RUNNING HEAD: UCAPERS

A Process Analysis of the Uniform Chart of Accounts Personnel Utilization System

A Graduate Management Project Proposal
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The Defense Department uses the Medical Expense and Performance Reporting System (MEPRS) to perform analyses in support of best business practices. As part of MEPRS, the Uniform Chart of Accounts Personnel Utilization System (UCAPERS) isused to record manpower utilization data. Data quality is critical to ensure that accurate and timely data is available to decision makers. The quality of the data depends on the accuracy of the input and on the level of understanding of the process. The purpose ofthis study is to conduct a process analysis of UCAPERS and to assess the level of the standardization of reporting by providers responsible for the data input. The results showthat UCAPERS is a complex process that is subject to varying degrees of interpretation. This appears true both among providers and MEPRSs managers. Additionally, there is a wide variance in the reporting of certain categories of activities both among junior andsenior officers. The authors recommendations include: a web-based program to educate the personnel responsible for data capture, the development of a standardized format for data capture, and the development of an automated method for the daily capture of UCAPERS data to enhance data quality.

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Abstract

The Defense Department uses the Medical Expense and Performance Reporting System (MEPRS) to perform analyses in support of best business practices. As part of MEPRS, the Uniform Chart of Accounts Personnel Utilization System (UCAPERS) is used to record manpower utilization data. Data quality is critical to ensure that accurate and timely data is available to decision makers. The quality of the data depends on the accuracy of the input and on the level of understanding of the process. The purpose of this study is to conduct a process analysis of UCAPERS and to assess the level of the standardization of reporting by providers responsible for the data input. The results show that UCAPERS is a complex process that is subject to varying degrees of interpretation. This appears true both among providers and MEPRS's managers. Additionally, there is a wide variance in the reporting of certain categories of activities both among junior and senior officers. The author's recommendations include: a web-based program to educate the personnel responsible for data capture, the development of a standardized format for data capture, and the development of an automated method for the daily capture of UCAPERS data to enhance data quality.

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Introduction

Businesses expecting to survive the competitive environment that marks the global community today must include in their strategic plan effective measures to control costs and to increase productivity. The escalating costs of health care in the United States serves as the impetus for the ever-increasing necessity of these management tools. It is estimated that health care expenditures as a percent of the Gross Domestic Product (GDP) will approach 15.9% by the year 2010 after reaching a recent low of 13% of GDP in the mid-1990's (Health Care Financing Administration, 2001). To face the similar challenge of an increasing demand for services amidst limited funding, the United States military is now required to operate as a corporation by employing best business practices. Consequently, the Surgeon General (TSG) of the United States Army has directed the fielding of a business tool, known as the Balanced Score Card (BSC), as the metric to track progress in developing measures to improve productivity and to establish financial goalposts (Harben, 2001). The BSC format utilizes four areas of focus for its template. These include customer satisfaction, internal processes, learning and growth of the organization, and financial. Measures for each of these core areas are based on the Army Medical Department's (AMEDD) BSC but are tailored to the each individual department responsible for developing its own version (Harben, 2001). Ongoing assessment of the data used in these measures provides the information used by decision makers in their strategic planning as illustrated in the BSC outlined in Appendix A (Holt, 2001).

The data used in these analyses are partially obtained from the Medical Expense and Performance Reporting System (MEPRS). This Tri-Service program aggregates data from the United States Army (USA), Air Force, and Navy in a format that permits direct

comparison of data in three areas of common interest. These areas are grouped under financial (expenses), workload (productivity), and personnel (utilization) categories within the MEPRS database. For the USA, all of the data for these three elements are consolidated in the Expense Accounting System (EAS), Version III or IV. The personnel data in the Uniform Chart of Accounts Personnel Utilization System (UCAPERS) is merged into the EAS system in the creation of a final report. The final allocation of data in the EAS is transmitted to the EAS IV repository, which is designed to replace the current system used for data queries known as the MEPRS Executive Query System III (MEQS III). MEQS III will remain operational for approximately five years when it is scheduled for replacement by EAS IV (MEPRS, 2000). Data from various queries from EAS IV and UCAPERS is used to perform a variety of analyses comparing productivity among departments, trends in the costs of services, and the man hours spent in each of the Military Occupational Specialties throughout the military. Additional uses include analyses associated with base closures, resource allocations, provider compensation studies, and report cards to Congress (DENCOM Memo for Defense Service Support Area, 1994).

Conditions which prompted the study

Efforts to evaluate the productivity of providers are conditioned on two essential variables: workload and personnel utilization (Betka and Lacusta, 1984). Comparisons can be made by relating workload measures to the number of hours spent directly producing these measures. The validity and reliability of these comparisons relies on the quality of the data source. As with any database, the quality of the data in the EAS IV Repository is dependent on the quality of the input from the source organizations.

Logically the quality of the input hinges on two factors: the level of understanding of the system and, in turn, this level of understanding depends in part on the adequacy of training and amount of experience in using the programs (Hurdle and Pope, 1989).

In 1999, the USA Dental Command (DENCOM) fielded a new system software program, the Corporate Dental Application (CDA), to electronically capture workload data (Army Dental Care System (ADCS), 2001). CDA was designed to replace the existing system for capturing dental workload by permitting a trained clerk at every dental clinic to enter the dental services completed by each provider on a daily basis. Initially, CDA encountered numerous implementation problems primarily associated with insufficient infrastructure and training. After these glitches were rectified the resulting system has improved on the pre-existing one in three ways. First, CDA has a window to capture the readiness status of each service member permitting tracking of the unit status. Dental Readiness is a military classification system used to identify the dental needs of each service member. The four classes [1-4] assign each individual according to their oral health status and elapsed time since the last examination. Each class is described in Table 1 (Joseph, 1997). Second, the software has consolidated and modified some of the procedural codes used for classifying services thus clarifying issues associated with proper codes for the organization. Finally, the data entered for each patient is electronically submitted the instant the submit tab is activated allowing up to date accounting of clinic and organizational workload (personal conversation with Staff Sergeant J. Dycus, Systems Analyst, CDA; July 23, 2001). The process improvements provided to address the shortfalls associated with worldwide fielding of CDA and the reengineering of the format for categorizing the individual services has resulted in a

database with substantially improved data quality, which is due in part to improved training at the local level (personal conversation with M. Fravell, Chief, CDA; July 25, 2001).

Table 1. Description of Dental Classifications

Class 1.	Patients not requiring dental treatment or reevaluation within 12 months
Class 2.	Patients who have oral conditions that, if not treated or followed up, have the potential but are not expected to result in dental emergencies within 12 months.
Class 3.	Patients who have oral conditions that if not treated are expected to result in dental emergencies within 12 months. Patients should be placed in Class 3 when there are questions in determining classification between Class 2 and Class 3.
Class 4.	Patients who require a dental examination. This includes patients who require an annual or other required examination or whose dental classification in unknown.

Conversely, the DENCOM has not demonstrated a consistent organizational understanding and application of the UCAPERS system (personal conversation with Colonel R. Leeds, DENCOM Commander, July 05, 2001). Thus, the question that results from this perception follows: Is the training, knowledge level, and implementation of UCAPERS consistent throughout the various individual organizations of the DENCOM? If not the data quality would be compromised by unreliable data collection.

As a result, the findings of an analysis intended to measure productivity would necessarily be suspect as to validity and reliability. The traditional definition of productivity is output as a function of input (Choich, 1988). In this study, productivity is operationally defined as workload generated as a function of the time spent in direct patient care as captured by UCAPERS. Validity is operationally defined as measuring the right, or intended variable, and reliability is operationally defined as measuring the

variable consistently (Kerlinger, 1986). Accordingly, the value of any decisions based on an analysis of data that is measured invalidly and/or unreliably would be questionable.

Statement of the Question

Since the quality of the data in UCAPERS depends on the accuracy of the input and the accuracy of the input is assumed to be a function of the knowledge of the system's process, the research question then becomes: What is the level of knowledge of the system among the providers, clerks, and work center supervisors on whose input the integrity of the system depends? A proper assessment of the individual user's depth of knowledge would necessitate a comprehensive grasp of the subject matter by the investigator. This process must be understood with sufficient clarity so that the researcher could then succinctly and clearly question providers to determine their level of comprehension.

Literature Review

Historical basis

There are many reasons for the use of a process analysis as an accepted method for seeking ways to improve organizational performance. As early as the 1980's, Betka and Lacusta (1984) described a productivity-monitoring tool as a method to enable managers to assess the relationship between productivity and labor hours worked. Lagasse (1996) reported that it is vitally important for administrators to monitor provider productivity to ensure appropriate use of resources and to implement incentives to stimulate compliance. The information gained with these tools is useful in tracking trends and assessing historical data. Furthermore, models can be developed and used to predict future workload and labor requirements. In the 1990's, Business Process Reengineering

(BPR) rose to prominence as managers sought additional mechanisms to improve productivity. BPR resulted in corporate restructuring, downsizing, and an increase in outsourcing as ways to enhance company value. The downside to this management tool was the increase fear among employees who anticipated the loss of their position as the company eliminated unprofitable services. This often resulted in the dilution of the seasoned knowledge base that is crucial to the development of future ideas and programs (Dean, 1996). Yet, when applied with an interest in preserving human resources, these processes have even been recommended recently for small businesses, even down to the individual practitioner. Even operators of dental practices must learn to adapt modern business practices to their private practice (Levin, 2000). In an earlier article, Levin stated that most private practice dentists are not even aware of the overhead associated with the services they provide (Levin, 1997). This is all the more reason for large organizations such as the AMEDD and DENCOM to adopt a system to manage costs and to develop the measures to track them (Holt, 2001).

The necessity for organizations of all sizes to adopt best business practices is evolving rapidly. The ever-changing health care environment requires all providers to be familiar with the costs of each encounter with a patient and the overall business aspects of health care (Perez, Brown, Salminen, Hume, and Wittich, 1999). This includes a variety of dental practices that must learn to employ modern business practices. Those organizations with business systems in place and excellent customer service will improve productivity and, consequently, will survive and thrive. The estimated 80% that do not develop business systems will experience reduced performance (Levin, 1997).

Hence, the rationale for the civilian dentist to perform a business analysis of his practice and to implement effective business practices based on the findings is becoming more compelling (Levin, 1997). The status of the overall economy, the fluctuating unemployment rate that at times results in labor shortages, the costs associated with various training requirements, and the recent reduction in the number of new services available for the dentist to offer his beneficiaries are all included as some of the main reasons to implement these measures. Another persuasive factor is the decreasing average production per patient, which is largely due to reductions in insurance reimbursements (Levin, 2000). This is occurring at the same time that the volume of patients is increasing indicating that dentists are working harder to maintain their productivity goals. Based on guidance from the military leadership, this rationale also applies to all healthcare organizations including military dental services (Holt, 2001).

Productivity

Productivity is measured as units of output divided by units of input (Choich, 1988). Thus, a desirable goal is to attain the greatest possible output of services with the least amount of labor hours at optimal levels of quality (Betka and Lacusta, 1984). Several authors have also reported that a large portion of the costs of health care is attributable to labor costs (United States Department of Labor, 1998; Betka and Lacusta, 1984; Szasz, 1990). Managers have a greater degree of influence on labor costs than on most other cost factors associated with providing health care. People are the key to any cost cutting effort; even modest improvements in performance can lead to dramatic productivity increases; resulting in better service at lower costs (Werther, 1984). Not all authors concur with this position. Johnson (1984) stated that reducing labor costs to

improve productivity has limited application to a health care facility and that not all productivity improvements necessarily come with enhanced efficiency. However, for dental practices, Levin (1997) espouses a principle captured in the term Operational Productive Capacity, defined as every hour the dental practice is operational should reflect the highest productivity at the lowest overhead.

The productivity-monitoring system (PMS) proposed by Betka and Lacusta (1984) includes several components. They are: workload indicators (outputs or services), labor standards (determined by various work measurement techniques and represent the average time required to complete each output or service), and payroll information (hours worked, hours paid, salary and benefits). These components are similar to the elements comprising MEPRS; namely, workload, expenses, and labor (UCAPERS). The PMS provides a framework to determine optimal staffing requirements, monitor departmental productivity, and analyze workload patterns within departments. These analyses can be used to forecast workload expectations for managers, which in turn can lead to optimal staffing options (Betka and Lacusta, 1984). These goals and objectives are similar to those for which MEPRS is used (personal conversation with B. Barfield, August 08, 2001).

The requirement for business practices in the military health care system is expanding rapidly. The Assistant Secretary of Defense for Health Affairs mandated managed care for military health systems for Fiscal Year's (FY) 1998-2003 (Perez et al., 1999). As recently as September of 2001, Secretary of Defense Rumsfeld stated that "over the next two years we will reform the procurement of care from the private sector" because of the redundant bureaucracy and overlapping organizations in the military

medical system (speech at the Acquisition and Logistics Excellence Week Sept 10, 2001). Previous guidance from the office of the Undersecretary of Defense for Personnel and Readiness, directs that all three services develop an activity based costing system and begin using an activity based management system by the end of FY 2003 (personal conversation with D. Ardner, 11 September 2001).

The interpretation of this directive for the USA has come in the form of the Balance Score Card (BSC) originally developed by Kaplan and Norton (Kaplan and Norton, 1996). It is being applied to the USA medical system under the direction of Lieutenant General Peake, the Surgeon General. The BSC is an organizational wide metric designed and deployed as a strategic management system that will make rapid and effective execution of strategy the normal mode of operation. It is intended to enable the AMEDD to maintain its focus on key initiatives so that desired outcomes can be achieved. The BSC supplements financial measures with perspectives representing the customers, internal business processes, and organizational staff development. This last perspective occurs chiefly through learning and new initiatives. It is disseminated throughout the organization and can by used by anyone as a tool for instituting process improvement, especially by managers (AMEDD Balanced Score Card, 2001).

Much of the data to be used to measure the progress under the BSC implementation is obtained from the MEPRS database via the EAS IV query system. The Uniform Chart of Accounts Personnel System (UCAPERS) is the personnel utilization arm of this system and captures the hours spent by providers in the performance of their duties. The productivity of the DENCOM collectively can be determined from data available in EAS IV. The data used to determine individual practitioner productivity is

available from the CDA and UCAPERS databases. Hurdle and Pope (1989) note that their results purport that the time input by physicians is the most important determinant of any productivity measurement. The relationship between work productivity and time input is not, however, an elastic one. In fact it is less than one, which indicates that a reduction in time input does not result in an elastically proportional decrease in productivity (Betka and Lacusta, 1984).

Intuitively, it is known that the data quality is dependent on data input. Before even assessing the quality of the data in the MEPRS system, and of UCAPERS in particular, a working understanding of the system must exist on a corporate and individual provider level. Without system awareness, the quality of the input may well be compromised and, hence, the value of decisions based on potentially invalid, and certainly unreliable data would be uncertain. Consequently, a process analysis of UCAPERS, a system that institutional knowledge was previously cited as suspect, would appear beneficial.

Process Analysis

A process analysis is operationally defined as a chronological sequence of events that explains how something is accomplished or how readers can do something. This type of analysis can fall into two categories: Informational and Instructional processes. The informational, or mechanical method, is designed to provide the steps on how to accomplish something, but does not expect the reader to duplicate the steps precisely. Instructional processes provide a detailed sequence that is followed exactly by the reader in order to comply with stated organizational goals or to successfully complete a process (Process Analysis, 1998).

Purpose of the research

The purpose of this study is to conduct a process analysis of MEPRS, focusing on UCAPERS, with the intent of forming a concise understanding of the system followed by an assessment of the level of awareness that exists in the workforce. The long-term benefit may well be an improvement of the general knowledge base, the implementation of a process standard, and the improvement in the data quality of UCAPERS and, consequently, of MEPRS. This in turn would permit decision makers to analyze a higher quality of data and potentially make more informed conclusions.

Methods and Procedures

The process analysis will begin with a review of the published Department of Defense (DoD) literature on the MEPRS and UCAPERS programs as conducted by the USA. Similar literature available from the United States Air Force (USAF) will be examined. In the absence of, and in additional to the printed documents, standardized surveys will be used to assess the level of understanding and methods of implementation of the UCAPERS. Telephonic interviews of junior dental officers and graduate dental program directors will be conducted to assess the degree of standardization of reporting the time spent in the various activities that are common to the dental occupation in the military. Structure written surveys will be gathered from MEPRS' managers from installations around the world.

Additional questions will be directed to corporate level managers to determine if there are any developing plans to modify or replace the current UCAPERS format. Awareness of this possibility could guide the recommendations made by this study pending the results of the research.

The information gathered from these varied sources will be presented in a logical process analysis. The intent then would be to use the analysis as a resource to create a more effective education tool to improve compliance with UCAPERS guidelines.

To measure validity and reliability, the UCAPERS system should be an Instructional process analysis. If the system is being implemented as designed, then the main goal of standardized data input will be achieved. However, if the system is not universally understood and implemented, then the Informational process analysis method is being used to the decrement of the data quality. For the purposes of this study, validity and reliability will be assessed using the following mechanism. A query of the EAS IV Repository will be made for the UCAPERS data for four Dental Activity Commands (DENTAC) from separate Regional Dental Commands (RDC) for the second quarter of FY 2001; January through March 2001. The data request will be for dental providers according to their Military Occupational Specialty (MOS) code. Each MOS represents a dental specialty category. The results from this query will be compared to the results from a "mock recording" of UCAPERS data for this same time period and MOS categories. The corporate MEPRS subject matter expert will build the mock record at the DENCOM level by inserting the UCAPERS data from copies of the original worksheets for the same four DENTACs.

Expected Findings and Utility of Results

As noted previously, personal experience and informal interviews with colleagues have resulted in a plethora of impressions on the utility and process of UCAPERS. The information attained from the published documents and SMEs is expected to conflict at times with the operational awareness of the system at the end user level. Should this

expectation prove correct, the quality of the data inputted into the system would be suspect. Hence, the intent of completing an analysis that results in a verifiable resource to serve as an instructional base for educating the managers and end users throughout the organization should be realized. At the very least, guidelines for implementing the program could result in an institutional application of the intended format.

Results

The intent of a process analysis of the MEPRS/UCAPERS is to provide a foundational knowledge base to guide decision makers in determining the optimal method to maximize compliance with any program designed to track productivity within the Military Healthcare System (MHS). Any efforts to increase the institutional awareness of the purposes and methodologies of these accounting systems must be rooted in a solid understanding of the programs by those tasked with overseeing their implementation. The focal point of this study is on UCAPERS, a subsystem of MEPRS. To best understand UCAPERS's position within the larger program, it is necessary to discuss the origins of MEPRS, the concept supporting its development, and its stated purposes and objectives.

Genesis of MEPRS

The Medical Expense and Performance Reporting System (MEPRS) evolved from two existing management programs: the Uniform Chart of Accounts (UCA) and the Uniform Staffing Methodologies (USM). Both had previously been developed and fielded independently within the MHS. Previously, the Office of the Secretary of Defense for Healthcare Activities (OASD/HA) directed the development of the UCA as a program designed to track expenses within military healthcare facilities. Input from the Medical

Services' comptrollers and resource managers were obtained in this process. The development of the USM was also directed by the OASD/HA and was fielded with input from medical manpower personnel. Since the information available in these two systems overlapped in many areas, it became prudent to merge these two separate systems for consolidation and coordination purposes. Beginning with the sharing of data in early 1985, the two systems were effectively merged over time to track the first quarter of FY 1986 beginning in October of 1985. Hence, MEPRS was implemented and immediately became mandatory for Department of Defense (DoD) components (Medical Expense and Performance Reporting System (MEPRS), 2000).

Prior to 1975, the three military medical services maintained separate and independent information and databases to track the costs associated with the provision of healthcare at their respective facilities. Complicating this situation was the fact that each service also used varying definitions of common data elements, which in turn led to different outputs of data. The final and most critical issue was the incompatibility of the divergent service programs, i.e. comparisons between the three systems simply could not be made.

This scenario served as the impetus for a joint study of the MHS initiated by a Presidential mandate under the auspices of the Office of Management and Budget, the DoD, and the Department of Health, Education, and Welfare. There were four major concerns to provide the focus for the study, namely: the anticipated shortage of physicians due to the end of the draft; the increasing overhead within the DoD; the quality of planning, management, and evaluation systems; and the social equity of military health care and its compatibility with national objectives. The 2-½ year study

culminated with nine major recommendations designed to result in more effective and efficient delivery of healthcare in military facilities in the continental United States during peacetime. The UCA served as the answer to one of these recommendations; namely, the need for a uniform data system for the Tri-Service military medical departments (MEPRS, 2000).

During the approximate same time frame that the UCA program was in development, the House Appropriations Committee recommended that the DoD implement uniform standards to determine manpower requirements for medical components. Up to this point it was not possible to compare the divergent systems used by the Tri-Service departments and Congress wanted this situation to be corrected. The process, initiated during the mid-1970's, resulted in the formation of the USM, which was aligned with the UCA. Previously, the method for developing the estimating equations for calculating manpower needs had been the same for all three services. The study recommended keeping these equations and further advised the standardization of the data used to develop them as well as the formulas for calculating them. These changes mostly related to workload factors affected by demographics and historical usage of the services offered (MEPRS, 2000).

The Tri-Service Medical Departments now had a uniform and scientifically based methodology for capturing data and for making long-term forecasts for manpower requirements.

Concept behind MEPRS

The peacetime mission of the MHS is to provide medical support to America's military members and their beneficiaries. Maintaining that capability requires monitoring

the cost, staffing, resources, and outputs of the Tri-Service systems. The intent is to include efficient practices, measurable and achievable goals, and timely and accurate healthcare planning. To achieve these objectives, a constant effort is required to collect and analyze the data related to the expenses and performance of the various systems and then to analyze the information in such a way as to allow reliable comparisons among the sister medical services. Only with a process in place that collects this data in a consistent manner can managers effectively make the decisions that will accomplish the stated mission.

The criteria required of this data is that it be accurate, consistent, complete, and timely if decision makers are to be expected to act with success. Quantifiable data is necessary to permit managers to compare actual performance with the stated goals. MEPRS provides the system to categorize financial data into functional activities that sometimes may cross organizational lines providing managers with a coherent system designed to make educated decisions.

The reasons to support a compatible expense and manpower reporting system include concerns over defense spending, rising national healthcare costs, and the desire to provide a mechanism to substantially improve the MHS. In addition to providing an effective way to permit comparisons between the medical systems of the three medical services, MEPRS also presents a method to compare the performance of the MHS, either collectively or individually, with its civilian counterpart (MEPRS, 2000).

The benefits of MEPRS include cost awareness down to the department level as well as at the DoD, it allows the assignment of expenses to the primary department responsible for providing a particular service, and it serves as an effective information

management tool for managers at all levels within the MHS. This grants decision makers the means to construct meaningful programs to manage manpower issues and control costs while monitoring productivity. These three elements are key to a business process analysis for a well-run organization.

Purpose

The stated purpose of MEPRS is to provide for the MHS a uniform system to manage healthcare costs. This partially includes detailed performance measures, expenses commonly incurred and classified according to the responsible work center providing the service, a standardized personnel utilization data per site, and a method to determine cost assignment (MEPRS, 2000).

MEPRS provides definition of a work center, employs a uniform performance measurement system, describes the accepted cost assignment method, and receives required information in a standardize format for every military treatment facility.

Policy guidance originates with the Assistant Secretary of Defense for Health Affairs who is responsible to the Under Secretary of Defense (USoD) for Personnel and Readiness (P&R) in the DoD. Any financial issues arising under MEPRS falls under the purview of the USoD Comptroller, who provides guidance and accounting resources when required and the USoD for P&R provides guidance for manpower issues to the Tri-Service components. All of these agencies are directed to coordinate their respective activities to ensure an integrated management system (MEPRS, 2000).

Objectives

A manual provided by MEPRS serves as the standard for implementation of DoD policy as stipulated by Congressional mandate. It is designed to assist MTFs in measuring

productivity and assessing management effectiveness, in developing performance standards, and in identifying areas requiring special command attention. MEPRS can also be used to determine site-specific capabilities and to identify potential areas for inter-service support of workload through sharing of expertise and resources through consolidation.

The Office of Management and Budget (OMB) Circular A-123 (Office of Management and Budget, 1995) defines Defense Management Controls as the organization, policies, and procedures used to reasonably ensure that programs achieve their intended results, resources are used consistent with the mission of the Agency, and reliable and timely information is obtained, maintained, reported and used for decision making. Through the implementation of stated guidance that is detailed in scope, compliance metrics, and reconciliation procedures, MEPRS meets the standards of this regulation. The OASD/HA serves as the source for information requests on this standard and for petitions to deviate from this document for official policy actions (MEPRS, 2000).

The reader should note that this system is constantly evolving. As standing guidance is acted upon, modifications become necessary to fully implement the intent of the process and achieve the stated goals. The modifications that are required are often distributed throughout the MEDCOM footprint via organizational guidance that is circulated in printed memorandum format. The formalized publishing of these changes follows the implementation of the modifications at an unpredictable rate (personal conversation with Ms. B. Barfield, February 5, 2002).

MEPRS Process

As previously noted, the three primary components of MEPRS are manpower (utilization), workload (productivity), and financial (expenses). The data for these elements are contained in the EAS IV repository of MEPRS. Manpower data is captured by the UCAPERS and will be discussed in some depth later. The Corporate Dental Application (CDA) is a proprietary software program used by DENCOM to collect workload data from its 179 workcenters (most of which are dental clinics), which is then aggregated at the corporate level before being exported into the EAS IV repository (Army Dental Care System, 1999). The financial component of MEPRS includes all of the expenses (except payroll) associated with the provision of medical services and is captured for the Army in the Standard Army Financial System (STANFINS) (Army Financial Management (AFM), 2001). The essential components included in STANFINS are similar to those included in most businesses that use a cost accounting system to determine the costs associated with producing a given level of a product or service. These expenses include: contracts, supplies, equipment, travel, and base operations (utilities and building repairs) among others. While STANFINS technically contains civilian payroll data, MEPRS accesses this information via UCAPERS (AFM, 2001).

Cost accounting is defined as the process of assigning production costs to the products that result from the organizational output (Anthony and Pearlman, 2000). Cost accounting, also known as cost management, can be used throughout all organizational levels to help managers determine how efficiently their department utilizes assets such as manpower, equipment, and funds. Cost accounting data is also useful in the planning and control functions of military medical organizations (MEPRS, 1998). For planning

purposes, the data provides useful input to the budget process; and, as part of the control function, the data is useful for identifying and investigating cost trends and variances.

Since cost accounting is a critical part in maintaining the efficiency of an organization, a mechanism to capture the data necessary to determine the cost of operations is needed. MEPRS serves this purpose by integrating financial data with non-financial data such as workload and manpower utilization, which is sometimes recorded as full time equivalents (FTE), to produce a total cost and/or a cost per unit of workload or FTE. In the cost accounting process, to determine the actual costs of producing a given medical service, it is necessary to assign the costs associated with the support components of an organization to the revenue (or service) producing components. This assignment process is termed a stepdown procedure or stepdown process. This is a unidirectional process completed by personnel administrating and implementing the MEPRS. Once the expenses of a given workcenter are allocated to other workcenters, the account of the given workcenter is closed for accounting purposes. The assignment process is usually based on allocating the portion of expenses associated with a non-revenue producing workcenter to a revenue producing workcenter. This assignment is based on the amount of workload generated by a given workcenter as a percentage of the total workload for all of the workcenters supported by the administrative service. In the military medical arena, another way to view stepdown is that all administrative and ancillary workcenters exist only to support inpatient and outpatient care. Therefore, all expenses incurred by these services to support patient care are prorated appropriately based on usage and the amount of support provided. The four integral elements required

to perform stepdown procedures are a Chart of Accounts, performance factors, expenses, and an Assignment Sequence Number (ASN) (MEPRS, 1998).

To monitor all of the workcenters (departments) throughout a given organization, MEPRS assigns a code and lists these in a Chart of Accounts also known as an Account Subset Definition (ASD). The ASD lists all of the MEPRS codes for recognized workcenters in alphabetical order and is positioned in the first section of a Medical Expense and Performance Report. A process exists to validate a department as a legitimate workcenter and includes the method to create a new or delete an existing workcenter (MEPRS, 1998).

Performance factors are non-financial data that represent a unit of measure such as workload, square footage, or FTEs used in the stepdown process to allocate expenses, report workload, and compute costs. For the DENCOM, the CDA captures workload in Dental Weighted Values (DWV) where each unit represents a preset dollar amount representing the expected value of that service. One DWV is equivalent to $100; so a service assigned a DWV of 0.34 would be valued at $34 (ADCS, 2000).

Most of the non-personnel related expense allocations are transferred from the STANFINS into the MEPRS and held in the EAS IV repository database pending queries to support cost analysis programs. Additionally, the MEPRS staff manually records expenses not contained in STANFINS, such as depreciation and internal resource sharing costs. Data on military pay is provided by UCAPERS. STANFINS uses a system that is essentially a financial accounting system that produces reports on the dispersal of funds allocated to a given organization. The expense information is contained in a series of

codes called Account Processing Codes (APC), which are used as a form of an internal language within STANFINS (AFM, 2001).

The ASN process provides a sequence number to each ancillary and administrative workcenter to determine the order of allocation of expenses from the ancillary and administrative workcenters to those workcenters receiving support and/or services. This process uses complicated formulas that are beyond the scope of this study.

Functional Cost Codes

MEPRS utilizes functional categories to which the appropriate expenses and workload are assigned for data allocation. The primary functional categories include inpatient care, ambulatory care, dental care, ancillary services, support services, special programs, and readiness. Each functional category is furthered subdivided into summary and subaccounts (reflecting a particular workcenter) depending on the organizational structure of the department (MEPRS, 1998). In-turn, a functional cost code (FCC), also referred to as a MEPRS code, is created to classify a given function or workcenter in a larger organization or a single organizational entity. Each FCC consists of a combination of four alpha/numeric characters. The first letter is used to represent the functional category for a given service (an e.g. is "A" for inpatient care). The second represents the summary account, in this example "Medical Care", coded "AA" and the third letter refers to the subaccount for a given workcenter, code "AAB" for cardiology. The corresponding three-letter FCC for dental care is "CAA". The fourth letter is used identify the services being provided. In order to establish some standardization, the MEPRS 4th Level Coding Document provides a listing of 4th level MEPRS codes to be used by all MTFs. Sometimes a MTF requires additional codes for site-specific purposes. One example of a

site-specific requirement is when more than one workcenter at a given installation provides the same service as another, and separate reporting is desired. Accordingly, if there were more than one dental clinic, the corresponding FCCs may be “CAAA” and “CAAB” and so on. The pertinent FCC codes for Dental Related activities are shown in Table 1 (page 24).

The expenses associated with a given workcenter generally are in one of two classifications: direct and indirect. Some expenses are shared by more than one workcenter and a method called purification is used to allocate the appropriate percentage of the costs to the responsible workcenter MEPRS FCC code, referred to as a cost pool MEPRS code. A cost pool does not represent a specific workcenter; rather a temporary account for those costs that meet the definition required to be in the cost pool. An example of purification of a cost pool account occurs when two or more workcenters share physical space, personnel, and/or supplies. MEPRS manages this situation by defining a common account to collect direct or indirect costs and assigns it a FCC with an “X” in the third (subaccount) character (See Table 2). Cost pool FCC accounts are an excellent tool to develop unit costs for situations in which expenses cannot be directly identified with specific workcenters or function. The total expenses in this cost pool for a given section are assigned to the appropriate workcenter using a formula (determined by an equitable performance factor; i.e., visits, square footage, etc) prorating expenses to the performance standard established for that workcenter in a specified time period (MEPRS, 1998). Recently, a new MEPRS FCC was created for DENTAC commanders by an intra-organizational memorandum designating the code “EBAN” for each dental activity (DENTAC) (MEPRS, 2001). Likewise, costs associated with depreciation are coded

under the “E” series, special functions such as graduate medical or dental education and dental or optical laboratories are coded under the “F” series, and medical readiness falls in the “G” series for FCCs (MEPRS, 1998).

Table 2: Listing of Functional Cost Codes for Dental activities.

Dental Care	
Dental Clinic	CAA_
Oral Surgery APV	CAA5
Dental Cost Pool	CAX_
Support Services	
Dental Depreciation	EACA (Dental Equipment)
Command, Management, & Administration	
Dental Command	EBAN
Graduate Dental Education	
Gen Residency Program	EBIA
Periodontics Residency	EBIC
Endodontics Residency	EBID
Prosthodontics Residency	EBIE
Oral Maxillofacial Surgery	EBIF
GDE Intern/Resident Expenses	FANA
GDE Fellowship Expenses	FAQA

This process of cost assignment by FCC is continued over the duration of the fiscal year allowing the determination of the expenses associated with the services provided by a given workcenter during the stated period of time. When considered separately, expenses over a period of time can be evaluated for general trends and abbreviated periods of time (a month or even a quarter) that may reveal an outlier of exaggerated expenses either above or below the developing trend line. Of course, in a vacuum, this data is not as pertinent to effective analysis and decision-making unless the costs are related to another set of data. Thus, the remaining two components of MEPRS, workload and manpower, represent the obvious data elements used to compare with the financial data. Dental related workload data is maintained in the EAS IV repository and represents the collective input from the USA's dental clinics as captured by the CDA, which was implemented in 1999 by vocal order of the commanding officer, DENCOM. The concept and design for CDA was formulated under the direction of his predecessor (personal conversation with M. Fravell; Chief, IMO for CDA, October 2, 2001). Manpower utilization data is captured by the Uniform Chart of Accounts Personnel Utilization System (UCAPERS) and represents the focus of the remainder of this process analysis.

A representation of the results of reviews and analysis is demonstrated in the following example. A recent change to MEPRS was implemented with the deletion of

FCC “BBZ5,” which was replaced with code “CAA5,” a FCC found in the dental care series. Previous to this change, the specific workload recorded for exodontia in the operating room was captured under the now expired code and also under a dental specific FCC in the corresponding oral surgery clinic co-located in the hospital facility. This double recording of workload on an individual basis, while inaccurate, was not critical on as a one-time event, but the repetition of the error over an extended period would decidedly result in skewed data (MEPRS, 2001). This change did not completely have the desired effect. Now all workload performed by an oral surgeon on an outpatient basis (includes same day surgeries performed in the operating room) can only be captured by the dental clinic. However, for procedures performed on inpatients, the workload may well be captured by the oral surgeon in the hospital dental clinic as well as by the hospital. This last eventuality occurs automatically as a result of the surgeon’s treatment notes entered into the medical record (personal conversation with B. Barfield, March 29, 2002).

The expense cost accounting process results in numerous intra-organization reports that are used by a host of agencies to monitor the performance of the military medical systems. The listing, description, and discussion of these varied reports are beyond the scope of intent of this research project.

UCAPERS

Genesis

The United States Army’s personnel utilization and expense data program known as the Uniform Chart of Accounts Personnel Utilization System (UCAPERS) was phased in at all Medical Treatment Facilities (MTF) worldwide beginning with FY 1980

(Uniform Chart of Accounts Personnel Utilization System (UCAPERS), 2000). The intent was to provide a uniform accounting and reporting procedures for USA military MTFs. For its personnel utilization issues, the United States Navy employs a proprietary system known as the Standard Personnel Management System (SPMS), and the United States Air Force utilizes an Air Force Personnel Sub-System of the Expense Assignment System (EAS) to capture its personnel utilization data. The three services choose to use independent systems to collect this data required for MEPRS. The service specific data is aggregated in a common format for comparison at the national level.

Purpose

The primary purpose of UCAPERS is to collect and report personnel utilization and expense data to MEPRS. The system also collects and reports on USM manpower utilization data. UCAPERS is an automated system that supports two of the three functions of MEPRS; namely, civilian and military personnel expense and utilization data. (The reader may recall that the majority of non-military personnel related expenses reported to MEPRS originate with the STANFINS.)

The Uniform Staffing Methodologies portion establishes common methods for collecting and analyzing personnel utilization data to be used in developing a uniform method for determining and justifying DoD medical manpower requirements. MEPRS mandates the collection and reporting of this data to the major command headquarters. UCAPERS supports this mission with its automated system (UCAPERS, 2000).

Corporate Collection Method

A system wide program as large as the UCAPERS requires a design that minimizes the time spent by responsible staff in the collection and reporting of the

pertinent data. Although there are several categories of personnel classified within UCAPERS, this paper will focus on three summarized categories of personnel created to accommodate the capture of personnel utilization and expense data compilation. These include: Clinicians, Non-Clinicians, and Contracted Services.

The utilization data is collected on worksheets generated by the UCAPERS and is considered by some to be a legal document. Clinicians including physicians and dentists complete this worksheet on a monthly basis or as otherwise directed by the local MEPRS office at the respective MTF. The onsite procedure for collecting the data at the various installations worldwide share many common elements, but most appear to have incorporated a host of local adaptations to assist in the data collection process. This statement will be clarified and expanded on as this report progresses. In most instances, MEPRS office personnel input the data collected from the clinicians directly into the UCAPERS database.

Non-clinician utilization data is captured via another method, which consists of one of two schedules used in the UCAPERS. These include a retrospective schedule for those personnel who work a standard schedule week after week and a prospective schedule for personnel whose schedule is subject to wide variations in flexibility. Consequently, the first step in the process is to develop both types of schedules. This is accomplished with direct input from the managers of the workcenters for the organization who develop the template for each employee under his/her supervision. The resulting schedules are inputted into the UCAPERS for the purpose of generating worksheets for data collection. After the defined work period has passed, variations for prospective schedules are inputted into the UCAPERS. The input can be completed by a MEPRS

clerk or directly by workcenter personnel if they have access to the system. For workcenters using only retrospective schedules, only the exceptions are required to be reported after a given reporting period. Examples of legitimate exceptions include vacation and sick leave.

With some exceptions, for a clinician who performs direct patient care full time, any time they spend performing necessary administrative duties during the normal workday is not considered a legitimate exception. Consequently, time spent in activities that do not qualify as a justified exception do not result in a utilization entry exception and, consequently, is not inputted as such. Thus a data query seeking only the time spent in direct patient care for a provider who spends a portion of the workday in pursuit of administrative duties required of the position will result in a skewed set of results. This apparently conflicts with the contention that the best way to simplify the analysis of productivity is to measure provider hourly productivity as a function of several workload variables (Hurdle and Pope, 1989).

As an illustration, the code “CAA” was described as the FCC for dental care but actually contains the costs associated with personnel utilization spent in direct patient care and administrative duties (supervisory duties, completion of employee ratings, counseling employees, etc.). MEPRS does not have a FCC to account only for pure direct patient care time. It is noted that Commanders who are categorized under the FCC “EBAN” are permitted to record legitimate administrative time since their primary mission is administrative in nature. The costs associated with EBAN are stepped down to the dental clinics supported by the Dental Command staff.

Data on personnel utilization for all contracted clinicians and services is captured from source documents provided by the contractor and is normally entered in UCAPERS by MEPRS personnel.

Reports

Authorized personnel are required to complete reports and can query data to conduct analyses. The data results presented in these reports list the personnel utilization information in the form of full time equivalents (FTE). The FTEs vary by department or clinic, and from one facility to another depending on a host of variables, to include services offered, demographics, and budgetary guidance.

A sample format of a data query can be seen in Table 3. The FTEs are listed as assigned, available, and the table then lists several categories for non-available time. The major reasons for non-available time include leave, temporary duties away from the facility, and sick time among others. Data listed in the FCC "CAA" are included in the Available FTE column indicating the time the provider was purportedly present for duties in support of the mission. As stated earlier, this category of FCC includes actual direct patient care time and administrative duties (UCAPERS, 2000).

A number of standardized reports are required for submission at a variety of time intervals. The enumeration and description of these reports is beyond the scope of this research project.

Table 3: Sample format of a data query for FTEs

Month	Personal Cat	Specialty	Description	FTE's Assigned	FTE's Available	FTEs Non-Available Hosp LV/Sick LV	FTEs Non-Available Leave
Feb-01	Civilian	63A	DENTISTRY, GENERAL				
Feb-01	Contractor	63A	DENTISTRY, GENERAL				
Feb-01	Military	63A	DENTISTRY, GENERAL				

Feb-01	Military	63B	DENTISTRY, COMPREHENSIVE				
Feb-01	Military	63D	PERIODONTIST				
Feb-01	Military	63E	ENDODONTIST				
Feb-01	Military	63F	PROTHODONTICS				
Feb-01	Military	63H	PUBLIC HEALTH DENTAL				
Feb-01	Military	63K	PEDODONTIST				
Feb-01	Military	63M	ORTHODONIST				
Feb-01	Military	63N	ORAL SURGEON				
Feb-01	Military	63P	ORAL PATHOLOGIST				

System Security

The UCAPERS has in place a series of security measures to limit the access to the system and thus protect the integrity of the data quality. Limiting access to authorized personnel provides the primary source of system security. There are two system sign on steps: Operating system sign on and UCAPERS system sign on. Both require an identification code and a password.

The system administrator who coordinates with work center managers to assign access authority provides these access codes.

Additional security measures concern the maintenance of the hardware and software. Specifically, these relate to appropriate work practices designed to prevent damage to the workstation and associated equipment. Also, authorized personnel are provided guidance on preventing unauthorized access to the UCAPERS (UCAPERS, 2000).

Data Input

Hurdle and Pope (1989) indicated that the time input by physicians is the most important determinant of productivity measurement. It follows then, that to accurately analyze productivity as a function of time spent producing the measured workload,

several issues must be addressed. These include the accuracy of the data input at the provider level, the integrity of the system serving as the collection database, and the ability to query the system for the desired information. The data input by the providers would in turn be largely dependent on the amount of training and experience on the procedures to input the appropriate data. Each of these will be addressed in turn with the intent of evaluating and recommending possible remedies to systemic flaws.

The data input for the hours spent by each provider in various activities is listed according to a standardized format termed Schedule Exception Codes (SEC) as shown in Appendix B. Providers use a standardized worksheet (Appendix C) to list the numbers of hours spent in each SEC per week for each month. Thus if a given provider spent two days of vacation /leave in the month, he would list 16 hours of time coded as LV per the SEC list, and so on. The data element for patient care is the default code on the worksheet and is not considered a SEC. The department's clerk, who is responsible for collecting the data, then enters the data directly into the UCAPERS database or forwards the data to the installation MEPRS clerk for input. Once the UCAPERS monthly data for a given workcenter is complete, and then the program converts the hourly data into full time equivalents (FTE), a manpower utilization term. The total number of FTEs for this workcenter is further divided into broad categories (Table 2) representing the various FTE classes of functions and can be queried in a report for a proposed analysis. The total shown represents the number of FTEs chargeable to the given workcenter for the stated time period used to calculate the labor costs.

Survey Results

Werther (1984) discussed that any organizational system, whether proposed or in place, requires employee buy-in to achieve success. To maximize the data quality collected through UCAPERS and available for incorporating into MEPRS, emphasis must be placed on the impact of the providers who complete the monthly worksheets. Assessing the amount of initial and ongoing training, the general knowledge level, and the method used to transfer how the employee's time was spent to the worksheet should provide valuable insight into the level of employee interest in the program. A structured questionnaire (Appendix D) was used to telephonically interview junior dental officers at various installations representing the regional dental commands. The criteria for selecting the officers included in the survey included: those currently not enrolled in a residency program, and those who had not yet achieved the rank of Major nor had been selected for this promotion. The assumption was that if the newest members of the Dental Corps were aware of the system that more senior officers would also have a working knowledge.

Junior Officers

In general, the surveyed officers questioned were familiar with the overall concept of the UCAPERS with all stating that the system was concerned with tracking the hours spent in each of a variety of military related activities. A very small minority indicated that they thought the system also tracked productivity, but recanted that position as the interview progressed. This was attributable to the fact that as additional questions were offered, their memory of the function of the UCAPERS was recalled.

Most officers denied ever receiving formal training in the correct method for completing the monthly worksheet. For the purposes of this interview, formal training was operationally defined as training provided by a representative of the installation

MEPRS office, which has overall responsibility for UCAPERS management. Almost all officers indicated that the training they received derived from senior officers, usually the Officer-in-charge or the Commander.

After these two commonalities, the results of the survey varied widely. The most notable variances regarded the number of hours captured per day/per week and the method of capturing hours spent in performing the Dental Officer of the Day mission. This duty relates to providing necessary care for beneficiaries that present with a dental problem outside the normal duty day. The variations included: no recording of the on-call time at all, recording the time spent at home while on call with a different SEC from the time spent in providing actual after hours emergency care, or recording both activities with the same SEC. The responses were divided relatively evenly among these three options.

A second significant variation concerned total hours captured per day or per week. Everyone reported at least eight hours per day and 40 hours per week as a minimum. Approximately one third of the respondents reported that they limited their captured hours to only eight a day and 40 per week and the remaining two thirds reported all the hours worked in the performance of military duties. Instructions from MEPRS managers were the reason given for limiting the reported hours to an amount below the hours actually worked. Several even reported (as instructed) the weekend hours when they were in a day off status. This last derivation may well account for some of the variations in the values associated with the FTE data analysis reported later. Almost all officers were not entirely confident that they were reporting the hours spent correctly, but the majority did attest to the fact that they were reporting them as they had been so

advised. Of these, most officers tracked their hours during the month by using either a personal calendar or their own appointment book. One site even reported using the automated scheduler available with CDA to monitor their activities. Yet, a few officers did not use any tracking method other than to comment that their schedules were routine and relatively easy to recall.

The main intention of the survey was to determine if a standardized format was used to complete the monthly worksheets. As reported, this is not the case. Had there only been a single outlier (or even a limited few) from a preponderance of responders who completed the survey according to the same standard, then a quick fix might well be engineered, especially if all the exceptions were confined to a single installation. As it is, the variety of potential responses across the country to the same question on how to catalog certain work activities indicates that a standardized approach was not employed. In this eventuality, this degree of variation would necessarily skew the results at individual facilities and installations as well as at the corporate MEPRS system.

Program Directors

A telephonic survey (Appendix E) of seven directors of the 20 military residency programs was used to assess the level of standardization of data when completing the UCAPERS monthly worksheet. The most significant variation concerned the capture of total hours worked per day/per week. The survey results indicate that approximately half of the directors only capture eight hours per day and 40 per week despite the fact that they work far more than this. Again the usual reason given for limiting the number of hours reported was the instructions provided by the MEPRS manager. The remainder reported their hours as worked in total. An additional observation was that some of the

responders who kept their reported hours to the 8/40 limit devised ingenious formulas to estimate the hours spent in various activities and then completed their worksheets with amounts represented as percentages based on their efforts for the time period in question.

Another variation in the responses occurred with the reporting of hours spent in didactic lectures and clinic operations. Some responders reported all activities under the SEC "GME" both for directors and other mentors. Others segregated clinic hours from didactic hours when the director or mentor was actively engaged in treating their individual patients. This time was reported under the code for patient care while all other activities were captured with the "GME" code. Still others reported mentors and students under the "GME" code for similar activities while some segregated the activities of mentors and students under the coded "GME" and "CME" respectively.

Additional examples could be mentioned, but in the view of the researcher the point has been made. Specifically, senior Dental Corps officers who have captured their work activities under UCAPERS for years still demonstrate a wide variation in their reporting habits.

Installation MEPRS Managers

In perusing the answers submitted in response to the questions detailed in Appendix F, it would be somewhat of an understatement to state that the system is not uniformly administered. However, since the primary objective is to accurately capture manpower utilization data, this study will focus on those questions that elicited the widest variance in responses.

On face value, it may seem inappropriate to alter government documents in the interest of completing a required mission element. The standardized worksheet prepared

by the MEPRS system to capture manpower utilization appears to be an exception to that rule. Most installations admit to using a customized format for capturing this data and many tailor the form to the specific department. The modifications were limited to the usual exception codes locally reported, and the resulting format did not vary significantly from the original form. Others use a template for which exception codes (SEC) must be entered to note changes. Still others, in an attempt to improve accuracy, have devised a system to capture the data on a weekly basis.

The degree of compliance with the timely completion of the worksheets as reported, appeared to trend in relation to the level of emphasis placed on the process by the command. Most sites reported that the command emphasis was high and, concurrently, the compliance rate for providers completing the worksheets was also high. As to the overall high compliance rate, there was one notable exception. This site reported the use of a template that established a set number of hours per month based on eight hours per workday. This approach required the submission by the provider of all of the appropriate exception codes (SEC) applicable during a given month. If the SECs were not submitted by the monthly close out deadline (a timeline that varies depending on the installation), the system automatically defaulted to the data in the template. Interestingly, this site also reported the lowest estimated compliance rate for provider submissions of all sites responding to the survey.

Another significant area of conflicting survey responses concerned the subject of data reporting for the SEC “CE”, which represents compensatory time earned. This question was asked since it represents a potential area for varied response. Most installations reported that this code was not applicable to manpower considerations for

providers. However, several of the reporting sites did report that the “CE” code was used for providers reporting more than eight hours per day or 40 hours per week.

These examples make a point. The consistent reporting of data by all installations contributing data to the MEPRS is apparently lacking. This fact raises considerable questions as to the data quality of the overall system. Yet, one counterpoint requires discussion. All sites at the MTF level indicated that a proprietary system is used at their installation to analyze the productivity and manpower related issues. Apparently, a standardized corporate system at the MEDCOM level is not used to track productivity and manpower trends. However, the site specific system used may have a purpose for tracking these issues for the local command structure.

Data Query

To determine validity and reliability of the data capture procedure, a trial query of the data input at the installation level was compared to the data captured at the corporate MEPRS level as found in the EAS IV repository. Specifically, certified copies of the actual UCAPERS worksheets from four installations for the second quarter FY 2001 were obtained. The data from these sheets was entered into a mock MEPRS template and then the appropriate internal codes for calculating FTEs were applied. (It was referred to as a mock template as the data entered will in no way amend the existing data for the installations studied.) Then the data on FTEs for the same installations and time periods was queried from the EAS IV repository. The data in the repository pertaining to the four sites selected was inputted by two different categories of employees. At three of the installations a clerk at the MTF level entered the data; and for the remaining installation a

clerk at the local DENTAC entered the data. The data was classified according to FTE categories depending on the assignment and availability of the personnel employed in a workcenter. It should also be noted that these utilization data are available for all employees as an aggregate or on an individual basis at the local MTF level, but not in the corporate arena. Only the aggregate data for the providers was included in the query in the effort to demonstrate reliability and validity. Another reason for this chosen method is that productivity is a function of DWVs produced and provider man-hours.

Since the worksheets are submitted and entered month by month, this format was used for this exercise. However, for the purpose of clarification, Tables 4 through 7 show the data only as an aggregate for the entire second quarter for the installations included in the study. Table 4 reflects the results for Ft. Drum. Accordingly, Table 5 illustrates the results for Ft. Irwin, Table 6 shows Ft. Riley's outcomes, and Table 7 reflects the results for Ft. Stewart.

Table 4: Data comparison for Ft. Drum

MOS	EAS IV Repository FTE Available	DENCOM Test Input FTE Available
63A	11.38	6.65
63A9D	2.51	3.87
63B	10.82	11.42
63D	2.24	2.23
63E	4.8	4.77
63F	2.46	2.43

Table 5: Data comparison for Ft. Irwin

MOS	EAS IV Repository FTE Available	DENCOM Test Input FTE Available
63A	8.04	8.33
63B	6.87	4.74
63K	2.05	2.05
63M	2.42	2.32
63N	3.43	3.87
63R	0.09	0

Table 6: Data comparison for Ft. Riley

MOS	EAS IV Repository FTE Available	DENCOM Test Input FTE Available
63A	7.09	6.65
63B	6.03	7.64
63D	2.74	2.79
63E	1.9	1.95
63F	2.41	1.58
63N	2.19	3.10
63R	0.02	0.02

Table 7: Data comparison for Ft. Stewart

MOS	EAS IV Repository FTE Available	DENCOM Test Input FTE Available
63A	14.35	10.28
63B	17.42	15.01
63D	5.21	4.89
63E	2.24	1.65
63F	5.2	6.05
63N	4.79	4.68
63R	0	1.89

As expected the results from the trial data calculations for all of the installations do not exactly match those found in the EAS IV repository. The discrepancies could be attributable to a variety of factors or combinations of factors. One likely difference is due to the varying interpretation by each clerk inputting the data as to the appropriate coding for certain activities. Another plausible factor is the lack of standardization in the system as evidenced by the common use of local versions of the official UCAPERS worksheet, information that was obtained from the surveys sent to MEPRS managers. One example of the discrepancies was previously illustrated by the practice of capturing off duty weekend hours by some sites, but not by most. These results illustrate that the quality of the data is questionable because of these discrepancies. Statistical analysis of the differences was not conducted because the actual impact of the difference on the overall results for all installations was beyond the scope of this study. For the purposes of this

study, the potential for error, whatever the origin, was deemed sufficient to illustrate the point.

Possibly the inconsistency in reporting FTE data for the MOS "R" illustrates the point in the most succinct way. Note that this category is reported by three of the DENTACs. For these three, the data is reported in a seeming inconsistent way. Only for Ft. Riley is the data for the "R" category captured by both the DENCOM test input and the EAS IV repository. For the remaining three installations, the data was reported by one method or the other, but not both; or the data was not reported at all. This fact illustrates the varied interpretation of the worksheet data that is possible when viewed by different data managers. Another possibility for the discrepancies may be best explained by the use of variations of the official UCAPERS worksheet. Only Ft. Riley uses the official document exclusively. Possibly the amended forms were not easily deciphered by the various managers who inputted the data.

USAF's Version of UCAPERS

Manpower utilization data is captured under the Air Force personnel Sub-System of EAS III (MEPRS, 2000). There are two methods used to capture this data, either or both of which can be used at one installation, one facility, or even one department or clinic. For either one, the standard reporting format dictates that eight hours per workday are recorded. Exceptions are permissible within an ill-defined range but wide variances will trigger an audit by the installation MEPRS manager.

The first method entails the use of a template tailored for each provider. The template is used as the default manpower report for that provider for each period. The template accounts for the normal work pattern of the provider and includes the number of

hours worked during the stated time period. Variations to the template are entered when the provider submits exceptions by using the prescribed codes from the SEC list for work patterns that deviate from the norm. The aggregated totals, including exceptions, are submitted to the installation MEPRS manager on a monthly basis using one of two procedures. First, the clerk can simply produce a cover sheet with the actual hard copies of the templates (modified by exceptions as needed) attached. For the second option, the clerk can provide a report listing all providers who followed the template exactly and list those providers who deviated from the template with the appropriate exceptions codes annotated.

The second method for data capture entails the use of timesheets for use by the provider to track his utilization for the specified period. The station manager verifies this data before the aggregated information is forwarded to the MEPRS manager (personal conversation with Technical Sergeant D. Dorrian, Chief, personnel Sub-system of EAS III for the USAF, October 8, 2001).

Discussion

Productivity has been previously defined as the ratio of outputs to inputs. For the Dental Care system this translates to the ratio between workload to the time spent in direct patient care. Besides labor there are, of course, additional costs associated with the production of healthcare services. Items such as supplies, recurring overhead expenses such as utilities and rent, and maintenance costs are just a few. However, compared to the civilian sector, the provision of military dentistry has some distinctive requirements when considering manpower utilization issues. If unavoidable time demands, which are not direct patient care, were included in the data used to calculate productivity then any

analysis based on the resulting data would be flawed. Obviously, duty time spent in training for uniquely military functions should not be captured with treatment time. The UCAPERS system provides the mechanism to capture these military duties as a separate code from time spent in the treatment of patients; provided it is inputted correctly. However, the system does not segregate the time spent in necessary administrative duties from patient care time. Admittedly there is a requirement for these activities that are in support of the mission, but their inclusion in the same database as direct patient care skews the data. The result may be the appearance that military dentists are not as productive as they may actually be.

The value in comparing productivity to a number of benchmarks seems readily apparent. Decision makers must be able to base their judgments on comparisons of Army data to that of other services and the private sector if a fair analysis is to be conducted. Naturally, there are limitations to exactly matching the clinical scenarios for all agencies. If the sister services capture their manpower utilization data similarly for the functional cost code (FCC) “CAA” then the database would contain comparable information. This is again contingent on the accurate input of data at the provided level. However, for the same reasons the military services would again appear to be less productive than they would if only direct patient care time was measured.

Defense Medical Human Resource System

To address the data input issue, a process action team (PAT) is developing a new system intended to replace UCAPERS. This process was initiated in late 1993 in response to guidance provided by a memorandum from the Deputy Secretary of Defense and was called the Defense Medical Human Resource System (DMHRS) (Resource Information

Technology Program Office (RITPO), 2001). The intention was to standardize the manner in which manpower utilization was captured for the Tri-Service medical organizations. Thus, DMHRS would replace the Army's UCAPERS, the Navy's SPMS, and the Air Force's sub-system of EAS with one integrated system. Additionally, the proposal calls for DMHRS to be deployed to, and utilized in, MTFs with peacetime missions including those facilities located outside the continental United States (RITPO, 2000).

The primary capabilities of the system include providing information on manpower allocation issues, the capture and import of data on utilization of personnel, and the allocation of individuals based on their skill sets, record maintenance, the determination of staffing levels required based on patient acuity levels, and the calculation of the costs associated with labor component of healthcare delivery.
The alternative proposals for the configuration of DMHRS range from an automated human resource information management system to a commercial off the shelf (COTS) system. Adopting the first alternative resulted in the initial deployment of what became known as DMHRS 1, which was subjected to a field test at the Brook Army Medical Center (BAMC) on Fort Sam Houston, Texas. Field tests, also known as beta test sites, are conducted to evaluate the functionality of the proposed system prior to worldwide deployment. The field test at BAMC was adjudged to be a failure. Yet, DMHRS has continued through an evolutionary process until currently BAMC is currently using an improved version of the original program, one that is operating to acceptable standards (personal conversation with Ms. J. Moore, August 23, 2001). Additionally, the DMHRS' PAT began to consider other alternatives including a COTS system with a proven track

record of success in commercial applications. Currently the PAT, which includes, among others, representatives from the Tri-Service medical departments, is moving towards a proposed field test time frame of late calendar year 2001. Sites include the Naval Air Station at Jacksonville, FL; Fort Stewart, GA; and Andrews Air Force Base, MD. Given the commercial success of the program and based on the results of the field-testing, the PAT anticipates a worldwide deployment of the, what is variously known as DMHRS 2 or DMHRSi by late 2002 (RITPO, 2001). The "i" represents an Internet version.

Panel members from the DMHRS' PAT indicated that once the program is effectively fielded, the ability to capture time spent in direct patient care as a separate data element will not be included as a feature. The motivations for the development of a new system were not predicated on incorporating this capability. The data input will still be processed based on the existing FCCs and, consequently, the specific capture of direct patient care will not be possible. Thus, while the new software program will enhance data analysis for its intended functions, the analysis of productivity based on the textbook definition will not be a feature (personal conversation with Ms. J. Moore, Chief of BAMC's DMHRS project, August 23, 2001).

Automated Solutions

The use of automated information, training, and business application programs has exploded over the recent years. Electronic workload capturing software has been used in nursing (Hughes, 1999), for a health information intranet (Matarrese and Helwig, 2000), and proposed for use in dentistry (Schleyer, Forest, Kenney, Dodell, and Dovgy, 1999). Hughes acknowledged that, while there are a number of workload programs available, the reliability of some of them is limited. Matarresse and Helwig stated that the

quality of health information available on-line, while plentiful, was at times questionable. The article on the use of the Internet by dentists indicated that while two-thirds use the net in their office, only about 5% use it in the treatment areas (Schleyer et al., (1999). Later Schleyer and Spallek (2001) reported that while Internet use in the dental office continues to rise, the available fields are not very mature in some areas. Dentists reported using the computer and on-line services to improve the efficiency of their practices and to enhance clinical abilities. However, the use of computers for the purpose of tracking and analyzing productivity is lacking (Schleyer, 2001).

In addition to these applications, the use of an automated system for recording treatment documentation has been demonstrated. When positioned near the treatment area, the automated system did reduce the amount of time necessary to record the services provided, which resulted in the availability of more direct patient care time. Additionally, most users indicated that the documentation process was more complete with the automated system. The final advantage found in this study is that the nurses were able to complete their duties during their normal work shift (Pabst, Scherubel, and Minnick, 1996). Whether these results would apply to the practice of dentistry remains to be seen.

Future research

The current manpower utilization-tracking program, UCAPERS, does not have the capability of tracking time spent by providers in direct patient care as a separate entity. Also, the discussion of the evolution of the DMHRS II program indicates that although the new system is anticipated to provide numerous benefits over the existing one, the ability to segregate direct patient care time as a stand-alone data element will

remain lacking. Since productivity is a measure of outputs as a function of inputs, the decision makers analyzing the efficiency of the USA dental assets do not have a tool to effectively assess the data.

The Corporate Dental Application (CDA), used by the DENCOM to record and report dental workload, continues to evolve as a software program. Currently CDA administrators are in the process of fielding a web based scheduler for Army dental clinics worldwide. In addition to fulfilling the stated goal of providing an automated appointment scheduling device, this application will be also enable clinic personnel to track unfilled appointment time and scheduling practices. The intention is to improve the process to ensure that providers are busy (personal conversation with M. Fravell, Chief, CDA, October 3, 2001).

Busyness alone does not determine actual productivity. Hence, the capability to track the actual amount of direct patient care time spent producing the captured workload would be a benefit. Further research into the development of this application as part of CDA or as a stand alone automated system is recommended.

Utility of Results

There are three major benefits noted from this study. These three relate to the educational value of the document, the assessment of the knowledge level of current junior officers, and identification of an ongoing endeavor to replace the current system with an improved one. Each will be discussed in turn.

The description of the process of capturing, inputting, and analyzing manpower utilization data provides to the leadership of the Dental Corps a document to use as a starting point to implement standardized training on the UCAPERS. With decision-

makers at the highest level of government continuously searching for best business practices it is incumbent on the leaders to educate all the employees on the importance of the system. Staff buy-in to implementation of the program according to its intended format can better assure their compliance with accurate and complete data recording. With improved staff appreciation of the critical impact of correct UCAPERS data on the development of best practices, the realization of the impact on the organization and their individual and collective positions should become clearer (Werther, 1984).

The results of the structured telephonic survey indicate that the knowledge level of UCAPERS at the junior officer level, while solid, is not consistent. This is potentially significant for two reasons. First, many of these officers stated that their system awareness is attributable to training received from officers more senior to them. Yet, the results of the survey of senior officers indicate that their own interpretation is inconsistent. It may be assumed that this training is provided to all officers/providers in the clinics. Second, the current level of knowledge should provide a good foundation for any plans to implement additional institutional training in an attempt to standardized the data reporting mechanics.

Another benefit of the results of this paper is the identification of a project designed to replace UCAPERS; one that was previously unknown. This provides an opportunity to impact the development process of DMHRS to include features that would benefit the DENCOM's desire to capture direct patient care hours. Then the true productivity could be accurately calculated. Currently, the DENCOM tends to look at productivity, measured as Dental Weighted Values (DWV) (captured by CDA), per dental clinic or DENTAC and compares that to like sized organizations, which does not

take into account the hours spent in direct patient care time. Rather, the tendency is to compare the aggregate DWVs to the cost of producing this measurement. Any system that permits the ongoing capture of inputs to determine a productivity value that coincides with the definition of the term would be an advantage over the current situation.

Conclusions

Several conclusions can be made from this study. First, the results of the survey indicate that most Dental Corps officers have only a rudimentary understanding of UCAPERS. In general, this knowledge level does not include an awareness of the primary purpose for which MEPRS uses the information. Second, the dentists surveyed did not uniformly report several categories of work types. This disconnect could obviously compromise the quality of the data. Third, there is not an automated tool to effectively capture the data universally. Most sites used the standardized worksheet.

Recommendations

Three recommendations are presented as a result of this study. First, the development of a web-based teaching module to provide the clinicians on the basic intent of UCAPERS and MEPRS should serve to enhance data input quality. The format could be a program that covers the key points of these processes in a power point presentation with audio accompaniment. The goal should be to educate all providers in the significance of the processes in such a way that compliance with accurate and timely data submittal would be enhanced in an attempt to improve the data quality.

A second recommendation is the development of a standardized procedure for data reporting. The implementation of an approved process to report hours worked in a given function in the exact same SEC across the Dental Corps would be expected to facilitate the improvement in the quality of data. The caveat in this proposal is that the local MTFs that enter the UCAPERS work hours must have buy-in to the standardized format.

A third recommendation is the development of an automated system to capture UCAPERS data. The current CDA program would be a logical choice to use should the capability to add fields be feasible. Already, one DENTAC is using the automated scheduler to track work hours. The data is currently not exportable to the MEPRS database, but the information is a useful tool to enhance the completion of the worksheet. Modifications would be necessary to permit the data to be aggregated into categories reflecting the appropriate SECs. Even with these upgrades the data may not be immediately exportable since the corporate MEPRS' managers would have to approve the process. Yet, the ability to capture the data electronically would have at least two potential benefits. First, the capture of data on a daily basis would save time and improve accuracy in recording work hours for all providers. This benefit would be enhanced with the advent of the standardized reporting format. Second, the DENCOM would at last have the capability to track hours spent purely in direct patient care as an individual metric improving its ability to compute the productivity of outputs as a function of inputs. This last advantage would shift the critical step of calculating productivity to the proper implementation of the proposed standardized reporting format.

References

Anthony, R.N. & Pearlman, L.K. (2000). A review of essentials of accounting. Upper Saddle River, New Jersey: Prentice Hall.

AMEDD Balanced Score Card (2001). Retrieved on the World Wide Web on September 24, 2001 at http://ke.army.mil/bsc/

Army Dental Care System (1999). Strategic planning. Retrieved from the World Wide Web on September 13, 2001 at http://www.dencom.army.mil

Army Financial Management (2001). *Standard Army Financial System*. Retrieved on October 1, 2001 on the World Wide Web at http://www.asafm.army.mil/dfas/

Army Knowledge Online (2000). *What is Balanced Scorecard Collaboration?* Retrieved from the World Wide Web on August 22, 2001 at http://ke.army.mil/home.php3

Betka, R.D. and Lacusta, MP. (1984). Productivity monitoring systems: Their use in management planning, forecasting, and labor budgeting. Health Care Strategic Management, 22 (1), 8-12.

Choich, R. (1988). Relationship of productivity analysis to departmental cost-accounting systems. American Journal of Hospital Pharmacy; 45, 1103-10.

Dean, E.B. (1996). *Business Process Reengineering*. Retrieved from the World Wide Web on September 24, 2001 at http://www.google.com/search?q=cache:b3x_gWXfnxg:akao.larc.nasa.gov/dfc/bpre.html+%22business+process+reengineering%22+&hl=en

DENCOM Memorandum for the Commanders of the Dental Service Support Areas and DENTACs dated October 5, 1994.

Harben, J. (2001). *Planners draw map to AMEDD's future*; Stripe. Retrieved on the World Wide Web on September 24, 2001 at http://www.dcmilitary.com/army/stripe/6_16/local_news/6678-1.html

Health Care Financing Administration (2000*). National Health Expenditures Projections: 2000-2010*. Retrieved from the World Wide Web on September 15, 2001 at http://www.hcfa.gov/stats/NHE-Proj/proj2000/default.htm

Holt, T. (2001). *The BSC - Putting Strategy Into Action*. Retrieved from the World Wide Web on 26 September 2001 at http://ke.army.mil/bsc/

Hughes, M. (1999). Nursing workload: an unquantifiable entity. Journal of Nursing Management, 7, 17-22.

Hurdle, S. and Pope, G.C. (1989). Physician Productivity: Trends and Determinants, Inquiry 26(1), 100-15.

Johnson, R.L. (1985). On the edge: Will the drive for productivity push hospitals over? Health Progress, 66 (9), 24-7,54.

Joseph, S.C. (1997). *Policy for standardization of dental classifications.* Retrieved from the World Wide Web on April 1, 2002 at http://www.tricare.osd.mil/policy/fy97/dent9720.html

Kaplan, R.S. and Norton, D.P. (1996). The Balanced Scorecard: Translating Strategy into Action. Boston, MA: Harvard Business School Press.

Kerlinger, F.N. (1986). Foundations of Behavioral Research. New York, NY: CBS Publishing, Holt, Rhinehart, and Winston, Inc.

Lagasse, P. (1996). Physician Productivity Measurement, Methodology, and Implementation. Journal for the Society of Health Systems, 5 (2), 41-9.

Levin, R.P. (1997). Are you operating at OPC? Journal of the American Dental Association, 128 (12), 1649-51.

Levin, R.P. (2000). Business Systems: the key to dental practice success. Journal of the California Dental Association, 28 (5), 358-65.

Matarrese, P., Helwig, A. (2000). The development and assessment of web-based health information for a corporate intranet – A pilot study. Proceedings AMIA Annual Symposium, 551-5.

Medical Expense and Performance Reporting System (1998). *MEPRS Helpful Hints*. Retrieved on July 26, 2001 on the World Wide Web at http://www.meprs.amedd.army.mil/links.html

Medical Expense and Performance Reporting System (2000). *DOD 6010-13*. Retrieved on July 19, 2001 on the World Wide Web at http://www.meprs.amedd.army.mil/links.html

Medical Expense and Performance Reporting System (2001). *Memo 1*. Retrieved on October 2, 2001 on the World Wide Web at http://www.meprs.amedd.army.mil/MEPRS/01guide/Memo1.doc

Office of Management and Budget (1995). *Circular No. A-123*. Retrieved on October 1, 2001 on the World Wide Web at http://www.whitehouse.gov/omb/circulars/a123/a123.html

Pabst, M.K., Scherubel J.C., & Minnick, A.F. (1996). The impact of computerized documentation of nurses' use of time. Computers in Nursing, 14 (1), 25-30.

Perez, R.P., Brown, F.B., Salminen, E.R., Hume, R.F., & Wittich, A.C. (1999). Development of a core curriculum in professional growth: Practice management military model. Military Medicine, 164, 764-66.

Process Analysis (1998). Retrieved from the World Wide Web on August 21, 2001 at http://www.tc.cc.va.us/writcent/handouts/writing/process.htm

Resource Information Technology Program Office (2000). *DMHRS Assessment: Final Report.* Retrieved on September 5, 2001 on the World Wide Web at http://www.ritpo.ha.osd.mil/main.asp

Resource Information Technology Program Office (2001). Retrieved on September 5, 2001 on the World Wide Web at http://www.ritpo.ha.osd.mil/main.asp

Schleyer, T.K., Forest, J.L., Kenney, R., Dodell, D.S., & Dovgy, N.A. (1999). Is the Internet for clinical practice? Journal of the American Dental Association, 130, (10), 1501-11.

Schleyer, T., Spallek, H. (2001). Dental informatics. A cornerstone of dental practice; Journal of the American Dental Association, 132 (5), 605-13.

Szasz, A. (1990). The labor impacts of policy change in health care: How federal policy transformed home health organizations and their labor practices. Journal of Health Politics, Policy and Law, 15 (1), 191-210.

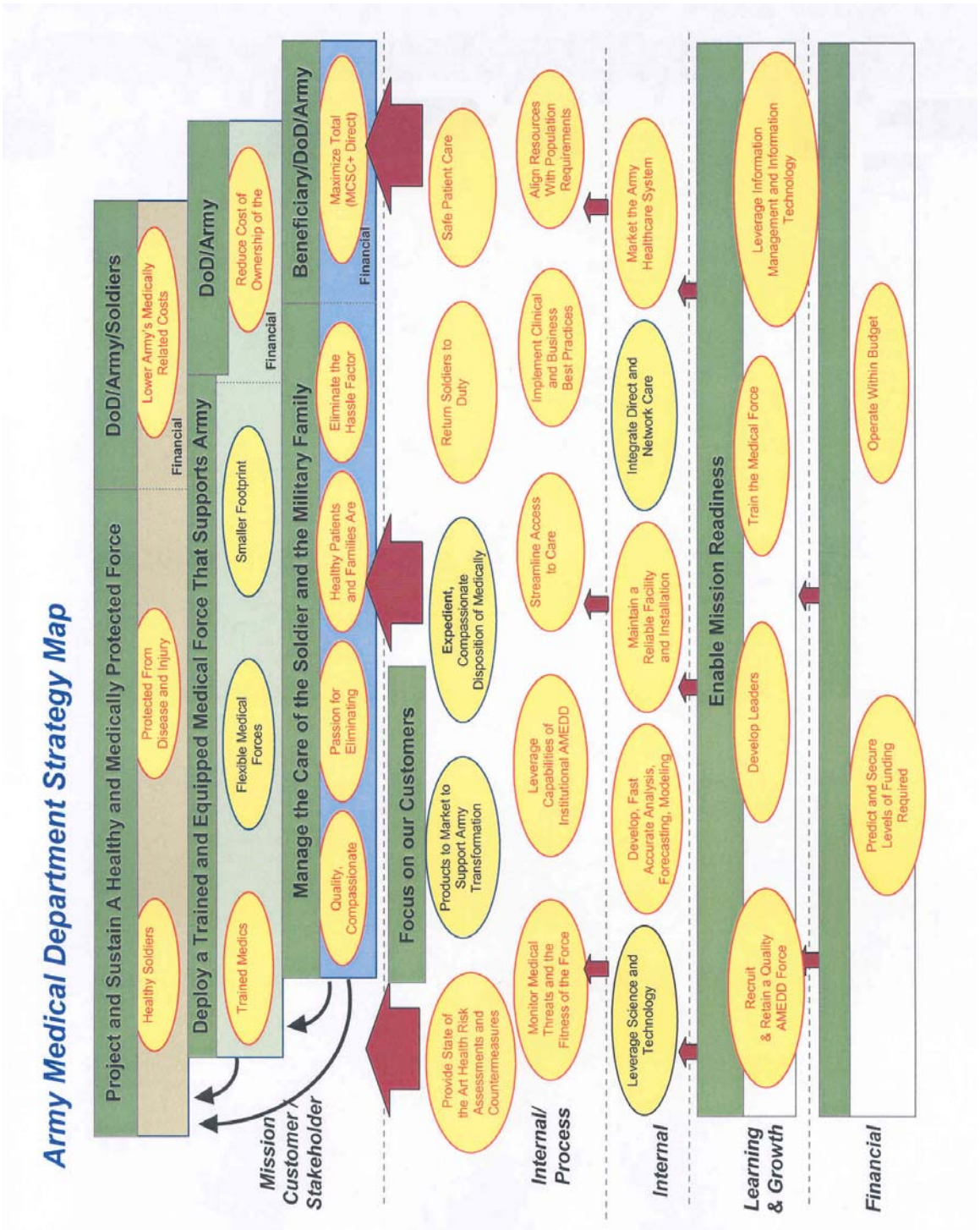
Uniform Chart of Accounts Personnel Utilization System (2000). Retrieved on July 19, 2001 on the World Wide Web at http://www.meprs.amedd.army.mil/ucap.html

United States Department of Labor (1998). *Health Care Workers Retraining Demonstration: Evaluation Summary*. Retrieved from the World Wide Web on November 20, 2001 at http://www.wdsc.org/layoff/demos/health.htm#funding

Werther, W.B. (1984). Involving employees in change, productivity and the future. The Health Care Supervisor, 2 (2), 1-14.

Appendix A

This appendix contains a copy of the current Balanced Score Card as adopted by the United States Army Medical Command. The BSC appears on the next page.



Appendix B

SCHEDULE EXCEPTION CODE DEFINITIONS

AOD	Administrative Officer of the Day. Time spent away from the work center performing Administrative Officer of the Day (represents the MEDDAC/MEDCEN Commander in all administrative matters). (Extra Duty/Non-Available Time) (Military Only)
AWOL	Absent Without Leave. Absence from appointed place of duty without proper authorization. (Non-Available Time) (Military Only)
AWOP	Absence Without Pay. Absence from place of duty for which no pay is received and absence is not charged to member's leave account. (Non-Available Time) (Civilian Only)
BTE	Borrowed Time External. Used to record hours worked by an individual borrowed from outside the medical treatment facility (that is, from TOE and other TDA units). (Available Time) (Both Mil/Civ)
C	On Call. Time that a person is not actually working but is required to be accessible to the hospital in case of an emergency. (Non-Available Time) (Both Mil/Civ)
CBC	Courts/Boards/Committees. Time spent away from the work center to serve as a designated member of promotion boards, soldier of the quarter boards, courts-martial, and other non-mission related activities. Does *not* include committees for which the individual is required to attend by regulatory requirement. (For example, DCA is a required member of PBAC, so time spent is duty time, not CBC). (Extra Duty/Non-Available Time) (Both Mil/Civ)
CE	Compensatory Time Earned. Used to record time over 8 hours a day or 40 hours a week for which equal time off will be earned. CE will be used to record all time over 8 hours a day or 40 hours a week for military regardless of whether or not equal time off is projected. (Available Time) (Both Mil/Civ)
CQ-D	Charge of Quarters - Dental. Time spent away from the work center performing duties within a Dental unit, which pertain to the maintenance of good order and discipline in a billets area. (Extra Duty/Non-Available Time) (Military Only)
CQ-M	Charge of Quarters - Medical. Time spent away from the work center performing duties within a Medical unit, which pertain to the maintenance of good order and discipline in a billets area. (Extra Duty/Non-Available Time) (Military Only)
CT	Compensatory Time Taken. Time given off to make up for time worked over and above normal duty time. (Non-Available Time) (Both Mil/Civ)

CURE	Cure Leave. Paid off-duty-time used by local national employee for preventive medicine reasons. Not charged to annual or sick leave. (Non-Available Time) (Civilian Only)
DIS	Destruction/Inventory/Survey. Time spent away from the work center performing duties as they pertain to conduct of line of duty investigations, reports of survey, linen inventories, cash count, controlled substances inventory or destruction and others as required. (Extra Duty/Non-Available Time) (Both Mil/Civ)
DO	Day Off. Regularly scheduled non-duty day. (Non-Available Time) (Both Mil/Civ)
ED	Extra Duty. Time spent away from work center performing hospital related additional duties. Includes head count, duty driver, guard duties, and so forth. (Non-Available Time) (Military Only)
FOD	Field Officer of the Day. Time spent away from the work center performing Field Officer of the Day. (Extra Duty/Non-Available Time) (Military only)
FTX	Field Training Exercise. Used to record time spent participating as a trainee in a field exercise outside the Medical Treatment Facility (MTF). (Readiness/Non-Available Time) (Military only)
HT	Holiday Time. Used to record time off in observance of a national holiday. HT will also be used to code the day off given in lieu of the actual holiday for those individuals who are required to work on the holiday. (Non-Available Time) (Both Mil/Civ)
LTE	Loaned Time External. Used to record the absence of individuals from their assigned work center when they are working outside the hospital temporarily. (Non-Available Time) (Both Mil/Civ)
LTI	Loaned time Internal. Used to record the absence of individuals from their assigned work center when they are temporarily working somewhere else within the facility. The "borrowing" activity must add the person borrowed to their time schedule as applicable (that is, for each period of loaned labor, there must be a corresponding period of borrowed labor reflected on the time schedule). (Non-Available Time) (Both MIL/CIV assigned only)

LV	Annual Leave. Authorized absence from place of duty for military and civilian personnel chargeable against the member's leave account. (Non-Available Time) (Both Mil/Civ)
MASS	Mass Casualties. Used to record readiness activity that is related to Mass Casualty Exercises. (Readiness/Non-Available Time) (Both Mil/Civ)
ML	Maternity Leave. The time a military person is given off due to pregnancy. It includes time before and after having a baby. (Non-Available Time) (Military Only)
MOBX	Mobilization Exercise. Used to record time spent while participating in readiness exercises in the MTF that prepare individuals for their wartime role. Includes recall and alert exercises, mobilization exercises, and contingency operation plan exercises. (Readiness/Non-Available Time)(Both MIL/CIV)
MORA	Military Organizational Related Activities. Time spent away from normal duty activities performing non-hospital related responsibilities. Includes promotion boards, disciplinary actions, parades, inspections, and so forth. (Non-Available Time) (Both Mil/Civ)
MTNG	Military Training. Time spent in military or hospital contingency training usually provided by Training NCO or Plans, Operations, and Training Section. Examples include NBC training, weapons familiarization, security briefings, SQT, Expert Field Medical Badge, Readiness Briefings and Classes, and Leadership Courses (PLC, BNCOC, ANCOC). (Readiness/Non-Available Time) (Both MIL/CIV)
NCOD	Non-Commissioned Officer of the Day. Time spent away from the work center performing Non-commissioned Officer of the Day. (Extra Duty/Non-Available Time) (Military Time)
OCON	OCONUS Sponsorship/Admin. Time spent away from the work center performing sponsorship or other administrative duties outside the continental United States. (Non-Available Time) (Both MIL/CIV)
OT	Overtime. Used to record approved overtime for civilians. This is time over 8 hours a day or 40 hours a week for which civilians will be paid rather than be given compensatory time off. For military, record all time over 8 hours a day for 40 hours a week as Compensatory Time Earned (CE). (Available Time) (Civilian Only)

OTH	Other. Used to record situations that are not otherwise defined. Example: jury duty, reserve duty (for civilians employed by the facility), excused absences, and so forth. (Non-Available Time) (Both Mil/Civ)
PASS	Pass. An authorized absence by the Company Commander from place of duty not chargeable as leave, granted to military personnel for relatively short periods of time. (Non-Available Time) (Military Only)
PNS	Planning National Support. Time spent participating in the planning and administration requirements of implementing medical readiness activities other than those related to individual or unit deployment. Included in this account are the planning and administrative activities associated with the National Disaster Medical System (NDMS), reserve forces integration and Host Nation Support Program Agreements. (Readiness/Non-Available Time) (Both MIL/CIV)
POR	Planning For Overseas Redeployment. Time spent participating in the planning and administration of individual or unit deployment requirements, such as: security clearance, immunizations, preparation of orders, transportation coordination, deployment briefing, ID tags, Geneva ID cards, clothing or equipment issue, port calls, planning, scheduling, preparing, coordinating and evaluation of medical readiness exercises and readiness and alert status reporting. (Readiness/Non-Available Time) (Both MIL/CIV)
PROC	In/Out Processing. The time used by incoming and departing military and civilian personnel to turn in or collect their records and clear post. (Non-Available Time) (Both MIL/CIV)
PT	Physical Training. Time spent in participating in physical fitness training that is organized, scheduled and carried out during normal duty hours when it takes personnel away from their normal work center duties. Includes PT tests and evaluation of PT tests, time spent organizing and supervising such tests. (Readiness/Non-Available Time) (Military only)
SK	Sick. An authorized absence due to illness. It includes doctor's appointments, quarters (QTRS), convalescent leave, and medical hold. It is used for both military and civilian personnel. (Non-Available Time) (Both MIL/CIV)
SP	Sleep Day. An excused absence for military personnel after performing night duty such as Charge of Quarters (CQ), Administrative Officer of the Day (AOD), and so forth. (Non-Available Time) (Military Only)
TDY	Temporary Duty. A period of authorized absence from the duty station for either official or permissive temporary duty. (Non-Available Time) (Both MIL/CIV)

TH	Training Holiday. Absence from place of duty authorized by the local commander at his or her discretion. (Non-Available Time) (Military Only)
TNG	Education and Training. Time spent in day-to-day JOB RELATED proficiency training. Includes unit in-services, staff development programs, BCLS-ACLS and all programs taught by Nursing Education and Training for nursing personnel.(Available Time) (Both MIL/CIV)
TRNR	Instructor/Teaching Time. Used for time spent by staff personnel instructing students. (Available Time) (Both MIL/CIV)

Appendix C

This appendix contains a copy of the standard worksheet used by United States Army physicians and dentists to record their hours worked for the indicated month. The sheet is provided to each provider preprinted with name, rank, and military occupational specialty. The sheet is generated by the local military treatment facility's MEPRS office. A copy appears on the next page.

UCA - PERSONNEL UTILIZATION SYSTEM
PREPARED

PHYSICIAN UTILIZATION/SURVEY WORKSHEET MONTH ENDING 01 JUN 30 PCN DXXXX-NAC-61PB
BROOKE AMC

APC/WORK CENTER: KWBA OFFICE OF THE COMMANDER
MEPRS CODE: EBAA DEPT/DIV: 101 COMMANDER
NAME: ID CODE: RANK: LTC PMOS/SSI/JOB SERIES 61P

	JUN 01 06	JUN 07 13	JUN 14 20	JUN 21 27	JUN 28 30	TOTAL
PATIENT CARE						
SURVEY						
EBAA COMMAND				99		
EBEA GRAD MEDICAL EDUCATION SUPPPORT				1		
ADMIN TIME						
GME						
CME						
TDY CME						
MISSION						
CONSULT						

	JUN 01 06	JUN 07 13	JUN 14 20	JUN 21 27	JUN 28 30	TOTAL
LEAVE						
SICK						
MEDICAL READINE						
PT						
DEPLOY						
FTX						
PROFIS						
MIL TNG						
OTHER (FUNCTION						
HT						

INSTRUCTIONS:
TIME: -ALL ENTRIES OTHER THAN SURVEY PERCENTAGES (%) ARE IN HOURS.
-EACH FULL DUTY DAY AS TDY, LEAVE, SICK TIME, DEPLOY, OR FTX COUNTS AS 8 HOURS.
-FORM MAY BE COMPLETED WEEKLY OR AS MONTHLY TOTAL.
-IF UNSURE OF CATEGORY, LIST FUNCTION AND DURATION UNDER OTHER
REPORTING TIME/HOURS FOR TRAINEES: -GME TRAINEES REPORT IN-HOUSE HOURS UNDER PATIENT CARE AND REPORT TIME SPENT IN OUTSIDE FACILITIES OR NON-CLINICAL ACTIVITIES UNDER OTHER (E.G.,RESEARCH, AFIP)
0DEFINITIONS:
PATIENT CARE: ALL TIME SPENT IN DELIVERY OF PATIENT CARE TO INCLUDE REQUIRED IN-HOUSE CALL(S), CHARTING, TELEPHONE CONSULTS, CONSULTATIONS, ROUNDS, AND LAB TIME. THIS EXCLUDES TIME SPENT SUPERVISING TRAINEES.
0SURVEY %: PERCENT OF DISTRIBUTION OF PATIENT CARE TIME SPENT IN EACH AREA OF YOUR SPECIALTY (INPATIENT AND OUTPATIENT).
0ADMIN TIME: SERVICE, DEPARTMENT OR HOSPITAL COMMITTEE AND MANAGEMENT ACTIVITIES (E.G., QA, PERSONNEL ACTIONS, BUSINESS PLANNING, MEDCASE, CEEP). THIS EXCLUDES GME/CME OR PATIENT CARE RELATED ACTIVITIES.
0GME: TIME SPENT TEACHING, PREPARING TO TEACH, OR SUPERVISING TRAINEES IN DELIVERY OF PATIENT CARE; ANY GME ADMINISTRATION WORK (E.G., RRC, OTSG); AND RESEARCH IN SUPPORT OF GME.
0CME (LOCAL): TIME SPENT PREPARING FOR, DELIVERING, OR PARTICIPATING IN PROFESSIONAL DEVELOPMENT ACTIVITIES. DOES NOT INCLUDE GME-RELATED ACTIVITIES OR CME CONDUCTED IN TDY STATUS.

Appendix D

Survey Question for Junior Officers

1. Without necessarily providing the exact words that the acronym UCAPERS stands for, do you in general know what it refers to?

2. Have you received any formal training on the completion of the form? When? Have you received any follow up training on compliance with completing the form?

3. How often do you complete the form?

4. Have you received any guidance on the number of hours that are to be recorded for one day/week/month?

5. Do you record more than 8 hours/day or 40 hours/week?

6. How do you keep track of your hours each month? Do you just “remember” at the end of the month or do you record them on a daily or almost daily basis?

7. Do you receive assistance in completing the form or assist anyone else in the completion of his/her form?

8. Are you comfortable with the accuracy of the manner in which you record the data?

9. How long have you been in the military?

10. Have you completed a 1-yr Advanced Education in General Dentistry program?

Appendix E

Survey Questions for Program Directors

1. Do you and your mentors complete a UCAPERS worksheet monthly?

2. When you are providing in class lectures how do you account for this time on the worksheet?

3. When you are providing clinical oversight for students (they are seeing patients but you are not), how do you account for this time on the UCAPERS worksheet?

4. When you are providing clinical oversight for students (as above), but you are also seeing your own patients simultaneously, how do you account for this time spent on the worksheet?

Appendix F

Survey Questions for MEPRS Managers

1a. Is there a standardized form used to capture provider UCAPERS data?

1b. Are there any departments or clinics that use its own customized form?

2a. For each department or section (and here I am especially interested in the answer for the DENTAC) is the UCAPERS data entered electronically at the department/DENTAC by clerks or are the hard copies of data hand carried to the UCAPERS central office for input by the UCAPERS personnel? I would prefer to know the whole picture for the MTF also.

2b. If the data is entered electronically at the department (clinic) level, is the aggregated monthly total sent to the UCAPERS database at the MTF electronically or is it manually reported by the individual clinic's representative?

3a. For a full time provider, do you enter at least 8 hours/day and 40 hours/week? Or do you enter data for 56 hours/week? (2 days/week may most times be entered as Schedule Exception Code Definition (SECD) "DO")

3b. Is the data entered on a weekly or monthly basis?

3c. Do you enter more than 8 hours/day and 40 (or 56) hours/week if the providers data sheet so indicates that these extra hours were worked? Is there a maximum limit?

3d. If the answer to 3b varies with the individual department, who determines the number of hours to be entered per day/per week?

3e. Once the data is entered, can it be corrected at a later date? And if it can be corrected, what is the suspense for making corrections?

4a. If more than 8 hours/day and or 40 hours/week are entered, are the extra hours captured by the SECD code "CE", or is the specific applicable code entered? (e.g. if the provider saw patients for 10 hours on a given day, do you enter record 10 hours of patient contact time or 8 hours and 2 hours of "CE"?)

4b. Specifically, do you know if this (the answer to 4a) is occurring at the DENTAC level?

5a. What is your estimated compliance rate for providers or departments?

5b. What is your specific compliance rate for DENTAC providers?

6a. What is the level of command influence concerning compliance with UCAPERS?

6b. What is the level of command influence by the DENTAC?

7a. What training is provided for clerks who enter UCAPERS data at the department/clinic level (including DENTAC)?

7b. Is any training for providers who complete the UCAPERS data sheet, and if so is the training accomplished at your level or the department/clinic level?

7c. Is there any refresher training available for clerks or providers on date entry and form completion?

8a. Is the MEPRS/UCAPERS data used at your level for any specific functions such as tracking productivity either per department or per provider?

8b. If the answer to 8a is Yes, is your system proprietary or is it a standardized format used at other levels?

9. If you have any other comments that you believe would be pertinent to our understanding of this system, please annotate them here.