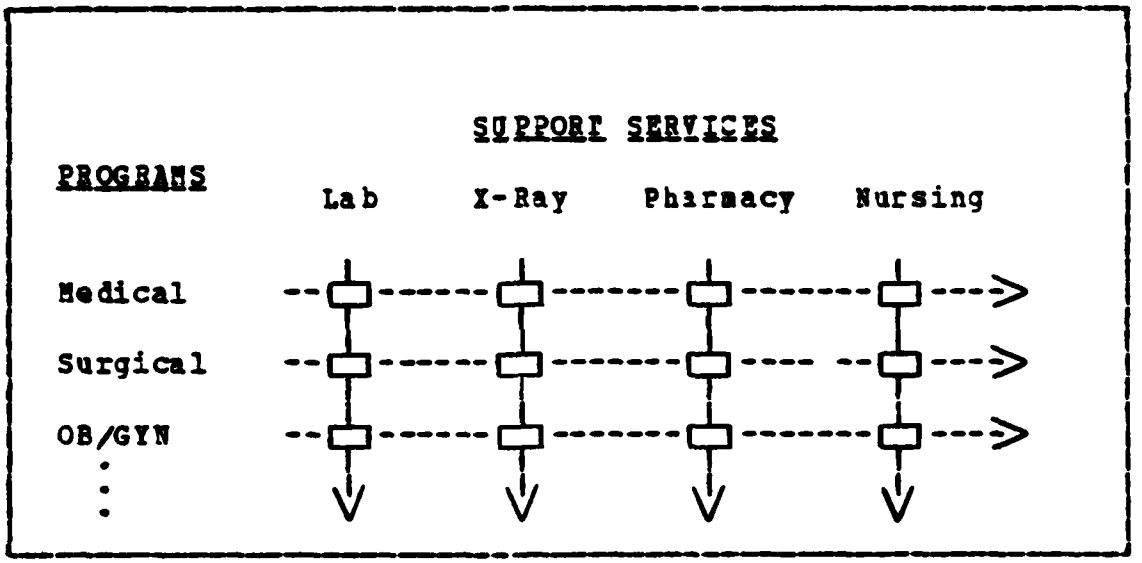


Figure 3.1 Matrix Organization of a Hospital.

For the purpose of discussion, these two structures have been identified separately; however, in application they are closely related. A hospital can be viewed as a matrix organization which is divided across product (program) lines such as medical or surgical divisions, each of which is served and supported by common support divisions [Ref. 13: pp. 143-160, Ref. 4: p.87]. Figure 3.1 demonstrates the relationship. This concept illustrates the close relationship that exists between program accounts (clinical services) and other responsibility centers (ancillary and support services) in a hospital setting. Fane [Ref. 8: p.33] contends that hospital accounting data must be capable

of being arranged along organizational lines to allow for responsibility accounting and along product (service) lines to allow for product costing purposes.

UCA appears to be a mix of both responsibility and program account structures. The final product of UCA is the Medical Expense and Performance Report (MEPR) which identifies the costs associated with each of the final operating expense accounts of Inpatient Care, Ambulatory Care, Dental Care, and Special Programs. UCA assigns all costs to these final operating expense accounts during the stepdown process and is consistent with the concept of a program account structure [Ref. 4: p.79].

UCA is also held to be "a system of cost accounting and expense reporting that provides management with a basic framework for responsibility accounting" [Ref. 2: p.1-10]. Horngren [Ref. 5: p.156] states that "responsibility accounting...systems recognize various decision centers throughout an organization and trace costs...to the individual manager who has responsibility for making decisions about the costs in question." Responsibility accounts correspond to the organizational units within an organization [Ref. 4: p.581]. A review of the UCA accounts

contained in Appendix B indicates that many of these accounts correspond to specific organizational units.

If UCA is to be used in both the context of program and responsibility accounting, the distinction between the two structures is important. Although programs and responsibility may be synonymous at the higher levels within the Military Health Services System, this may not be true as one moves lower in the organization to the operating levels. For example, Internal Medicine is a final operating expense account of UCA, yet there is no distinct single responsibility center associated with the entire Internal Medicine program. Ward personnel comprise a significant portion of the resources required to care for patients admitted by the Internal Medicine Service; however, because of the matrix organization of the hospital, they do not come under the management control or responsibility of the Chief of Internal Medicine. Although the Internal Medicine Service may consume resources from many different areas and the cost of providing those resources is allocated by UCA to the Internal Medicine subaccount (UCA account AAA), neither the Chief of Internal Medicine nor the physicians within the Service have any direct control over the operation of the

ancillary and support work centers that provide these services. While they may control the number of laboratory tests or x-ray exams that they order, they do not control the costs of providing these services.

Both program and responsibility structures appear to have use within a military health care facility. A Commanding Officer may find program information helpful as a tool for identifying programs whose unit costs appear to be out of line with other programs at the facility or with similar programs at other facilities. He can then investigate significant variances and take appropriate corrective action. The responsibility structure should be useful to both the Commanding Officer and lower level managers in evaluating the performance of individual work centers and their contribution to the total cost of operating the facility. However, the decision to use UCA data to assist in the management of an activity is one that must be made by activity managers.

The balance of this chapter will examine UCA as currently implemented at Oakland and evaluate its potential use as both a program and responsibility accounting system.

B. COST OBJECTIVES

In order to support the decision process, managers must determine and define cost objectives. Cost objectives should include "any activity for which a separate measurement of costs is desired" [Ref. 5: p.20]. Although UCA has identified a set of clearly defined cost objectives (work centers), they appear to be designed to support the decisions and needs of higher authority. If UCA is to be useful to managers at the activity level, the cost objectives must support their needs as well.

For the purpose of making comparisons between facilities, the program structure of the work centers identified by UCA may be meaningful. However, for the purpose of management control at the activity level, the development of additional work centers or cost objectives that more closely correspond to the organizational lines of responsibility within the facility may be beneficial. For example, the costs of operating a ward at Oakland is assigned to the medical or surgical cost centers on the basis of the occupied bed days attributed to the particular service. However, the operation of the ward is organizationally the responsibility of the Chief of Nursing Service. An

accounting report to identify the unit cost per occupied bed day on the ward may be beneficial in evaluating the performance of the ward. As stated earlier, UCA allows individual activities the flexibility to design systems in support of UCA "to accomodate their own organizational structures and management reporting needs" [Ref. 2: p.1-11].

C. CLASSIFICATION OF COSTS

In order for cost data to be useful to management, costs must be classified. While there are a number of ways that this can be accomplished, classifications that are commonly used in the health care setting include the following:

1. fixed or variable costs;
2. unit costs; and
3. direct or indirect costs. [Ref. 10: p.7]

Each of these will be discussed in turn.

1. Fixed or Variable Costs

The ability of an organization to differentiate between fixed and variable costs can be useful in evaluating how changes in activity or volume of a cost center will affect the total cost. "If a given cost changes in total in proportion to changes in activity, it is variable; if a cost remains unchanged in total for a given time period despite

wide fluctuations in activity, it is fixed" [Ref. 5: p.21]. UCA makes no attempt to differentiate between fixed and variable costs. As a result, the use of UCA data to predict total costs based upon changes in workload or activity are very limited.

2. Unit Costs

Unit costs represent the average cost per unit of measure and include both variable and fixed costs. A distinction should be made between these types of cost in any analysis of unit costs for the purposes of decision making [Ref. 10: p.12]. Horngren [Ref. 5: p.25] notes that a "common mistake is to regard all costs indiscriminantly - as if all costs were variable costs." For this reason, the interpretation of unit costs must be done with caution. For example, it is incorrect to conclude that because Oakland's cost per occupied bed day (OBD) for Cardiology is $276.76 that each additional Cardiology OBD will result in an incremental cost of that amount. A portion of the cost is fixed (depreciation, housekeeping, police and fire protection) and will occur regardless of an increase in workload while another portion (laundry, medical supplies) will only occur in direct relation to an increase in OBD's. Because UCA

fails to differentiate between the fixed and variable portions of unit costs, users of UCA data must recognize this limitation in order to avoid erroneous conclusions concerning the effect of changes in the activity of a program on total costs.

Caution must also be used when using UCA unit costs as a basis for evaluating the efficiency of responsibility centers. For example, Figure 3.2 represents an average cost (unit cost) curve for a hypothetical work center and is comprised of both variable and fixed costs [Ref. 14: pp. 187-191]. It specifies that as output increases, the cost per unit of output (average cost) will decrease. The output measure that corresponds to the lowest point on the curve represents the level at which the cost per unit of output will be the least. However, it does not necessarily represent the lowest total cost that could or should be attained. For illustrative purposes, consider Figure 3.2 to be a hypothetical clinical pathology department in a hospital with a quantity of output represented by weighted procedures (W/P), which is the UCA output measure for clinical pathology. With an output of 10,000 W/P's the department has a unit cost of $4.00 and a total cost of

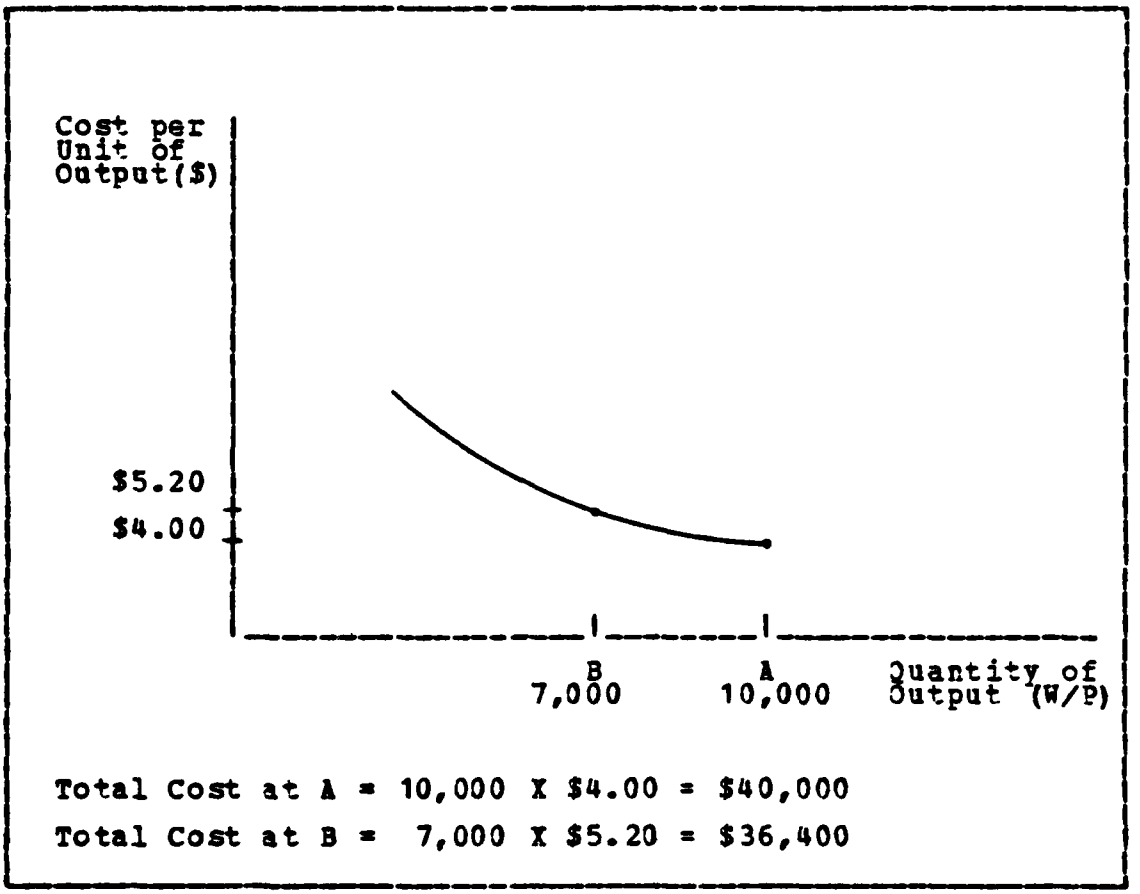


Figure 3.2 Relationship of Unit Costs to Total Costs.

$40,000 (10,000 X $4.00). With an output of 7,000 W/P's the unit cost is $5.20 and the total cost is $36,400 (7,000 X $5.20). If the responsibility center manager is being evaluated on unit costs, there is an incentive to increase output (workload) to drive down unit costs whether or not that output is actually required. The Clinical Pathology Department has an incentive to produce 10,000 W/P's

regardless of the total cost of doing so because the unit cost is lower at that output than at 7,000 W/P's. An evaluation of unit costs could be misinterpreted as an increase in efficiency while in reality, unnecessary workload is adding to total costs and resulting in inefficiency.

3. Direct or Indirect Costs

A third differentiation of costs can be made with regard to the ability to trace a cost to a specific function, cost center, or product. Costs that can be traced to a single cost objective are direct costs. Costs that are incurred by two or more cost objectives are indirect costs and must be allocated using some acceptable allocation method. Indirect costs should be allocated on the basis of some identifiable causative relationship to the cost objective [Ref. 4: p.11]. Direct and indirect costs can be further classified as fixed or variable to provide more precise information concerning cost behavior [Ref. 10: p.14].

UCA classifies cost as either direct or indirect and then, after an allocation stepdown process, computes unit costs. All costs are initially designated as direct costs of either an intermediate or final operating expense

account. Costs included in the intermediate accounts become indirect expenses of the final operating expense accounts after stepdown has been completed.

The classification of UCA direct costs is determined more by the ability of the data collection system to accumulate cost directly by work centers than by the nature of the cost itself. UCA data for Oakland shows that not all subaccounts within the Inpatient Medical Account (UCA Account AA) have physician salaries identified with them even though they report workload and compute a cost per unit of output. For example, the Neurology subaccount (UCA Account AAJ) shows a workload of 1313 occupied bed days and a cost per occupied bed day of $212.73. However, the Neurology subaccount shows no direct expenses and no physician salaries. Physician salaries for inpatient Neurology appear to be accumulated in some other inpatient subaccount. The same is true for several other subaccounts within the Inpatient Medical Account. Although these discrepencies may be caused by the difficulty of making accurate determinations of where a physician actually spends his time, it results in a cost that is normally considered a direct expense [Ref. 10: pp. 35-43, Ref. 2: p.3-12] being disregarded in the

compilation of costs for some work centers. In addition, physician salaries for some of the ambulatory clinics at Oakland are recorded as direct expenses of the subaccounts while others are not. Military physician salary costs for OB/GYN Clinics are placed in a cost pool for later allocation while in the case of surgical clinics these costs are identified as direct expenses for the appropriate subaccount. Because of the varying methods of identifying costs, cost categories take on different meanings between similar program accounts. The usefulness of the classification of direct or indirect cost becomes questionable unless like costs are identified directly with comparable subaccounts. This becomes particularly relevant when making comparisons between programs (services) within facilities or between facilities. The greater the number of costs that can be identified directly with a specific work center, the more valuable will be the information that is produced [Ref. 10: pp. 33-43].

D. ALLOCATION OF COSTS

An essential facet of any cost accounting system is cost allocation [Ref. 5: p.495]. In UCA cost allocation is the process of distributing overhead and ancillary service costs to the final operating expense accounts.

UCA allocates two distinct groups of costs to the final operating expense accounts during the stepdown process. The first group is support services which for the most part are indirect overhead costs over which individual work centers have little direct control. The second group is ancillary service cost which includes clinically related services such as pharmacy, laboratory, and radiology. This group of costs is directly related to the treatment of the patient and influenced by managers of clinical work centers by the amount of service they use. UCA allocates support services first and ancillary services next. Because the allocation of both groups of costs occurs simultaneously during stepdown, the cost data that is available for analysis moves from a stage of identifying only a portion of what should be classified as direct costs to a cost figure that includes a combination of both direct and indirect costs. If the cost data is going to be meaningful and useful to managers, the differentiation between direct and indirect costs should be maintained during the stepdown process and displayed as such on interim management accounting reports [Ref. 10: p.45]. Horngren [Ref. 5: p. 162] notes that a common complaint of managers is that they are unfairly charged with costs over

which they have no control. He concludes that "indiscriminate cost allocations may undermine the confidence of the managers in the entire system."

E. MANAGEMENT REPORTS

The Computation Summary, the Detail Unit Cost Report, and the Medical Expense and Performance Report (MEPR) (described in Appendix A) are the final reports generated by an activity at the completion of the UCA process. If UCA is to be useful for responsibility accounting, one would expect the manager of a work center which is reported on the Detail Unit Cost Report to be able to make some judgement on the relative efficiency of his work center based upon the data given. For example, the Detail Unit Cost Report generated by Oakland identifies the costs associated with Diagnostic Radiology (UCA Account DCA), as shown in Table I . However, when one scrutinizes the costs represented in each category, it becomes obvious that, as a tool to measure the performance of diagnostic radiology, the information is of questionable value. The first column of Table II displays the costs that are combined to create the total of Direct and Support Expenses, shown on Table I. These costs include not only expenses for Diagnostic

TABLE I

Detail Unit Cost Report - Diagnostic Radiology (DCA) - NAVREGMEDCEN Oakland - FY-1981

Direct and Support Costs	$1,577,365
Ancillary Costs	1,073,970
Total Expense	$2,651,335
Ancillary Workload	395,823
Cost per Unit	6.6982

NOTE: The term ancillary costs in this case refers to costs that were collected in a radiology cost pool and includes components of both direct and allocated costs.

Radiology at the core hospital but also the costs for radiology services at the nine outlying Branch Clinics of Oakland. Table II also displays the costs that are combined to create the total of ancillary expense. Because of the myriad of costs that are mixed in the totals, an evaluation of the performance of Diagnostic Radiology based upon these figures becomes difficult. It is possible for one to go to the Computation Summary to gain further insight into the components of the costs; however, that report contains very limited information. A complete understanding of the costs that are included in the totals on the Detail Unit Cost Report requires a tedious and time consuming process of

TABLE II

Diagnostic Radiology - Expense Breakdown - NAVREGMEDCEN Oakland - FY-1981

	Direct and Support Expense	Ancillary Expense
Direct Expense	$1,155,984	$795,603
Allocated Costs		
Command Staff	43,164	9,488
Operating Management	21,217	4,664
Communication	11,575	2,544
Civilian Personnel	1,927	4,464
Military Personnel	11,520	108
Comptroller	8,778	1,930
MIS	15,680	3,447
NAF Support	2,733	26
Pass Office Support	1,236	12
Word Processing	--	105,130
Fire Protection	5,308	81
Police Protection	5,735	88
Plant Management	3,514	54
Operation of Utilities	93,113	1,131
Maintenance of Real Property	36,503	23,671
Minor Construction	58,136	3,656
Other Engineering Support	8,389	128
Transportation	--	174
Material Services	55,171	17,494
Housekeeping	1,241	4,046
Biomedical Repair	9,650	96,031
Linen and Laundry	26,791	—
Total	$1,577,365	$1,073,970
GRAND TOTAL	$2,651,335	

following the costs through the UCA Stepdown Schedule, and tallying each category of cost. It is not the intent of this discussion to advocate that all cost data be displayed in minute detail on UCA output reports, but that costs should be categorized and displayed in a manner that is useful to responsibility center managers and upper level

managers within an activity in evaluating the performance of responsibility centers.

F. CONTROLLABLE VS NON CONTROLLABLE COSTS

The issue that will be addressed in this section concerns the costs that should be assigned to the manager of a responsibility center to provide an indication of how well he is discharging his duties. There are differing views concerning the kinds of costs that should be included in the reports of a responsibility accounting system. The first is that only those costs that are directly controllable by the manager of the responsibility center should be included and is the position taken by most advocates of responsibility accounting [Ref. 5: p.161]. "An item of cost is controllable if the amount of cost incurred in or assigned to a responsibility center is significantly influenced by the actions of the manager of the responsibility center" [Ref. 4: p.12]. The second is that noncontrollable costs that are indirectly caused by the existence of the responsibility center should also be included. The purpose of the latter is to force the manager to try to influence, in a positive way, costs being incurred in other responsibility centers. In any case, controllable and noncontrollable

costs should not be mingled indiscriminately on responsibility accounting reports. [Ref. 5: pp.161-162]

This distinction between controllable and noncontrollable costs is not clear in the UCA reporting system. It is often difficult to separate costs that are controllable from those that are not. The Chief of Radiology Service has responsibility for the Diagnostic Radiology work center; however, as seen in Table II , he has vastly different degrees of control over the costs that are included in that account. He may have a great deal of control over direct expenses; he has a limited amount of control over material services and laundry expenses based upon his use of these services; and he has virtually no control over fire protection, police protection, or plant management. However, they are all grouped together, without differentiation, in the Detail Unit Cost Report of UCA. Table III illustrates the way the cost data could be displayed. This structure provides cost data in more detail than the Detail Unit Cost Report yet groups data into controllable and noncontrollable categories. Branch Clinic data has also been excluded from Table III and could be displayed separately. The determination of which categories of costs should be included under

TABLE III

Diagnostic Radiology - Controllable/Noncontrollable Expenses - NAVREGMEDCEN Oakland (Core Facility) - FY-1981

Direct Expenses	
Diagnostic Radiology (Core Facility)	$ 470,377
Radiology Cost Pool	795,603
Total Direct Expenses	$1,265,980
Allocated Costs - Controllable	
Word Processing	$105,130
Material Services	64,121
Biomedical Repair	96,031
Linen and Laundry	26,791
Total Allocated - Controllable	$292,073
Allocated Costs - Noncontrollable Overhead	
Total Allocated - Noncontrollable	$283,080
GRAND TOTAL	$1,841,133

the heading of Allocated Controllable Costs is best left to the discretion of individual activity managers because there appears to be a significant amount of subjectivity in this classification. Similar displays could be developed for each responsibility center.

G. COST POOLS

Many individual costs cannot be directly identified with a specific UCA account or subaccount and are therefore

grouped into cost pools prior to allocation. The use of cost pools allow for the assignment of costs to cost objectives without the cost or effort of identifying each individual cost with a specific account [Ref. 5: p.529]. Oakland has established a number of cost pools for its inpatient wards, ambulatory clinics, ancillary services, and command and administration. These cost pool accounts are in addition to the standard accounts and subaccounts established for all UCA users. Table IV provides information on the size of each of these cost pools at Oakland and the amount of direct expenses assigned to them in relation to the total direct costs assigned to the relative final operating expense account.

These cost pools are established to pool costs that could not be easily assigned to some other intermediate or final operating expense account. Although the establishment of cost pools make the assignment of costs a much easier process, it may also dilute the usefulness of the data. The pooling process results in an averaging of costs and thereby a loss of accuracy [Ref. 5: p.529]. All direct costs assigned to a cost pool become averaged over the other

TABLE IV

UCA Cost Pool Direct Expenses - NAVREGMEDCEN Oakland - FY-1981

	TOTAL AMOUNT OF DIRECT EXPENSES ASSIGNED TO COST POOL	TOTAL AMOUNT OF DIRECT EXPENSES IN FINAL ACCOUNT	COST POOL DIRECT EXP AS PERCENT OF TOTAL
INPATIENT			
Medical	$1,203,223	$1,809,524	66.5%
Surgical	2,031,673	2,714,887	74.8%
OB/GYN	914,737	1,438,674	63.6%
Pediatrics	497,179	712,152	69.8%
Orthopedic	718,111	787,877	91.1%
AMBULATORY CARE			
Medical Clinics	28,753	1,096,064	2.6%
Surgical Clinics	0	1,213,176	--
OB/GYN Clinics	175,562	181,708	96.6%
Pediatric Clinics	0	495,118	--
Orthopedic Clinics	81,177	587,379	13.8%
Psychiatric Clinics	73,314	328,744	22.3%
Primary Care Clinics	0	5,412,304	--
DENTAL COST POOL	32,385	705,207	4.6%
ANCILLARY SERVICES			
Pharmacy	2,223,641	4,085,178	54.4%
Pathology	383,252	2,706,427	14.2%
Radiology	795,603	2,083,418	38.2%
Central Sterile Supply	0	831,578	--
SUPPORT SERVICES			
Command and Admin	245,788	4,351,718	5.6%

accounts during allocation. Although some costs are necessarily accumulated in cost pools, they should be minimized in order to reduce the loss of accuracy in the final unit cost figure. As seen in Table IV, the use of cost pools at Oakland is widespread and the degree to which the cost pools represent a significant portion of the total direct cost for a particular area is wide ranging.

Oakland uses cost pools to accumulate the costs associated with the operation of its wards. For example, the Medical Inpatient Cost Pool (UCA Account AAXA) includes, as direct expenses, the salaries of the nursing staff and ward supplies on all Medical wards. After receiving its allocated share of support and ancillary service costs, the Medical Cost Pool is allocated to the final operating expense accounts. By aggregating ward costs into one cost pool and then allocating the total cost over the various subaccounts on the basis of occupied bed days, any differences in the intensity of care provided to different types of patients is lost. In general, one would expect nursing personnel on Oakland's Medical wards to devote more time per occupied bed day to pulmonary/upper respiratory disease patients than to dermatology patients; however, by pooling

and then allocating ward costs, each type of patient causes an equal amount (average amount) of cost to be assigned to their respective service. While it is recognized that the use of cost pools may be necessitated by the difficulty of differentiating between patients assigned to a common ward but different services, managers should be aware that variances in the intensity of care for different patients are not reflected in UCA unit cost data.

H. STANDARD COSTS

The use of standard costs is a control device that is widely used in the business community but has received only limited attention in nonprofit organizations such as hospitals [Ref. 4: p.55]. "Standard costs are carefully predetermined costs; they are target costs, costs that should be attained" [Ref. 5: p.186]. Standard costs identify how much cost should be incurred for any particular program, task, or unit of output. They can then be compared to actual costs and used in evaluating the causes of any variances [Ref. 5: p.187].

While the use of standard costs in a manufacturing process have been well developed [Ref. 6: pp.544-612], the use of standard costs in hospitals is rare. It is

recognized that because of the complexities of the health care industry, the development of standard costs in hospitals is "a difficult and complex task." However, standards can be a meaningful tool in measuring performance [Ref. 10: p.69]. For example, a standard that identifies the appropriate amount of nursing labor per patient on a ward or a standard that identifies the appropriate direct cost for each laboratory procedure or radiology exam would be useful for making comparisons with actual costs and then analyzing the variances.

There are several methods that can be used to develop standard costs. Standards can be developed using industrial engineering methods to determine basic tasks and associated costs. Frank [Ref. 15: p.34] cites a study conducted at Johns Hopkins University Hospital which detailed the costs of activities of the medical staff in the obstetrical services. Another method involves the use of statistical regression analysis which models cost as a function of one or more variables [Ref. 15: p.34]. A third method involves the comparison of costs to those "incurred by other similar organizations over the same period of time" [Ref. 15: p.35]. This is the approach taken by UCA for comparisons between

military health care facilities, the merits of which will be discussed in more detail in the following chapter. A fourth method involves the use of internal performance data to generate standards based upon average performance for each work center. Herzlinger, Moore, and Hall [Ref. 9: p.241] used the latter method in evaluating a community health center. Although they recognized that the standards that were developed were averages and did not represent an optimal input-output relationship, they did provide a meaningful benchmark for managers to assess their relative performance.

While it is beyond the scope of this thesis to develop standard costs using any of the described methodologies, it appears that the development of standards similar to the last method described could be easily accomplished by individual activities as a means of evaluating their relative performance. A standard as simple as costs per unit of output for the previous accounting period could be used as a basis for demonstrating to the manager his relative performance over time.

In using a standard as a means of relating actual costs to the amount that should have been incurred for a given

output, one must recognize the limitations. Anthony and Herzlinger [Ref. 4: p.5] point out that while standards may be useful they are never perfect for two reasons:

1. Recorded costs are not a precisely accurate measure of resources consumed; and

2. Standards are, at best, only approximate measures of what resource consumption ideally should have been in the circumstances prevailing.

The use of standards would help to make UCA information more meaningful and understandable to operating managers and would provide a basis for examining and evaluating specific work centers.

I. SUMMARY

This chapter has examined UCA at the activity level and focused on how the data generated by UCA can be useful to health facility managers. Although intended to provide useful information to all echelons of management within the Military Health Services System, UCA, as currently implemented at Oakland, appears to be of limited use to managers at the activity level. UCA is a cost accounting system that is intended to provide full costing for a number of medical programs, identified as final operating expense accounts. In attempting to meet the reporting requirements of UCA, the emphasis has been on identifying all costs with these

accounts, to the detriment of providing meaningful and useful information to activity managers. UCA-generated data has the potential to be a valuable management tool for both responsibility and program accounting at the activity level if properly developed and structured in the form of meaningful management reports.

IV. THE USE OF THE UNIFORM CHART OF ACCOUNTS BY HIGHER AUTHORITY DECISION MAKERS

With the advent of the Uniform Chart of Accounts, it became possible to relate a measure of output to an estimate of actual expenses incurred in the form of a cost per unit of output. Such information could be used to accomplish two of the objectives of UCA: 1) to provide information which would facilitate comparisons between and among the health care facilities of the three military services and hospitals in the civilian sector and, 2) to provide a means for measuring the efficiency and cost of operations [Ref. 2: p.1-13]. Since the inception of UCA there has been a great deal of speculation, especially on the part of the health care managers of the military services, over the type of subsequent decisions that would or could be made by the Office of the Assistant Secretary of Defense for Health Affairs (OASD(HA)).

Some insight was provided in an OASD(HA) memorandum to the Surgeon General of the Navy dated 22 October 1981, which states that "DoD medical planners will undoubtedly come to rely upon UCA for a broad range of pricing and resource

programming decisions" [Ref. 16]. It has apparently been assumed that by establishing "uniform performance indicators, common expense classifications by work centers, and a cost assignment methodology" [Ref. 2: p.1-5], UCA will permit planners and decision makers at higher authority to make comparisons of costs per unit of output, and thus determine the relative efficiencies of hospitals. In theory, such comparisons would facilitate the identification of hospitals whose cost per unit of output was significantly higher than average and, as a result, decisions could then be made regarding the reprogramming or reallocation of resources in an effort to bring the cost per unit of output in line with other more efficient facilities. In this light, UCA data becomes a potentially powerful management tool for the OASD(HA) oversight function.

However, UCA data must provide the appropriate information required for such resource programming and resource allocation decisions. Specifically, the questions which must be answered are: Can a cost per unit of output be considered a measure of efficiency in hospitals; and, Can cross service comparisons legitimately be made based solely on UCA data? The purpose of this chapter is to answer these

questions by evaluating the value of UCA as a management control tool for use by OASD(HA) in its DOD medical operations oversight function.

A. THE MEASUREMENT OF MILITARY HOSPITAL OUTPUT

Since, under UCA, the cost per unit of output plays a major role in making hospital comparisons, it is necessary to examine the manner in which output is measured, or more appropriately, approximated. The manner in which costs are determined at the activity level by the cost allocation process has been discussed in the previous chapter. This section will, therefore, address the issue of output measurement and the relationship between costs and output as a measure of efficiency.

Prior to the development of the Uniform Chart of Accounts, the Composite Work Unit (CWU) was the means by which military hospitals attempted to measure output. The number of CWU's generated by a hospital was determined by the equation:

$$CWUs = OB + 10AD + 10LB + 0.3CV$$

where:

OB = Average Daily Occupied Bed Days

AD = Average Daily Admissions

LB = Average Daily Live Births

CV = Average Daily Clinic Visits

[Ref. 17: p.3]

Although the services have used the CWU since 1956, it was generally recognized as an inferior measure of hospital output. Its primary shortcomings were that it did not reflect the full range of hospital activities and it did not account for "case mix" and intensity of care differences. Simply stated, the CWU assumed that all patients were the same, since it did not recognize that some health care problems are more complex than others, and that complex cases consume more health care resources than simple, uncomplicated cases. Consequently, the CWU made it virtually impossible to develop meaningful cost per unit of output relationships useful in making comparisons of hospitals. In addition, as a measure of output, the CWU was easy to manipulate. Hospitals could increase their apparent level of output, and hence their budget, merely by admitting patients who could be treated on an outpatient basis, or by keeping patients in the hospital one or two days longer than medically necessary. The impact of such manipulations on cost per unit of output comparisons is discussed later in more detail. Another problem was that the simplistic CWU

information was submitted to Congress as part of the President's Budget Submission and, despite its recognized shortcomings, Congress used the CWU as an indicator of efficiency and as a tool for making budgetary decisions.

These shortcomings of the CWU were supported in a 1980 study, cosponsored by OASD(HA) and conducted by the Department of Mathematical Sciences, U.S. Air Force Academy [Ref. 17]. The Study, which developed an alternative to the CWU called the Health Care Unit (HCU), states:

> The CWU has come under criticism since its inception, largely resulting from its continued use in applications for which it was never intended. It is not reasonable to expect that a weighted sum of four variables, whose weights were developed 24 years ago, should be both the primary indicator of hospital output and a major determinant in the allocation of manpower and monetary resources. [Ref. 17: p.4]

The difficulty of developing a measure of hospital output is not to be underestimated. Ruchlin and Leveson state that "one of the most complex aspects" of measuring hospital output is accounting for case mix differences [Ref. 18: p.309]. They further point out that while a considerable amount of work has gone into attempts to develop an accurate methodology for measuring output, very few of them "fully develop measures that reflect the implication of variations in case mix on utilization of resources" [Ref. 18: p.310]. This view is shared by

Dumbaugh who states that one of the fundamental difficulties encountered when trying to compare different hospitals by measures of efficiency is that adjustments for the heterogeneity of patient mix must be considered [Ref. 19: p.215].

The HCU, as developed in the above mentioned study, attempts to measure hospital output and, to some degree, account for case mix differences by using "a linear combination, or weighted sum, of the 25 performance factors which are reported in Part I of the UCA Medical Expense and Performance Report" [Ref. 17: p.12]. In essence, the different weights assigned to each of the performance factors are "relative values" which attempt to reflect the differences in resource consumption among various hospital activities. The HCU, for example, recognizes that more medical resources are consumed by a surgical inpatient than are consumed by the typical medical inpatient. Total HCU's for a hospital are calculated by the following equation:

$$\text{Total HCUs} = \sum_{i=1}^{25} W_i P_i$$

where:

W_i = the weighting factor associated with category i, and

Pi = the number of performance factors of category i

[Ref. 17: pp.12,13]

This equation permits hospital output to be expressed in terms of a single number, which, in the opinion of the HCU study authors, will make comparisons of hospital output easier to understand and more useful to higher level management [Ref. 17: p.6]. As we shall see, it is this attempt to reduce the totality of hospital output to a single number that makes the HCU (like the CWU) subject to inappropriate interpretations and applications.

Since a later study refined the HCU concept as proposed in the Air Force Study, discussion of the manner in which the weights were derived will be deferred until later in this chapter.

Development of the HCU is a major improvement in capturing health care output, a product characterized by highly variable levels of resource consumption. But, the HCU is not perfect. In its present state of development, the HCU does not totally account for the variations in intensity of care associated with case mix differences between hospitals and within the same specialty. The ability to account for such differences is absolutely

critical if accurate and reliable comparisons of hospital output are to be made. In addition, like the CWU, the HCU can be manipulated to improve apparent output relative to the resources consumed. The impact of the inability of the HCU to capture the differences in intensity of care and the associated consumption of resources will be demonstrated in two examples at the end of this chapter.

In 1981, OASD(HA) contracted with the firm of R&D Associates to study the HCU concept [Ref. 20]. While the study had many purposes, each of them "ultimately focused on the development, validation, and implementation of the HCU as a measure of hospital output" [Ref. 20: p.2]. This study accomplished three things. First, all DoD hospitals were segregated into three categories (peer groups) determined to be relatively homogeneous. Second, the HCU was refined by the development of weights which account for the fact that the first day of admission is, in most cases, the most resource intensive day in a patients stay. And, third, it provided examples of a number of UCA/HCU based reports that could be used by management [Ref. 20: pp.3,24]. Each of these items is considered in turn.

1. The Development of Peer Groups

It is generally recognized that before cost per unit of output comparisons can be made, activities must be segregated into homogeneous peer groups. The development of peer groups has itself been somewhat of an issue due to the numerous variables which must be considered when trying to establish groups of similar hospitals. Olson [Ref. 3: p.75] recognized the importance of establishing peer groups for the purpose of making comparisons and made the following recommendation:

> ...that research be done to establish uniform peer group categories which encompass the many internal and external factors -- of which size is only one -- which influence the operation of the organization. Each peer group would contain facilities with similar exogenous and endogenous characteristics.

The R&D Associates' study also confirms the necessity of establishing peer groups as demonstrated by the following statement:

> The nature and complexity of cases handled varies from hospital to hospital. Such a variation is the result of policies designed to concentrate cases and medical expertise in selected hospitals to provide better care and improve efficiency. This, in turn, dictates that the procedures for calculating the HCU's take into account the different nature of the case mix that these policies imply. One way to do this is to separate the facilities into peer groups. [Ref. 20: p.4]

In recognition of these issues, the study developed three categories for military hospitals, which take the above factors into consideration.

While the development of peer groups is necessary in order to compare hospitals, it does not necessarily follow that all hospitals within a peer group are the same. This limitation was recognized by the Air Force HCU study authors who state:

> Even after partitioning the output of the hospital into homogeneous categories, some differences in case-mix (and consequently the intensity of care required) are certain to exist within each category. Depending upon both the particular grouping chosen and the accuracy desired, it may or may not be necessary to adjust the reported output to reflect these differences. If the partitioning is coarse, making adjustments assumes greater importance. Likewise, if greater accuracy is needed, adjustments should be made [Ref. 17: p.10].

Thus, there are limits to the conclusions which may be drawn from such comparisons, centering primarily around the issue of case mix or intensity of care differences. The HCU distinguishes between and assigns different weights to medical and surgical cases. However, it makes no distinction between cases that are resource intensive and those that are not, within the same specialty. For example, with the exception of the HCU's earned because of the different lengths of stay, a hospital receives the same amount of HCU credit for a coronary bypass as it does for the surgical correction of an impacted tooth, even though there is a substantial difference in the amount of resources consumed by these two surgical cases. Consequently, although two

hospitals within the same peer group may be similar in terms of their "exogenous and endogenous" characteristics, they may be substantially different in the intensity of the medical care they provide. Since the HCU does not differentiate between, and thus account for, these differences, comparing the cost per unit of output of these hospitals may lead to erroneous conclusions. This does not necessarily imply that these two hospitals should not be in the same peer group. Indeed, it would be impossible to establish peer groups in which all hospitals were absolutely identical. However, extreme caution must be exercised when making comparisons lest inappropriate and potentially adverse resource allocation decisions be made.

2. Performance Factor Weights

The R&D Study used the same basic equation to calculate HCUs as was originally proposed in the Air Force Study. However it improved upon the Air Force Study by developing weights for each of the three DOD hospital categories. Inpatient HCU weights for each category were derived from a linear regression run on the inpatient cost data submitted by DOD medical activities on their FY-1980 Medical Expense and Performance Report (MEPR) [Ref. 20: pp.22-28]. Table V

TABLE V

Normalized Inpatient HCU Weights

	CATEGORY (PEER GROUP)		
	I	II	III
MEDICAL			
Fixed	.332	.434	.240
Variable	.114	.130	.214
SURGICAL			
Fixed	.761	.755	.511
Variable	.139	.127	.197
OB/GYN			
Fixed	.382	.350	.424
Variable	.279	.180	.191
PEDIATRIC			
Fixed	.609	.363	.491
Variable	.066	.133	.163
ORTHOPEDIC			
Fixed	.669	.602	.463
Variable	.112	.099	.119
PSYCHIATRIC			
Fixed	.558	.181	.499
Variable	.079	.153	.127

[Ref. 20: p.32]

provides the normalized inpatient HCU weights for each category of hospital, and for each of the six Inpatient Care accounts listed on the MEPR. The terms "fixed" and "variable", identified for each of the six inpatient accounts deserve explanation. As stated in the study:

> An inpatient disposition is counted for each patient admitted to a hospital. In virtually all cases, all admissions are counted as having one occupied bed day for the day they are admitted no matter how long they stay

> that day. Also, the day of admission is unusual in that a significant amount of special treatment (tests, special care, etc.) occurs then. Thus, all charges on the day of admission (first occupied bed day) can be considered as fixed charges and all variable charges accrue on a per day basis from day two onward. [Ref. 20: p.24]

Simply stated, the fixed and variable weights assigned to each of the inpatient accounts recognize that the day of admission is more resource intensive (more resources are expended) than the occupied bed days which follow. Table VI provides the normalized outpatient HCU weights for each

TABLE VI

Normalized Outpatient HCU Weights

	CATEGORY (PEER GROUP)		
	I	II	III
DEPARTMENT			
Medical	.025	.029	.039
Surgical	.033	.033	.038
OB/GYN	.024	.024	.030
Pediatric	.021	.019	.026
Orthopedic	.032	.029	.030
Psych/Ment Hlth	.030	.029	.040
Family Practice	.023	.030	.034
Primary Medical	.023	.021	.025
Emergency Med	.036	.028	.033
Flight Medicine	.041	.036	.018
Undersea Med	NA	NA	NA
Dental #1	.006	.006	.007
Dental #2	.003	.002	.002

[Ref. 20: p.33]

category of hospital and for each of the 13 Ambulatory Care and Dental Care Accounts on the MEPR. These outpatient HCU weights were developed by calculating a group centroid from the facility data submitted on the FY-1980 MEPRs. The group centroid for each hospital and each department was derived from a "mean by hospital" calculation. [Ref. 20: p.29]

Tables VII and VIII illustrate the computation of total HCU's for a hospital and use the UCA data submitted by Oakland on their FY-1981 MEPR.

3. UCA/HCU Based Management Reports

Based upon UCA data, HCU computations, and the segregation of hospitals into peer groups, R&D Associates provided a number of UCA/HCU based reports that can be used by OASD(HA) for the purpose of comparing the cost per unit of output of DOD hospitals. A brief description of each of these reports follows:

a. Cost - Product Analysis Report. This report shows the total cost (expenses) per HCU produced for each hospital in each peer group. It also provides a "percent deviation from average" column which reflects a hospital's relative position to the group average. The authors of the R&D study state that the ranking of the expense/HCU

TABLE VII

Sample Inpatient Care HCU Computation, Naval Regional Medical Center Oakland, CA

INPATIENT CARE - Fiscal Year 1981

DEPARTMENT	PERFORMANCE FACTOR	WEIGHT	HCU	% TOTAL HCU
INPATIENT				
Medical				
Fixed (1)	3295 Dispositions	.240	791	
Variable (2)	18509 OBD - 3295 Disp.	.214	3,256	
Surgical				
Fixed	4747 Dispositions	.511	2,426	
Variable	26572 OBD - 4747 Disp.	.197	4,300	
OB/GYN				
Fixed	1366 Dispositions	.424	579	
Variable	7660 OBD - 1366 Disp.	.191	1,202	
Pediatric				
Fixed	1053 Dispositions	.491	517	
Variable	5897 OBD - 1053 Disp.	.163	790	
Orthopedic				
Fixed	2519 Dispositions	.463	1,166	
Variable	14088 OBD - 2519 Disp.	.199	1,377	
Psychiatric				
Fixed	962 Dispositions	.499	480	
Variable	5413 OBD - 962 Disp.	.127	565	
TOTAL INPATIENT			17,449	49.2%

(1) Inpatient fixed HCUs are calculated by multuplying the number of dispositions by the applicable HCU weight.

(2) Inpatient variable HCU weights are calculated by subtracting the number of dispositions from the number of occupied bed days (OBD) and then multiplying the difference by the applicable HCU weight.

TABLE VIII

Sample Outpatient and Dental Care HCU Computation, Naval Regional Medical Center Oakland, Ca

OUTPATIENT AND DENTAL CARE - Fiscal Year 1981

DEPARTMENT	PERFORMANCE FACTOR		WEIGHT	HCU	% TOTAL HCU
OUTPATIENT					
Medical (1)	59,397	Visits	.039	2,316	
Surgical	67,639	Visits	.038	2,570	
OB/GYN	24,441	Visits	.030	733	
Pediatric	23,955	Visits	.026	623	
Orthopedic	29,901	Visits	.030	897	
Psych/MH	14,898	Visits	.040	596	
Fam Practice	None Reported		.034	---	
Prim Medicine	330,958	Visits	.025	8,274	
Emer. Medicine	16,379	Visits	.033	541	
Flight Med.	25,434	Visits	.018	458	
Undersea Med.	4,578	Visits	Not Available (2)		
TOTAL OUTPATIENT				17,008	48.0%
DENTAL					
Dental #1	118,273	Procedures	.007	828	
Dental #2	77,351	Work Units	.002	155	
TOTAL DENTAL				983	2.8%
TOTAL HCU PRODUCT				35,440	100.0%

(1) Outpatient HCUs are calculated by multiplying the number of visits by the applicable HCU weight.

(2) R&D Associates had insufficient data upon which to base a calculation for an undersea medicine HCU weight. Since NAVREGMEDCEN Oakland reported 4,578 Undersea Medicine visits, total HCU product would be slightly higher than that calculated above.

ratio "could be thought of as depicting the relative efficiencies of hospitals" [Ref. 20: p.54]. In order for this statement to be true, it must be that hospitals with a higher cost per HCU are less efficient than those with a lower cost per HCU. The inability of the HCU to capture intensity of care differences makes this condition questionable.

b. Physician Productivity Report. This report provides a ratio of HCU's produced per physician assigned and ranks each hospital in each category from the highest ratio to the lowest. It also provides a "percent deviation from the average" column [Ref. 20: p.59]. Again, the implication is that hospitals with a low HCU per physician ratio are less efficient than those with a higher ratio.

c. Manpower Productivity Report. The format for this report is exactly like that of the last except that ratios of HCU's per Full Time Equivalent (FTE) manmonths assigned are calculated [Ref. 20: p.64]. The number of FTEs includes all military and civilian personnel assigned to the hospital as distributed in step two of the UCA stepdown methodology and as reported in the Stepdown Statistics Matrix submitted by activities to OASD(HA).

d. Facility Productivity Report. This report provides a ratio of HCU's produced per operating bed for each hospital in each category. Each hospital is rank ordered beginning with the highest ratio. [Ref. 20: p.69] Since the services have considerable latitude in adjusting the number of authorized operating beds at any given facility, the usefulness of this report is questionable.

e. Hospital Productivity Report. One of these reports is prepared for each DOD hospital and provides more detail than those reports previously discussed. The format of the report is much like that of the MEPR in that it identifies expenses for each of the UCA Summary Accounts in Inpatient Care, Ambulatory Care, and Dental Care. It also shows the number of HCU's "credited" to each of these accounts. The ratio of expenses per HCU is shown along with a "percent deviation" column which indicates the hospital's relative position with respect to the category average. [Ref. 20: p.74]

These reports rely exclusively on information submitted by activity UCA reports (MEPRs). The expense data reported in the MEPRs is used to develop the HCU weights. These HCU weights are then used in conjunction with the

performance factors, which are also reported on the MEPRs, to calculate total HCUs (output) for each activity. Once the HCUs are calculated, various ratios are developed for each hospital which, when rank ordered, purport to show the relative efficiency of one hospital with respect to another. Armed with this information, planners and decision makers may feel that they have sufficient information upon which to base resource allocation decisions. However, as will be shown below, this may not be the case.

B. TWO EXAMPLES OF THE LIMITATIONS OF COST AND OUTPUT COMPARISONS

With the implementation of the Uniform Chart of Accounts, military hospitals began, for the first time, reporting uniform cost and performance data. The development of the HCU and the partitioning of DOD hospitals into peer groups were additional efforts directed toward the establishment of a methodology whereby military hospitals could be compared with one another. However, it should not be assumed that uniform reporting has eliminated all of the variations which make unique entities of the three military medical departments and their respective hospitals. As discussed earlier, in order to accept that UCA and the HCU

are valid measures of expense and output, and therefore efficiency, it must be assumed that each of the hospitals within a peer group provide approximately the same levels of health care to approximately the same types of patients in approximately the same manner, or that average total cost is constant. A review of 1980 workload data pertaining to the admission rates and practices of the three Services indicates that the first and third assumptions may be demonstrably false.

During 1980, active duty Navy and Marine Corps personnel were admitted to Navy hospitals at a rate of 93.6 admissions per 1000 eligibles, on the average. Comparable figures for the Army and the Air Force were 150.9 and 148.0, respectively. It is not likely that these differences in admission rates could be attributed to a higher incidence of disease and/or injury among Army and Air Force personnel. A more likely cause may be basic policy differences regarding the mode of health care delivery. [Ref. 21: p.2]

A review of the data showing the leading cause of admission for active duty personnel in each of the three Services helps highlight some Service unique characteristics. For example, column one of Table IX shows that during 1980 the

TABLE IX

Leading Cause of Admission - 1980 (Rates per 1,000 Average Strength)

	DIAGNOSIS		
	Acute Upper Resp. Infec.	Dental Disorders	Alcoholism
Branch of Service			
Army	16.8 (1)	0.9 (20+)	3.2 (2)
Air Force	3.2 (4)	10.1 (1)	2.5 (6)
Navy/MC	0.3 (68)	0.3 (45)	5.3 (1)

Rank in parenthesis

[Ref. 21: p.2]

Army's leading cause of admission for active duty personnel was acute upper respiratory infection (ICD9-645), with an admission rate of 16.8 per thousand, or approximately 14,000 admissions. This diagnosis ranked 4th at Air Force hospitals, with an admission rate of 3.2 per thousand, and 68th at Navy hospitals with an admission rate of 0.3 per thousand (200 admissions). To put these admission rates into perspective, the Army admission rate is more than 5 times higher than the Air Force admission rate and 56 times higher than that of the Navy's. Column two shows that during this same period, the leading cause of admission for active duty Air Force personnel in Air Force hospitals was dental disorders (ICD9-520), with an admission rate of 10.1 per

thousand and resulting in almost 6,500 admissions. This diagnosis was not ranked among the twenty leading causes of admission at Army hospitals. It ranked 45th in Navy hospitals and accounted for fewer than 300 admissions. Again, to place this figure into perspective, this Air Force admission rate is 11 times higher than the Army's and 34 times higher than the Navy's, for the same diagnosis. The Navy's leading cause for admission during 1980 was alcoholism (column three) with an admission rate of 5.3 per thousand. In contrast to the two diagnoses described above, all three services experienced roughly the same admission rate. Admissions for alcoholism (ICD9-303) ranked 2nd at Army hospitals and 6th at Air Force hospitals. [Ref. 21: p.1, 2]

Based on this data, it would appear that Army and Air Force hospitals choose to treat some minor health care problems on an inpatient basis, while the Navy chooses, for the most part, to treat these same illnesses on an outpatient basis. This hypothesis is supported by the fact that the average length of stay (ALOS) for personnel admitted to Air Force hospitals with dental disorders was only 1.5 days, while, the ALOS in Army hospitals for Army personnel with acute upper respiratory infections was less than 3 days.

This is not to argue the wisdom of such practices varying between services, but only to indicate the likely differing intensities of care which would result from them.

Up to this point the discussion has focused on the differences in the leading cause of admission for each of the Services. However, there are other admission indicators which would tend to support the hypothesis that there are differences in the admission practices of the three Services. Table X provides six additional diagnoses that were ranked among the top twenty causes for admission at Air Force hospitals. As the Table shows, only one of the diagnoses, viral infection of unspecified nature or site (ICD9-079), was among the top twenty admissions for Army and Navy hospitals. Since these six illnesses appear to be relativley minor when compared with more typical causes of inpatient admission, the amount of medical resources consumed, relative to the HCU "credit" earned, is correspondingly smaller. It should also be noted that these six admissions accounted for more than 10 percent of all active duty Air Force admissions and only 3.5 percent of active duty Navy and Marine Corps admissions [Ref. 21: p.5]. The impact on the cost per unit of output is readily apparent.

TABLE X

Comparison of Admissions for other Minor Illnesses

DIAGNOSIS	ICD CODE	RANK BY SERVICE AIR FORCE	ARMY	NAVY
Viral infection of unspecified site or nature	097	2	4	20
Other noninfective gastroenteritis and colitis	558	3	20+	20+
Ill defined intestinal infections	009	7	20+	20+
Contraceptive management	V25	13	20+	20+
Intestinal infections due to other organisms	008	16	20+	20+
Acute tonsillitis	463	20	20+	20+

[Ref. 21: p.5]

The point to be made from this discussion is that because of these differences in the manner in which the Services tend to treat minor illnesses, the inability of the Health Care Unit (HCU) to fully capture intensity of care differences becomes critical. By treating minor illnesses in an inpatient setting, hospitals are able to earn substantially more HCU "credit" than would be earned if these same illnesses were treated on an outpatient basis. For example, an Army hospital that admits a patient for an acute upper respiratory infection with a 3 day length of stay receives .668 HCU "credits" (.240 for the day of admission plus .428 for the two days thereafter). On the other hand, the Navy

hospital that treats a patient with the same diagnosis on an outpatient basis receives .039 HCU "credits". Thus, the Army hospital can receive 17 times more HCU credit than the Navy hospital for treating the same kind of patient. As a result of the inpatient care, the Army hospital will expend more of it's health care resources than will the Navy. However, while these costs will be reflected in the expenses generated by internal medicine on the MEPR, it is highly unlikely that the expenses will be 17 times greater than those expended by the Navy hospital.

In this example, the Army hospital is driving up it's total HCU's and total costs, while at the same time keeping down its average costs, by treating relatively uncomplicated cases in the inpatient setting. The hospital is also able to increase its ratio of HCU's per physician and HCU's per full-time equivalent. In this sense, the HCU becomes a rather perverse disincentive for achieving efficiency. The reader should recall that R & D Associates developed several UCA/HCU based management reports that used these ratios as measures of relative hospital efficiency. However, as can be seen in the above example, the HCU may actually encourage inefficiency. This problem was recognized by the authors of the R & D Associates study when they stated:

To the extent that the HCU becomes a real factor in decision-making, it is reasonable to expect that management behavior at the individual medical facilities will be adjusted to maximize the perceived efficiency of that facility, i.e., to yield maximum HCU's for each unit of resource used. If the true efficiency of the facility is increasing, then the system is working as it should. However, there is the possibility that true efficiency will not increase but that only the perceived efficiency will. This possibility, sometimes referred to as "gaming", can occur in two basic ways with the HCU: transfer of care or transfer of charges.

Transfer of care, more pernicious in that it results in overall inefficiency, is a change in actual treatment delivered--resulting in the transfer of certain cases from low HCU-yielding categories of care. This could come about through the use of inpatient care for cases which could be handled in outpatient clinics, or through referral of the more difficult and expensive cases from the inpatient clinics to CHAMPUS. Since the cost of inpatient care for a very easy case can be less than the average cost per disposition, the former tactic yields a net increase in measured efficiency. The latter one produces a perceived gain for the medical facility since, by referring only expensive cases, cost is reduced at a rate above the average cost for a disposition--thereby yielding a higher HCU/cost ratio. The best (and probably only) check on this kind of manipulation is the professional ethics of the hospital staff.

Transfer of charges is really an accounting ruse to move cost items around within the UCA or to treat cases in clinics which yield more HCU's but without any real changes in care. This kind of "cheating" can be very difficult to detect, although it would be minimized through the use of weights which are recalculated periodically to reflect any changes in costs for particular clinics. In this way, the gamester does not know for certain how to adjust charges, and so his ability to cheat is diminished. [Ref. 20: pp.88,89]

Another example of the differences among the Services with respect to health care delivery methods lies in the area of alcohol rehabilitation. As shown earlier, alcoholism was the leading cause of admission for active duty Navy and Marine Corps personnel in Navy hospitals during 1980. It also ranked 2nd and 6th in Army and Air Force hospitals, respectively. Here the similarity ends. When a diagnosed

alcoholic is admitted to a Navy hospital he is kept as an inpatient for two days (the day of admission plus one day). He is then placed in a resident status where he is maintained on the hospital rolls but not as an inpatient. All subsequent treatment is conducted on an outpatient basis in an Alcohol Rehabilitation Service [Ref. 22]. By contrast, Air Force hospitals maintain diagnosed alcoholics in an inpatient status for 31 to 33 days. This includes a 3 - 5 day detoxification phase and a 28 day medical rehabilitation phase [Ref. 23]. Alcoholics admitted to Army hospitals are carried as inpatients for 45 to 47 days, including the 3 - 5 day detoxification phase and a 6 week rehabilitation phase [Ref. 24]. The dramatic difference in the cost relative to the number of HCUs earned is readily apparent, even though the Services are providing health care to the same types of patients.

C. SUMMARY

It should not be concluded from the foregoing discussion that the authors are opposed to making comparisons of hospital output. Indeed, such comparisons could be very useful in identifying hospitals which may be in "trouble", thus enabling management to focus its attention in a more

precise manner. However, such comparisons, when taken literally and without the benefit of indepth analysis, are fraught with danger. These dangers are especially prevalent when trying to compare hospitals across Service lines.

It has been shown that there are substantial differences in the medical practices and policies of the three Services which make cross Service comparisons extremely difficult. It has also been shown that the UCA based HCU can encourage inefficiencies, and that management reports developed from this data can portray a hospital as relatively efficient when in fact it may be relatively inefficient, and vice versa. It is for this reason that planners and decision makers must exercise extreme caution when making decisions based upon UCA/HCU data, especially when the decision involves the reallocation of resources. In fact, it should be recognized that such decisions cannot be made based solely upon this data, as the authors of the Air Force Academy HCU study recognized when they stated: "We emphasize, however, that no measure of hospital output, however sophisticated, should be used exclusively in allocating resources" [Ref. 17: p.1].

The item of primary importance is that the HCU is the major value derived from UCA data which is presented to, and considered by, higher echelon management. Therefore, how the HCU is portrayed, interpreted, manipulated, and understood by higher level management is a key factor in the role that it is to play as part of the decision making process.

Throughout this chapter, the uses of efficiency measures and the concept of relative efficiencies as reflected through UCA/HCU have been scrutinized. The "efficiency" variable, that is the relative amount of resources consumed in producing a unit of product, provides a valuable perspective on management and operations. Improving efficiency (doing more with less) and maintaining cost effectiveness are in fact required objectives for all government activities. However, national security and maintenance of the medical training base (along with other essential considerations) often intrude upon, if not drive, the resource train. For example, while the Naval Hospital at Guantanamo Bay, Cuba may or may not be efficient and/or cost-effective, as measured by the UCA/HCU yardstick, national security considerations, as well as the nonavailability of alternative sources of health care, dictate that

the hospital remain open. In addition, although this hospitals operations may by extremely efficient, high fixed costs and the relatively small beneficiary population may cause its costs per unit of output to be greater than other hospitals of similar size. Cost-effectiveness and measures of efficiency (as currently developed using UCA) would therefore be of little consequence when making resource programming or resource allocation decisions for this hospital.

V. CONCLUSIONS

The purpose of this thesis was to critically analyze the Uniform Chart of Accounts to estimate the value of the information being generated and its appropriate role as a tool for management control and resource allocation. In conducting this evaluation, two distinct levels of management and decision making were examined. The first was management at the activity level and the second was management at higher authority.

In evaluating UCA at the activity level, UCA data generated by the Naval Regional Medical Center, Oakland was used as a basis for discussion. Although the data used was specific to Oakland, it is believed that the conclusions reached on the basis of the analysis may be applicable to any military medical treatment facility that is subject to the requirements of UCA.

UCA is a cost accounting system that appears to have been designed primarily to meet the information needs of management at higher authority; however, as demonstrated by the analysis in Chapter III, it has the potential to be a valuable management tool at the activity level if properly

developed by individual medical treatment facilities to meet their specific needs. UCA data can be useful in the evaluation of both programs (services) and responsibility centers if the data is accumulated, processed, and reported in a manner that is meaningful to the managers it is intended to support. Managers must assess their information needs and then develop systems that support those needs consistent with UCA reporting requirements. It is also important that managers understand what UCA data does and does not represent and that they recognize the limitations as well as the strengths of the information being generated. Key to the issue of whether UCA data will be used in a meaningful way by individual medical treatment facilities is the recognition of its value as a management tool by the managers of the facility.

Based on the analysis conducted in Chapter IV, it can be concluded that resource programming and/or resource allocation decisions by higher authority cannot be made based solely on UCA/HCU measures of cost performance and efficiency. While UCA/HCU data may be used as a screening mechanism to assist in the identification of hospitals and/or specialty services requiring increased management

emphasis, additional indepth analysis is required before definitive conclusions can be drawn as to their relative efficiencies or inefficiencies. Although the HCU is a substantial improvement in the measurement of military hospital output, its inability to measure and thus account for intensity of care and case mix differences between hospitals and within specialty services must be recognized by decision-makers. It must also be recognized that because of apparent differences in the medical practices of the three Services, cross-Service cost performance and efficiency comparisons are extremely difficult, and may in fact be misleading. If the UCA/HCU concept is to play a key role in the decision making process and these limitations are not recognized, arbitrary and capricious decisions may be made which would penalize relatively efficient hospitals and reward those that are inefficient.

APPENDIX A

THE UNIFORM CHART OF ACCOUNTS FOR FIXED MILITARY MEDICAL AND DENTAL TREATMENT FACILITIES

The purpose of this appendix is to provide the reader with a fundamental understanding of the Uniform Chart of Accounts. It is not an exhaustive explanation, but rather a framework with which the reader unfamiliar with UCA will be better prepared to understand the analysis contained in the body of the thesis. The information contained in this appendix was extracted from the Department of Defense Uniform Chart of Accounts For Fixed Military Medical and Dental Treatment Facilities [Ref. 2].

A. CHART OF ACCOUNTS

UCA establishes a hierarchy of accounts into which all expense and workload data can be assigned. At the highest level of the hierarchy are six functional categories:

1. Inpatient Care
2. Ambulatory Care
3. Dental Care
4. Ancillary Services
5. Support Services

6. Special Programs

Each of these six functional categories is subdivided into summary accounts and subaccounts. As an example, the functional category of Inpatient care consists of six summary accounts:

1. Medical Care
2. Surgical Care
3. Obstetrical and Gynecological Care
4. Pediatric Care
5. Orthopedic Care
6. Psychiatric Care

Each of these summary accounts is in turn composed of a number of subaccounts. A complete listing of each of the six functional categories and their respective summary and subaccounts is provided as Appendix B. Each element of expense generated within the health care activity is assigned to a particular subaccount (work center). The sum of the expenses in each subaccount represent the total expenses for each summary account, and the sum of the expenses in each summary account represent the total expenses for each functional category. The functional categories of Inpatient Care, Ambulatory Care, Dental Care

and Special Programs constitute final operating expense accounts which are the final expense accumulation points in the system. Ancillary Services and Support Services accounts serve as intermediate operating expense accounts the expenses of which are reallocated in a stepdown process to the four final operating expense accounts identified above.

Each of the UCA accounts listed in Appendix B is defined in the UCA manual in terms of "function", "costs" and "performance factor". The "function" describes the types of health care activities which are typical of each account. These definitions assist the activity in identifying the account to which "costs" (expenses) are to be assigned. The "performance factor" identifies a uniform workload measure which is used for evaluating performance. Performance factors for each account are also provided in Appendix B.

B. STEPDOWN METHODOLOGY

The assignment of Support Service and Ancillary Service expenses to the final operating expense accounts is accomplished in a five step sequential procedure. At the completion of this process, all expenses contained within the intermediate accounts will have been reallocated to the

final operating expense accounts. Discussion of each step in the process follows.

1. Assignment of Non-personnel Expenses

This first step in the cost assignment process has three phases. The first consists of assigning all non-personnel expenses to the intermediate and final operating expense accounts. These expenses come primarily from DOD Program Element 8, "Care in Defense Facilities", of the Operations and Maintenance Appropriation. However, any expenses originating from other DOD program elements which are incurred in direct support of a medical treatment facility are also included. These expenses are assigned to the appropriate UCA account by means of the job order accounting system. The UCA makes provisions for the establishment of indirect cost pool accounts. These accounts are used when it is difficult to identify the work center responsible for incurring an expense. An example would be the expenses incurred by a ward which contained both medical and surgical patients. Cost pool accounts may include both personnel and non-personnel expenses.

Phase two consists of the allocation of depreciation expenses. As stated in the UCA manual,

> Costs of modernization and replacement investment equipment funded from the Other Procurement Appropriation which

support a medical treatment facility shall be depreciated on a straight line basis using an eight year moving average and assigned as indirect expenses during the step down reassignment process rather than as a direct expense at the time of acquisition [Ref. 2: pp.3-6].

The third and final phase of this first step involves the compilation of performance data. Performance data is necessary in order to accomplish the stepdown of expenses from the intermediate operating expense accounts and the indirect cost pools to the final operating expense accounts as required in step four. This data is also required for the pre and post stepdown purification of expenses required in steps three and five.

2. Distribution of Full-time Equivalent Man-months and Salary Expenses

The distribution of full-time equivalent (FTE) man-months and salary expenses requires two substeps. First, FTE man-months to be charged to each account must be determined. The second substep involves the conversion of the identified FTE man-months into salary expenses.

Civilian personnel salary expenses are calculated on a monthly basis for each employee. Expenses consist of the amount of funds obligated as a result of the employment of each employee, and includes, but is not limited to, basic salary, incentive and hazardous pay, the government

contribution to benefits, overtime, and termination pay. The salary expense for each employee is charged to the appropriate UCA account based upon the distribution of FTE man-months as accomplished in substep one. The salary expense for military personnel is charged to the UCA accounts in the same manner as that for civilian personnel. The salary expense to be distributed for each military member is derived from the DOD Annual Composite Standard Rates Table which is promulgated annually by the Office of the Assistant Secretary of Defense (Comptroller). The amount to be charged to the UCA accounts each month is derived by multiplying the standard rate for a member's grade and military department times the allocated FTE man-months.

The UCA manual contains detailed guidelines for the distribution of FTE man-months and salary expenses. A summary of these procedures is provided as Appendix C.

3. Pre Step-down Purification of Expenses

Step three consists of a pre step-down purification of the expenses not previously allocated to UCA accounts during steps one and two. These expenses are allocated to the Support Services and Ancillary Services accounts,

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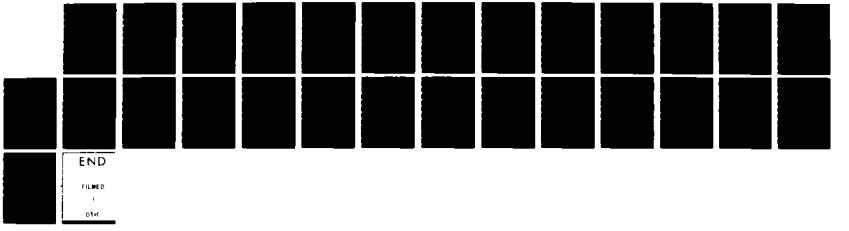

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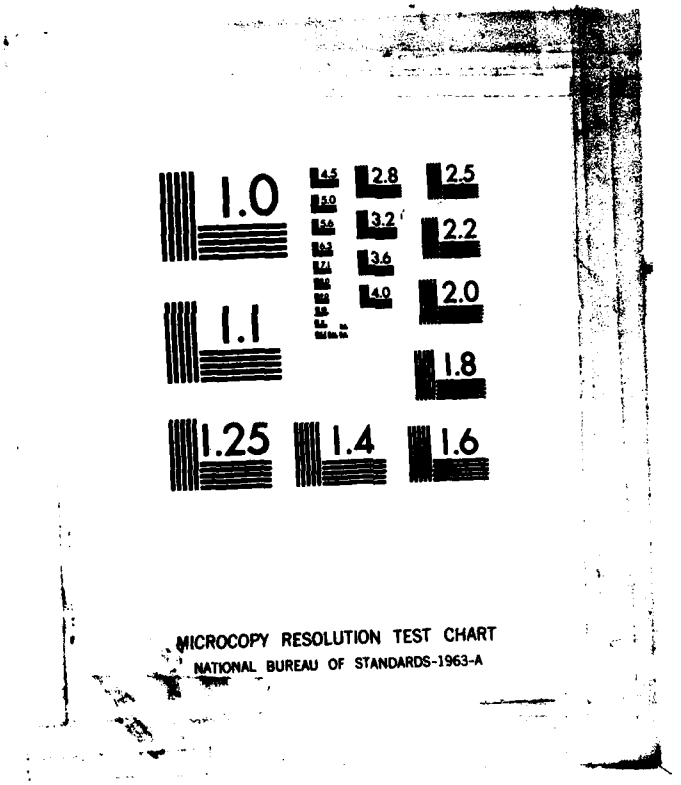
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provided there is no overhead included in the expenses. Expenses which include overhead are allocated in step four. After completion of step three, performance data for each operating expense account and expenses applicable to the operation of the medical facility will have been compiled. These two sets of data are necessary in order to proceed with the next step, the step-down procedure.

4. Assignment of Expenses to the Final Operating Expense Accounts

Step four involves the reassignment of costs from the intermediate operating expense accounts (Ancillary and Support Services) and indirect cost pools (wards and clinics) to the final operating expense accounts. The result of this process is the identification of direct patient care expenses by subspecialty workcenter and special programs.

As stated, the step-down process begins with the allocation of expenses which were assigned to the intermediate operating expense accounts. In general, the expenses are allocated to other intermediate operating expense accounts and final work center accounts (subaccounts), to which service was rendered. The assignment of these

expenses is made in accordance with specified assignment procedures for each account and in the prescribed sequence shown in Appendix D. A pictorial representation of this process is provided in Figure A.1 . The next step in the process is the assignment of costs accumulated in the indirect cost pools. These expenses are assigned to the appropriate work center accounts "based on a ratio of workload generated by each receiving account to the total workload of the indirect cost pool" [Ref. 2: pp.3-21].

At the completion of the stepdown process, only the subaccounts of the final operating expense accounts will contain expense data.

5. Post Stepdown Purification of Final Operating Expense Accounts

The final action consists of a post-stepdown purification of the final operating expenses accounts. This final purification consists of reallocating the expenses from one final operating expense account into another final operating expense account as specified in the appropriate "cost" paragraphs. This reallocation is accomplished by prorating the expenses based on the performance factor or other unit of service. At the conclusion of this final purification, the

expenses contained in each subaccount can be aggregated into their appropriate summary accounts and functional categories.

C. REPORTING THE RESULTS

The DOD Medical Expense and Performance Report (MEPR) is the vehicle by which activities report UCA data, and is provided, for informational purposes, as Figure A.2 and A.3 As can be seen, expense data is reported by functional category for not only the final operating expense accounts but also for the intermediate operating expense accounts. Workload (defined as the "performance factor") accomplished during the reporting period is also reported. These reports are submitted by activities to OASD(HA) through each military services' medical chain of command. In addition to the MEPR, an activity has developed a substantial data base and has created a number of additional data displays at the completion of the UCA process. A number of these displays are described below.

1. Account Subset Definition (ASD)

The ASD provides a listing of all UCA accounts used by a particular medical treatment facility. It also identifies the sequence in which expense assignment will be performed.

2. Stepdown Statistics Matrix

The Stepdown Statistics Matrix includes a listing of each UCA account and provides the performance factor basis upon which allocation of expenses will be based. This matrix includes as many rows as there are accounts defined in the ASD and as many columns as there are intermediate expense accounts. For example, inpatient depreciation is allocated on the basis of occupied bed days (OBD); therefore, this display contains OBD data for each final inpatient account so that depreciation can be allocated to each of these accounts on the basis of total OBD's for the facility.

3. Direct Expense Summary (DES)

The DES contains a listing of all UCA accounts for the medical treatment facility and the total amount of direct expenses attributed to each account prior to allocation.

4. Stepdown Schedule

The Stepdown Schedule provides a detailed display, in dollar amounts, of the results of the stepdown procedure. This display corresponds to the rows and columns of the Stepdown Statistics Matrix and is the result of applying the performance factors identified previously to the expenses identified in the DES.

5. Final Purification

This display provides a detailed report of the purification of the final expense amounts after stepdown. This display identifies the allocation of those costs contained in cost pools for multi-purpose wards, multi-purpose clinics, and outlying branch clinics. After final purification, all costs have been allocated to the final operating expense accounts.

6. Computation Summary

The Computation Summary displays each UCA account with a summary of all the UCA transactions that have occurred and their affect on the account. The Computation Summary has the following column headings:

(a) The total direct expenses accumulated in the account at the beginning of the process;

(b) The amount of support costs passed to the account;

(c) The amount of ancillary costs passed to the account;

(d) The costs in the account after stepdown;

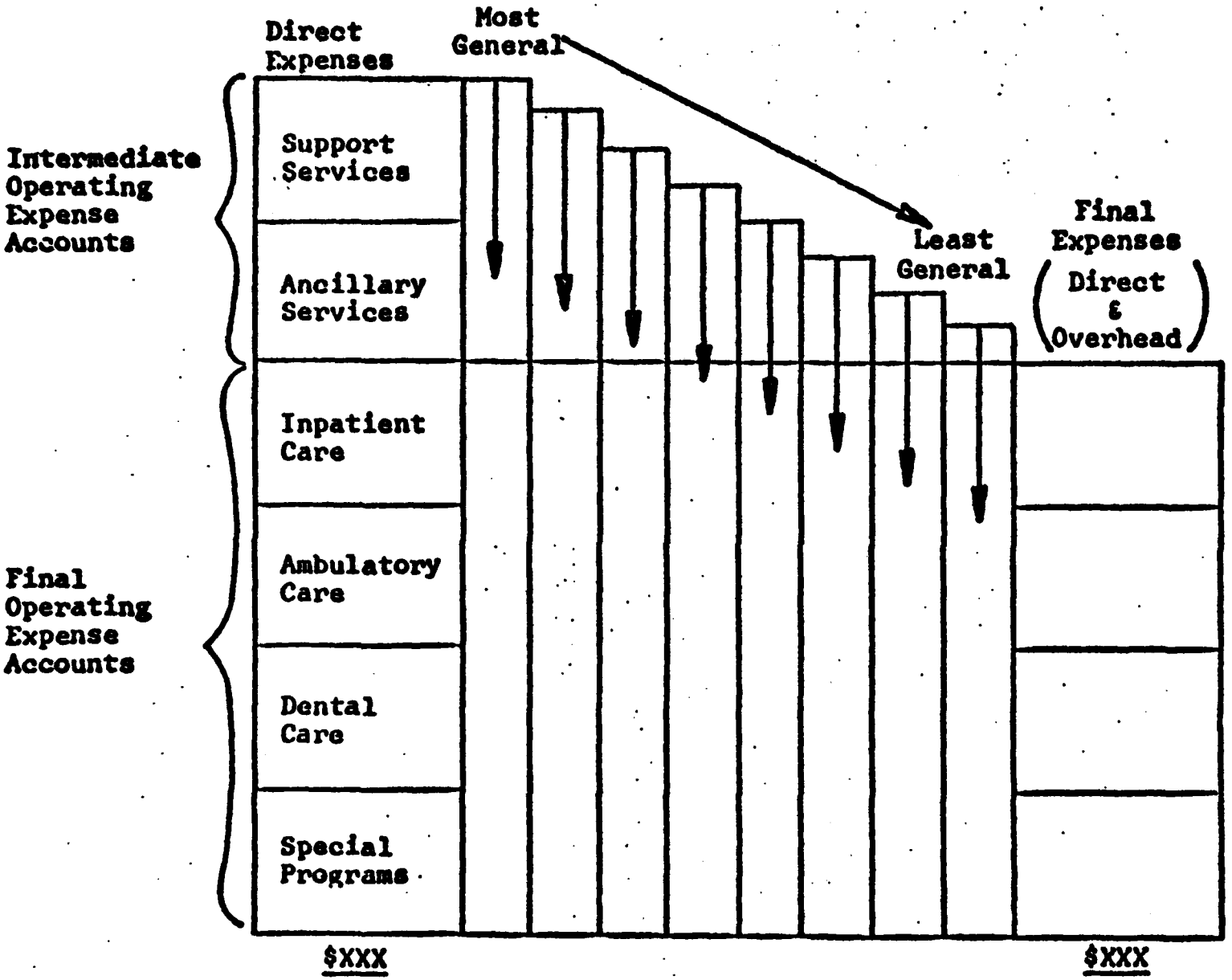
(e) The amount of costs allocated from cost pools during purification; and

(f) The final purified cost allocated to the account.

This display provides a summary of each step in the UCA cost allocation process conducted at the medical center.

7. Detail Unit Cost Report

The Detail Unit Cost Report provides total expenses; output measures; and cost per unit for each inpatient, ambulatory care, dental care, and ancillary service account. The data in this display is only carried to the three character subaccount level.



[Ref.3:p.91]

Figure A.1 Diagram of the Overhead Assignment Process.

DOD MEDICAL EXPENSE AND PERFORMANCE REPORT [1]	*See Instructions in Chapter 5 of DOD 6010.13-M*	RCS

NAME AND ADDRESS OF FACILITY *(Include ZIP Code)*	FACILITY CODE *(UIC)*	REPORT PERIOD
REPORTING AUTHORITY	DOD MEDICAL REGION	

PART I - DIRECT PATIENT CARE *(Direct Expenses Plus Support and Ancillary Services Assignments and Performance)*

INPATIENT CARE	DISPOSITIONS	TOTAL EXPENSES INCLUDING CLINICIAN SALARY	CLINICIAN SALARY EXPENSE	OCCUPIED BED DAYS
MEDICAL CARE				
SURGICAL CARE				
OBSTETRICAL/GYNECOLOGICAL CARE				
PEDIATRIC CARE				
ORTHOPEDIC CARE				
PSYCHIATRIC CARE				
TOTAL				

AMBULATORY CARE	TOTAL OUTPATIENT EXPENSES	OUTPATIENT VISITS	INPATIENT VISITS [2]
MEDICAL CARE			
SURGICAL CARE			
OBSTETRICAL/GYNECOLOGICAL CARE			
PEDIATRIC CARE			
ORTHOPEDIC CARE			
PSYCHIATRIC/MENTAL HEALTH CARE			
FAMILY PRACTICE CARE			
PRIMARY MEDICAL CARE			
EMERGENCY MEDICAL CARE			
FLIGHT MEDICINE CARE			
UNDERSEAS MEDICINE CARE			
TOTAL			

DENTAL CARE	TOTAL EXPENSES	WEIGHTED DENTAL PROCEDURE	WEIGHTED DENTAL PROSTHETIC WORK UNIT
DENTAL SERVICES			NA
DENTAL LABORATORIES *(Class 2 and 3 only)*		NA	
TOTAL			

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[1] SEE ATTACHED CAVEATS
[2] EXPENSES INCLUDED IN INPATIENT CARE ACCOUNTS

Figure A.2 DOD Medical Expense and Performance Report, Front.

PART II - ANCILLARY SERVICES [3] (Direct Expenses Plus Support Services Assignments and Performance)			
ANCILLARY SERVICES	TOTAL EXPENSES	WORKLOAD (Weighted Procedures)	EXPENSES (Weighted Procedures)
PHARMACY			
PATHOLOGY			
RADIOLOGY			
OTHER ANCILLARY SERVICES			NA
TOTAL			

PART III - SUPPORT SERVICES [4] (Direct Expenses)	
SUPPORT SERVICES	TOTAL EXPENSES
TOTAL	

PART IV - SPECIAL PROGRAMS (Direct Expenses Plus Support and Ancillary Services Assignments)	
SPECIAL PROGRAMS	TOTAL EXPENSES
SPECIFIED HEALTH RELATED PROGRAMS	
PUBLIC HEALTH SERVICES	
HEALTH CARE SERVICES SUPPORT	
MILITARY UNIQUE MEDICAL ACTIVITIES	
PATIENT MOVEMENT & MILITARY ADMIN.	
TOTAL	

PART V - NARRATIVE

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[3] THESE EXPENSES ARE INCLUDED IN PARTS I AND IV
[4] THESE EXPENSES ARE INCLUDED IN PART I, II, AND IV

Figure A.3 DOD Medical Expense and Performance Report, Back.

APPENDIX B

ACCOUNTS, CODES, AND PERFORMANCE FACTORS

This appendix provides a complete listing of the six functional categories of the Uniform Chart of Accounts, along with their respective summary and subaccounts. The functional categories of inpatient care, ambulatory care, dental care, and special programs are final operating expense accounts. Ancillary services and support services are intermediate operating expense accounts. Also provided in this appendix are the appropriate UCA codes and performance factors upon which the allocation of expenses is based.

ACCOUNT	UCA CODE	PERFORMANCE FACTOR
A. Inpatient Care	A	Occupied bed day
1. Medical Care	AA	"
a. Internal Medicine	AAA	"
b. Cardiology	AAB	"
c. Coronary Care	AAC	"
d. Dermatology	AAD	"
e. Endocrinology	AAE	"
f. Gastroenterology	AAF	"
g. Hematology	AAG	"
h. Intensive Care	AAH	"
i. Nephrology	AAI	"
j. Neurology	AAJ	"
k. Oncology	AAK	"
l. Pulmonary/Upper Respiratory Disease	AAL	"
m. Rheumatology	AAM	"
n. Medical Care Not Elsewhere Classified	AAZ	"
2. Surgical Care	AB	"
a. General Surgery	ABA	"
b. Cardiovascular and Thoracic Surgery	ABB	"
c. Intensive Care	ABC	"
d. Neurosurgery	ABD	"

ACCOUNT	UCA CODE	PERFORMANCE FACTOR
e. Ophthalmology	ABE	Occupied Bed Day
f. Oral Surgery	ABF	"
g. Otorhinolaryngology	ABG	"
h. Pediatric Surgery	ABH	"
i. Plastic Surgery	ABI	"
j. Proctology	ABJ	"
k. Urology	ABK	"
l. Surgical Care Not Elsewhere Classified	ABZ	"
3. Obstetrical and Gynecological Care	AC	"
a. Gynecology	ACA	"
b. Obstetrics	ACB	"
4. Pediatric Care	AD	
a. Pediatrics	ADA	"
b. Nursery	ADB	"
c. Neonatal Intensive Care Unit	ADC	"
d. Pediatric Care Not Elsewhere Classified	ADZ	"
5. Orthopedic Care	AE	
a. Orthopedics	AEA	"
b. Podiatry	AEB	"
6. Psychiatric Care	AF	"
B. Ambulatory Care	B	Visit
1. Medical Care	BA	"
a. Internal Medicine Clinic	BAA	"
b. Allergy Clinic	BAB	"
c. Cardiology Clinic	BAC	"
d. Diabetic Clinic	BAE	"
e. Endocrinology Clinic	BAF	"
f. Gastroenterology Clinic	BAG	"
g. Hematology Clinic	BAH	"
h. Hypertension Clinic	BAI	"
i. Nephrology Clinic	BAJ	"
j. Neurology Clinic	BAK	"
k. Nutrition Clinic	BAL	"
l. Oncology Clinic	BAM	"
m. Pulmonary Disease Clinic	BAN	"
n. Rheumatology Clinic	BAO	"
o. Dermatology Clinic	BAP	"
p. Medical Clinics Not Elsewhere Classified	BAZ	"
2. Surgical Care	BB	"
a. General Surgery Clinic	BBA	"
b. Cardiovascular and Thoracic Surgery Clinic	BBB	"
c. Neurosurgery Clinic	BBC	"
d. Ophthalmology Clinic	BBD	"

ACCOUNT	UCA CODE	PERFORMANCE FACTOR
e. Organ Transplant Clinic	BBE	Visit
f. Otorhinolaryngology Clinic	BBF	"
g. Plastic Surgery Clinic	BBG	"
h. Proctology Clinic	BBH	"
i. Urology Clinic	BBI	"
j. Surgery Clinics Not Elsewhere Classified	BBZ	"
3. Obstetrical and Gynecological Care	BC	"
a. Family Planning Clinic	BCA	"
b. Gynecology Clinic	BCB	"
c. Obstetrics Clinic	BCC	"
4. Pediatric Care	BD	"
a. Pediatric Clinic	BDA	"
b. Adolescent Clinic	BDB	"
c. Well Baby Clinic	BDC	"
d. Pediatric Clinics Not Elsewhere Classified	BDZ	"
5. Orthopedic Care	BE	"
a. Orthopedic Clinic	BEA	"
b. Cast Clinic	BEB	"
c. Hand Surgery Clinic	BEC	"
d. Neuromusculoskeletal Screening Clinic	BED	"
e. Orthopedic Appliance Clinic	BEE	"
f. Podiatry Clinic	BEF	"
6. Psychiatric/Mental Health Care	BF	"
a. Psychiatry Clinic	BFA	"
b. Psychology Clinic	BFB	"
c. Child Guidance Clinic	BFC	"
d. Mental Health Clinic	BFD	"
7. Family Practice Care	BG	"
8. Primary Medical Care	BH	"
a. Primary Care Clinics	BHA	"
b. Medical Examination Clinic	BHB	"
c. Optometry Clinic	BHC	"
d. Audiology Clinic	BHD	"
e. Speech Pathology Clinic	BHE	"
9. Emergency Medical Care	BI	"
10. Flight Medicine Care	BJ	"
11. Underseas Medicine Care	BK	"
C. Dental Care	C	N/A
1. Dental Services	CA	Weighted Dental Procedure

ACCOUNT	UCA CODE	PERFORMANCE FACTOR
2. Type 3 Dental Prosthetic Laboratory	CB	Weighted Prosthodontic Work Unit
3. Type 2 Dental Prosthetic Laboratory	CC	"
D. Ancillary Services	D	N/A
1. Pharmacy	DA	Weighted Procedure
2. Pathology	DB	"
a. Clinical Pathology	DBA	"
b. Anatomical Pathology	DBB	"
c. Blood Bank	DBC	"
3. Radiology	DC	"
a. Diagnostic Radiology	DCA	"
b. Therapeutic Radiology	DCB	"
4. Special Procedures Services	DD	Procedure
a. Electrocardiography	DDA	"
b. Electro-encephalography	DDB	"
c. Electro-neuromyography	DDC	"
d. Pulmonary Function	DDD	"
e. Cardiac Catheterization	DDE	"
5. Central Sterile Supply/ Materiel Service	DE	N/A
a. Central Sterile Supply	DEA	Hours of Service
b. Central Materiel Service	DEB	"
6. Surgical Services	DF	"
a. Anesthesiology/ Recovery Room	DFA	"
b. Surgical Suite	DFB	"
7. Same Day Services	DG	"
a. Same Day Surgery	DGA	"
b. Hemodialysis	DGB	"
8. Rehabilitative Services	DH	Visit
a. Inhalation/ Respiration Therapy	DHA	"
b. Occupational Therapy	DHB	"
c. Physical Medicine	DHC	"
d. Physical Therapy	DHD	"
e. Social Work Services	DHE	"
9. Nuclear Medicine	DI	Weighted Procedure
E. Support Services	E	N/A
1. Depreciation	EA	N/A

ACCOUNT	UCA CODE	PERFORMANCE FACTOR
2. Command And Administrative Support Services	EB	FTE Manmonths
3. Personnel Support Services	EC	N/A
a. Fire Protection	ECA	N/A
b. Police Protection (Security)	ECB	N/A
4. Public Works	ED	N/A
a. Plant Management	EDA	N/A
b. Operation of Utilities	EDB	N/A
c. Maintenance of Real Property	EDC	N/A
d. Minor Construction	EDD	N/A
e. Other Engineering Support	EDE	N/A
f. Leasing and Renting of Real Property and Facilities	EDF	N/A
g. Transportation	EDG	N/A
5. Materiel Services	EE	Cost of supplies and minor equipment issued
6. Housekeeping and Janitorial Service	EF	Hours of service
7. Biomedical Equipment Repair Service	EG	Hours of service
8. Linen and Laundry Service	EH	Pounds of laundry processed
9. Inpatient Food Service	EI	Rations served
a. Dietetics	EIA	"
b. Subsistence	EIB	"
10. Inpatient Affairs	EJ	Occupied bed day
11. Ambulatory Care Administration	EK	Outpatient visit
F. Special Programs	F	
1. Specified Health Related Programs	FA	N/A
a. Area Reference Laboratories	FAA	Weighted procedures
b. Area Dental Prosthetic Laboratory (Type 1)	FAB	"
c. Ophthalmic Fabrication/Repair	FAC	Spectacles fabricated or repaired
d. DOD Military Blood Program	FAD	Weighted procedure
e. Alcohol and Drug Abuse/Rehabilitation Program	FAE	Occupied bed day (while inpatient)
f. Drug Screening and Testing Program	FAF	N/A

ACCOUNT	UCA CODE	PERFORMANCE FACTOR
g. Clinical Investigation Program	FAH	N/A
h. Physiological Training/Support Program	FAI	N/A
i. Conducting Training and Educational Programs	FAJ	N/A
j. Student Salary Expenses for Classroom and other Learning Experiences	FAK	N/A
k. Externally Sponsored Continuing Health Education	FAL	N/A
l. Specified Health Related Programs Not Elsewhere Classified	FAZ	Varies
2. Public Health Services	FB	N/A
a. Public, Environmental and Occupational Health	FBA	N/A
b. Immunizations	FBB	Immunizations
c. Community Mental Health Activities	FBC	Visit
d. Veterinary Services	FBD	N/A
3. Health Care Services Support	FC	N/A
a. Supplemental Care Purchased From Civilian Sources	FCA	N/A
b. Military and Civilian Guest Lecturer and Consultant Program	FCB	N/A
c. CHAMPUS Beneficiary Support	FCC	N/A
d. Support to Other Military Activities	FCD	N/A
e. Support to Other Federal Agencies	FCE	N/A
4. Military Unique Medical Activities	FD	N/A
a. Contingency and Emergency Operations	FDA	N/A
b. Base Operations, Medical Installations	FDB	N/A
c. Nonpatient Food Operations	FDC	Rations served
d. Decedent Affairs	FDD	N/A
e. Initial Outfitting	FDE	N/A
f. Urgent Minor Construction	FDF	N/A
g. TDY/TAD Enroute to PCS	FDG	N/A
h. Civilian Permanent Change of Station	FDH	N/A
i. Military Unique Medical Activities Not Elsewhere Classified	FDZ	Varies

ACCOUNT	UCA CODE	PERFORMANCE FACTOR
5. Patient Movement and Military Patient Administration	FE	N/A
a. Patient Transportation	FEA	Hours of service
b. Travel and Materiel for Patient Movement	FEB	N/A
c. Aeromedical Staging Facilities/Transient Patient Care	FEC	Patient movements/ Occupied bed day
d. Military Patient Personnel Admin.	FED	N/A
e. Military Patients (Salaries)	FEE	N/A

[Ref. 2]

APPENDIX C

DISTRIBUTION OF PERSONNEL FULL-TIME EQUIVALENT MAN-MONTHS

This appendix provides a summary of the guidelines contained in the UCA manual pertaining to the appropriate distribution of full-time equivalent (FTE) man-months to UCA Accounts (work-centers). The distribution of FTE man-months is critical since it ultimately affects the distribution of salary expenses.

1. Substep 1 - Full-time equivalent (FTE) Man-month determination:

   A. Personnel included:

      (1) United States military personnel assigned on permanent duty orders (including students).

      (2) Federal civilian personnel and direct and indirect hire foreign national employees paid from appropriated funds.

      (3) Personnel attached on temporary duty/ temporary additional duty or on temporary orders for duty.

      (4) Personnel "borrowed".

   B. Personnel excluded:

      (1) Inpatients, except those assigned for duty with the medical treatment facility.

      (2) Foreign Armed Forces personnel.

      (3) Reserve or National Guard personnel on active duty for less than 90 days.

      (4) Federal civilian personnel and direct and indirect hire foreign national employees in an unpaid absence status.

      (5) Civilian employees paid from nonappropriated funds.

      (6) Personnel "loaned".

      (7) Volunteers.

   C. All personnel shall have their FTE work months

distributed to the accounts they support, except that:

(1) Labor shall be distributed to no more than seven accounts.

(2) Labor shall be distributed in multiples of five percent.

(3) Distribution of labor shall be based on primary duties assigned. Assignment to duties in the emergency medical care area (attending surgeon, medical officer of the day, emergency room duty officer) is considered to be a primary duty. However, time spent performing collateral duties, extraneous duties, assignments to boards and committees, and at-home call, is not considered to be a primary duty.

(4) The time of a person (military and civilian) in an authorized absence status, such as leave, sickness, or general military training, shall be distributed to the work center(s) in which that person normally works.

(5) Special identification of clinician's personnel expense distributed to the inpatient accounts is necessary for the Medical Expense and Performance Report. This identification is necessary to make proper comparison of inpatient care costs. In some instances, clinician personnel expenses should be included and in other instances they should not. For example, comparing civilian hospital charges through OCHAMPUS with a military medical treatment facility, inpatient expenses should exclude clinician personnel expenses. For this reason, the term "clinicians" is defined as "physician and dentist practitioners/ normally having admitting privileges and primary responsibility for the care of inpatients." Clinicians will distribute their time to subaccounts (subspecialties) rather than to mixed wards and clinics.

(6) Borrowed and loaned labor must be distributed based on the number of days in that status. Each period of time in excess of 4 hours, but not greater than 8 hours will be charged as one day of work or service.

(7) The labor distribution shall be based on the percentage of the FTE work month spent in each work center, not on the number of hours worked per day, week, or month.

(8) Civilian FTE work months shall be determined by the number of civilian personnel assigned during the month. A civilian absent from duty, but in a pay status, shall be considered assigned.

(9) Nursing service and administrative personnel who work on mixed wards or clinics may distribute their time to as many as 7 accounts. One of the accounts to which they

must distribute their time would be the mixed ward or clinic account to which they are assigned. The mixed ward or clinic will function as an indirect cost pool. The FTE work months accumulated in these mixed ward or clinic cost pools shall not be distributed to the subaccounts (subspecialties) until after the support and ancillary services expenses have been stepped down.

(10) Student personnel FTE work month distribution. Physicians and dentists during their second or later years of postgraduate training (residency) will be considered 50 percent chargeable to account FAK (Student Salary Expenses for Classroom and Other Learning Experience). The remaining 50 percent is chargeable where patient care is provided. Before the start of their second year in such training, physicians and dentists will be 100 percent chargeable to that account. Other officer and enlisted students will be chargeable 100 percent to that account if their curricula require a predominance of classroom training and contribution to patient care or support is incidental or minor. Other officer and enlisted students whose principal duties require the performance of tasks normally performed by permanently assigned personnel will be 50 percent chargeable to the appropriate work center and 50 percent chargeable to Account FAK.

2. Substep 2. Conversion of Full Time Equivalent Man-Months to Salary Expense.

A. A civilian's monthly personnel expense shall be that amount of funds obligated due to the employment of that employee during that month. This would include basic salary, incentive and hazard pay, government contribution to benefits, overtime, termination payments, etc.

B. Each civilian's personnel expense shall be charged to those accounts to which have had distributed that civilian's FTE man-month.

C. A military member's monthly personnel expense shall be that amount prescribed in the DOD Annual Composite Standard Rates Table for that military member's grade and military department times the FTE man-month.

D. Variance between actual pay and personnel expense computed from the DOD Annual Composite Standard Rates Tables shall be ignored for the UCA reporting.

[Ref. 2: pp.3-11,3-14]

APPENDIX Q

ALIGNMENT FOR INTERMEDIATE OPERATING EXPENSE ACCOUNTS AND BASES FOR ASSIGNMENT

This appendix provides the sequence for closing intermediate operating expense accounts. This sequence must be followed. In general, intermediate operating expense accounts which render the most service to other work centers are closed first. Accounts which receive the most services are closed last. It is important to recognize that once an account is closed, it cannot receive expenses from any other intermediate operating expense account whose expenses have yet to be assigned.

ACCOUNT	BASES OF ASSIGNMENT
1. Depreciation of Equipment	As described in the Depreciation Account.
2. Command and Administrative Support Services	Ratio of each receiving account's number of full time equivalent man-months (excluding patients) to the total number of full time equivalent workmonths.
3. Personnel Support Services (1)	Ratio of each receiving account's square footage to the total square footage of the medical treatment facility.
4. Public Works (1)	
a. Plant Management, Operation of Utilities, Other Engineering Support and that portion of Maintenance of Real Property which cannot be identified with a specific work center.	Ratio of each account's square footage to the total square footage of the medical treatment facility.

b.	Maintenance of Real Property and Minor Construction (including projects by contract not funded under 10 USC 2674) which can be identified with a specific work center.	Ratio of hours (or percentage) of service rendered to each receiving account to the total hours (or percentage) of service rendered to the medical treatment facility.
c.	Leases and Rental of Real Property and Facilities	Ratio of each receiving account's square footage used to the total square footage leased or rented by the medical treatment facility.
d.	Transportation Services	Ratio of hours of service received by each receiving account to the total hours of service received by the medical treatment facility.
5.	Materiel Service	
a.	All operating expenses except equipment maintained by contract or installation provided	Ratio of each receiving account's combined expenses for supplies (except subsistence) and minor plant equipment to total combined expenses for supplies (except subsistence) and minor plant equipment of the medical treatment facility.
b.	Equipment maintenance by contract or provided by the installation	Ratio of service rendered to each receiving account to the total service rendered to the medical treatment facility.
6.	Housekeeping and Janitorial Service (1)	Ratio of hours of service rendered to each receiving account to the total hours of service rendered to the medical treatment facility.
7.	Biomedical Equipment Repair	
a.	Personnel, bench stock and shop equipment costs	Ratio of hours of service rendered to each receiving account to the total hours of service rendered to the medical treatment facility.
b.	Medical equipment maintenance contracts	Ratio of hours (or percentage) of service rendered to each receiving account to

	the total hours (or percentage) of service rendered to the medical treatment facility.
8. Linen and Laundry Service	Ratio of pounds of dry laundry processed for each receiving account to the total pounds of laundry processed for the medical treatment facility. Pieces of laundry processed may be used as an alternative assignment basis only if conversion to pounds of dry laundry is prohibitive in cost, or prohibited by contract.
9. Inpatient Food Service	Ratio of inpatient rations served to each receiving account to the total inpatient rations served in the medical treatment facility.
10. Inpatient Affairs	Ratio of occupied bed days in each work center to the total number of occupied bed days in the medical treatment facility.
11. Ambulatory Care Administration	Ratio of ambulatory patient visits to each receiving account supported for record maintenance to the total visits to those clinics.
12. Pharmacy	Ratio of weighted procedures requested by each receiving account to the total weighted procedures provided by the Pharmacy.
13. Pathology	Ratio of weighted procedures requested by each receiving account to the total weighted procedures provided by Pathology.
14. Radiology	Ratio of weighted procedures requested by each receiving account to the total weighted procedures provided by Radiology.
15. Central Sterile Supply/ Materiel Service	
a. Central Sterile Supply	Ratio of hours of service rendered to each receiving account to the total hours of service rendered by Central Sterile Supply.

	b. Central Materiel Service	Ratio of cost of supplies and equipment issued to each receiving account to the total cost value of supplies and equipment issued by Central Materiel Supply.
16.	Surgical Services	Ratio of hours of service provided each receiving account to the total hours of service provided by Surgical Services.
17.	Same Day Services	Ratio of hours of service provided each receiving account to the total hours of service provided by Same Day Services.
18.	Special Procedures Services	Ratio of procedures requested by each receiving account to the total procedures provided by Special Procedures Services.
19.	Rehabilitative Services	Ratio of visits requested by each receiving account to the total number of visits provided by Rehabilitative Services.
20.	Nuclear Medicine	Ratio of weighted procedures requested by each receiving account to the total weighted procedures provided by Nuclear Medicine.

LEGEND:
(1) These accounts shall be moved between the Depreciation account and the Command and Administrative Support Services account when the services are provided by contract or by an installation support service (other than one manned by the medical treatment facility). If more than one account is moved, the relocated accounts must keep their relative alignment. In those instances when housekeeping and janitorial services are provided by both an in-house work force and by contract to the same reporting medical treatment facility, the contract expense will be moved up in the alignment as provided for above. However, no portion of the contract expense will be allocated to the in-house housekeeping and janitorial services account.
[Ref. 2: pp.3-23 to 3-28]

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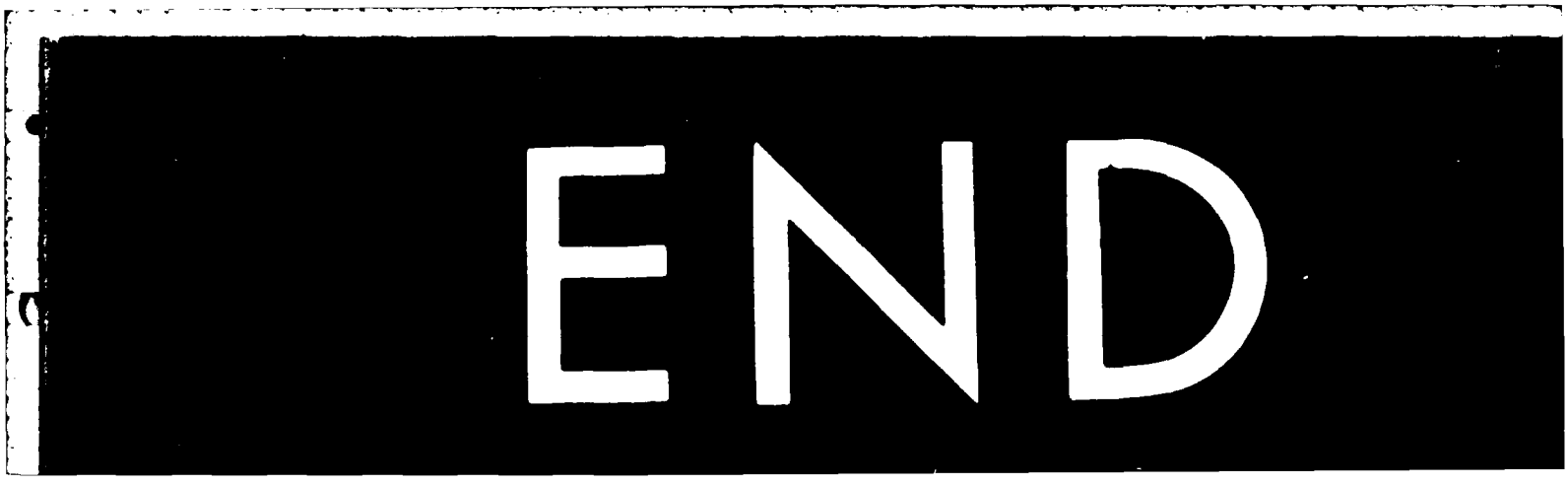
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