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TO DETERMINE THE BEST STAFFING METHOD FOR IDENTIFYING ANCILLARY STAFFING IN OUTPATIENT CLINICS AT BLANCHFIELD ARMY COMMUNITY HOSPITAL

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The research was designed to compare and contrast the two current DA Staffing Guides--DA Pam 570-557 and the Joint Healthcare Manpower Standards--with two clinics. The introduction of the Productivity Assessment Support System identified the most efficient and inefficient clinics and these clinics were used in the comparison of the staffing guides. To determine the best staffing guide, seven criteria were developed and ultimately tested using a physician survey. These results were incorporated into a selection matrix which showed that the JHMS method was the best. The conclusions drawn from this research design indicated the research methodology can be proliferated throughout HSC to ascertain which clinics are operating efficiently and to determine which method would be best suited for the organization. Furthermore, the comparison of the two staffing methods significantly provided allocations differently for each of the conversely operating clinics. In fact, the DA Pam 570-557 was conservative in its manpower allocations and the JHMS method was liberal. However, the JHMS did show a greater allocation which appeared to reward efficient clinics.

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A STUDY TO DETERMINE THE BEST STAFFING METHOD FOR IDENTIFYING THE ANCILLARY STAFFING REQUIREMENTS FOR SELECTED OUTPATIENT CLINICS AT THE BLANCHFIELD ARMY COMMUNITY HOSPITAL

A Graduate Management Project

Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the

Requirements for the Degree of

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by

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INTRODUCTION

Frivolous spending sprees and disregard for operational efficiency by United States hospital administrators were the general rule prior to implementation of the 1983 Prospective Payment System (PPS). Many hospital administrators and governing boards approved without question, physicians' requests for sophisticated clinical procedures or tests, additional support personnel, state-of-the-art equipment, and new construction because the Federal Government and other third party payers (Blue Cross and Blue Shield) reimbursed on a cost-plus basis. Many administrators perceived cost efficiency as a deterrent or disincentive because the medical staff associated these cost efficiency techniques with a correspondingly negative effect: reduction in their ancillary staffing (licensed practical nurses, receptionists) or fewer purchases of new equipment. Those administrators who implemented cost efficiency techniques found that staff physicians, in turn, sent their referrals to other hospitals (Johnson 24). Consequently, administrators saw neither a need for nor a necessity to become frugal.

Instead of implementing more cost efficient techniques, many administrators simply shifted costs to patient charges, a shift which increased the cost to the Federal Government and to other third party payers. This increase in charges dramatically improved the gross revenues for both physicians and hospitals. Since the Federal Government and other third party payers absorbed these increased charges, the patients were indifferent to these increases. For many years, the increases in charges remained the trend, primarily due to the Federal

Government and other third party payers' ignorance of how the health care system operated. This lack of understanding added to excessive health care spending, and, as a result, the Source Book of Health Insurance Data: 1986 Update indicates that the Gross National Product percentage for medical services had drastically increased to 10% by 1986 and is projected to reach 13% by the year 2000 (1-31). Thus, the Federal Government, as the largest payer of health care services costs, saw the economic need for PPS to constrain excessive health care expenditures.

To decrease health care expenditures, the PPS reduced reimbursement costs to institutions for discharge diagnoses and based these costs on an average charge for an average length of stay. The PPS ultimately reduced the Federal Government's overall expenditures for health care, but, moreover, PPS changed the behavior of many administrators to the extent that excessive spending habits ceased and "further incentives for productivity and efficiency increase[d]" (Betka and Lacusta 8). Many administrators also instituted innovative staffing designs to reduce expenses. PPS affected only inpatient areas; hence, staffing innovations proliferated into the patient care units or wards (there have been several designs in the laboratory and radiology areas) where flexible hours, time-sharing, and compressed schedules are now commonplace (Hinshaw et al. 8). These same authors ascribed some of these innovations to the national nursing shortage rather than to implementation of the PPS (8). Unlike the fast and drastic innovations experienced in the inpatient care units, staffing innovations have been slowly adopted by ambulatory clinic administrators. However, the advent of automated applications and instruments have enabled administrators to quickly determine efficiency within their clinics. For example,

staffing classification systems will derive efficiency by using either the physician's availability in the clinic (Verran 279) or the patient's problem flow chart or diagram (Fetter et al. 415). Notwithstanding these advances in automation and the classification systems, many clinic administrators continued to use the routine eight-hour day and Monday through Friday schedule. Additionally, the outpatient clinic's ancillary staff made up of registered nurses, licensed practical nurses, secretaries, receptionists, and appointment clerks, worked these routine hours without any parallel adjustments with the physician's schedule or his availability in the clinic. Even during those times when the physician is working in the operating room on scheduled surgery patients and he is unavailable to work in the outpatient clinic, the clinic administrator still retained the full ancillary staff for making appointments, changing dressings, and completing administrative tasks. Although these tasks are important, many of these tasks were menial in nature and less labor-intensive and can be completed in less time than when the physician is physically in the clinic. Thus, ancillary staff are idle in the clinic and, thus, they are not fully productive.

Further aggravating clinic productivity is that increased competition in the ambulatory care settings have mandated more convenient clinic hours. Many physicians adjusted their clinic schedules accordingly. For example, longer evening clinic hours, which cater to working couples, became necessary for physicians to remain competitive. Same-day surgeries also became popular. Nonetheless, while the physicians were working in the operating room, the clinic's ancillary staff worked the routine and the longer hours regardless of the clinical workload or the physician's schedule. These new market

driven behavior or pattern changes kept ancillary staff in the clinic at all times and were essential to remain competitive in the health care community, but these patterns have added to clinic's ancillary staff under-utilization. A solution to this under-utilization problem is for clinic administrators to adjust the ancillary staff such that sufficient staff are available to meet the needs of both physicians and patients as well as to maintain efficiency in clinic. Tailoring these numbers is an arduous task and often requires innovative techniques and methods to ensure the efficient use of all manpower resources.

Like most civilian hospitals, attempts by Department of Defense (DoD) hospital administrators to match and balance ancillary staffing with the availability of providers have been equally arduous. The DoD's three services have continued to use a table of distribution and allowance (TDA), which assigns staffing numbers for both the inpatient and the outpatient areas. The Army's TDA is derived from a yardstick staffing method found in the Department of the Army Pamphlet (DA Pam) 570-557, Staffing Guide for United States Army Medical Department Activities, dated 15 April 1984. This yardstick staffing method determines the number of physicians (irrespective of specialty) and ancillary staff for each clinic based on the total number of outputs, which are clinic visits, bed days, admissions, and births. The Navy's TDA also resembled the Army's TDA, since staffing is based on these same outputs. The Air Force's TDA, on the other hand, is derived from preestablished standards designed for a specific clinic. This TDA's standards evidently provides equitable distribution of the staff. As a result of the Air Force's success, Congress mandated that both the Army and Navy develop standards similar to the Air Force's preestablished

standards. Consequently, the Army and Navy have collaborated with the Air Force to develop Tri-Service manpower staffing standards. Although collaboration is still ongoing, the initial outcome has been tentative staffing guidelines, called the Joint Healthcare Manpower Standards (JHMS). In the meantime, the DA Pam 570-557 staffing method will continue to be used until the JHMS publication is finally staffed, approved, and fielded to the medical department activities.

Some of the research studies performed in the Army Medical Department (AMEDD) are mandated by the Office of the Surgeon General and Health Services Command for conducting clinical research (such as Acquired Immune Deficiency Syndrome or hepatitis vaccine development), but one notable exception related to the healthcare management field is the 1988 Ambulatory Work Unit (AWU) study by Optenberg, Coventry, Baker, and Austin. The study concluded that "the AWU represents a resource intensity sensitive weighted ambulatory index . . . provide[s] substantially greater credit to ambulatory care" (Optenberg et al., xxx). This study affirmed that an outpatient visit in one clinic was not equal to an outpatient visit in another clinic and thus, the conclusions represented a marked improvement over the inadequacies of both the military staffing methods (Coventry) and the civilian statistical staffing systems (Federa and Bilodeau 5). The AWU study furthermore considered the significant differences in the resources consumed to generate an outpatient clinic visit (output) for each clinic, including the subspecialty clinics. This study's results were quite similar to the Air Force's TDA but, unfortunately, the AWU study did not derive manpower staffing tables. Nevertheless, the study derived the ambulatory work unit measurement, which is a resource

intensity measurement used to adjust the workload produced in each clinic. Using this measurement as a basis for adjusting clinical workload can provide administrators the opportunity to equitably distribute limited resources.

The focus of this graduate management study was to compare and contrast two military staffing methods -- the DA Pam 570-557 and the JHMS -- for determining the staffing method that best identifies ambulatory ancillary staffing needs. A primary weakness found in previous staffing studies has been the researcher's assumption or omission that a clinic is operating at an efficient level. This study did not assume that all clinics were operating efficiently, and, therefore, introduces a statistical application for determining a clinic's magnitude of inefficiency relative to the most efficient clinic in the sample size. These results were analyzed, and two clinics were arbitrarily selected for the comparison study: (a) at the most inefficient extreme and (b) at the most efficient extreme. Prior to the conduct of the study, the results from analyzing two conversly operating clinics were expected to show significant differences in the staffing methods comparison.

Conditions Which Prompted the Study

Blanchfield Army Community Hospital (BACH) is located at the home of the 101st Airborne (Air Assault) Division, Fort Campbell, Kentucky. The Fort Campbell installation straddles the Kentucky and Tennessee state line, but the main hospital complex, BACH, is in Tennessee. BACH is a modern facility that replaced the old, cantonment style hospital on 17 September 1982 and has an operating bed capacity of 241. The average daily census in 1988 was approximately 125. The physical plant consists

of three main buildings: A, B, and C in a multi-level structure (Appendix A) and D, an auxiliary building.

The five story A building houses administrative offices and eight inpatient care units, including 30 full-term and 15 observational bassinets, in a 150,780 square foot area (Appendix B). The two-story 209,225 square foot B building houses the multi-specialty intensive care unit, six operating rooms, one recovery room (14 beds), six labor and delivery rooms, logistics, dietetics, diagnostic and treatment functions, and an inpatient pharmacy (Appendix C and D). The two-story C building (94,225 sq. ft.) houses 11 outpatient clinics, several diagnostic services, and an outpatient pharmacy (Appendix D and E). The 9,935 square foot stand-alone D building houses the environmental control systems for the entire hospital.

BACH's health services area for medical care includes the entire state of Tennessee and 26 counties in Western Kentucky. The catchment area and health service area encompasses a beneficiary population of over 165,000. The 1988 fiscal year workload output was 10,577 admissions, 45,084 bed days, and 591,992 outpatient clinic visits. Supporting this tremendously large workload volume are 487 military and 494 civilian personnel (as of 31 December 1988). The 1988 TDA authorized 487 military and 494 civilian personnel.

Efficiency studies for identifying the optimal staffing in outpatient clinics have been directed by the Surgeon General, the Health Services Command (HSC) or hospital commander, or required by the Army-Baylor Program. In many of these studies, however, the results reflected merely superficial findings because the researcher compared clinical workload data with other clinics within the medical treatment

facility or throughout MTFs in HSC (Johnson 26). Since these decisions were based solely on superficial and incomplete data, the findings represented unreliable trends and, frequently, seasonal trends. To eliminate such unreliable findings, the researcher should use a more thorough analysis, or longitudinal management studies, that involves one or more clinics. This type of study provides greater representation of the different data elements and analyzes these data over an extended and ongoing period. Furthermore, longitudinal studies allow managers to compare several different variables between the ongoing periods to the extent that different data analyses and variations will reveal that time period exhibiting the most efficient use of resources. Thus, managers can make prudent decisions based on the more accurate and reliable data. Notwithstanding these positive points, longitudinal studies have been described as "pushing productivity to its theoretical limits" and hinder an organization from being "managed at an organizational comfort level" (Johnson 26). Longitudinal studies are also time and manpower intensive and, thus, administrators may have no alternative but to direct the less difficult and superficial studies.

Three primary conditions prompted further research and investigation of the staffing methods cited. First, the administrative resident's graduate management project prompted the former Fort Campbell MEDDAC Deputy Commander for Administration (DCA), Colonel Alba, to direct a staffing efficiency study. The conversation between the DCA and the administrative resident has been summarized as follows: In an outpatient clinic the staff consists of four providers and six ancillary support personnel. During a given week, the providers are available only 75% of the time and the remaining time is spent in surgery, leave,

temporary duty, administrative time, etc. When providers are not in the clinic, what do the ancillary staff do? The solutions to this complex problem evolved around identifying the minimal staffing needed to perform all the required tasks. The existing staff evidently had ample time to do not only the required tasks, but also to do nothing (referred to as excess or non-productive time). The DCA envisioned a redistribution of excess staff to other areas that had been identified as having insufficient staff. In the research study, the selected efficiency technique was determine the magnitude of efficiency in all clinics. These results were then compared between the two staffing methods to ascertain any differences based on preestablished criteria.

The second condition involved a discussion between the administrative resident and the Fort Campbell MEDDAC Deputy Commander for Clinical Services (DCCS) on August 17, 1988 and his comments are summarized as follows: A staff obstetrician felt that a female ancillary staff person, who is a Licensed Practical Nurse (LPN), should be at his side during the entire outpatient clinic schedule. This person shared and ultimately assumed part of the obstetrician's clinical and administrative duties. The obstetrician envisioned the additional support person freeing him of all non-obstetrician tasks and, thus, allow him to see more patients. An initial response would be effusively positive since a cost-benefit analysis (saving a physician time so that he can see more patients) supported the obstetrician's request. However, further analyses revealed several problems associated with an operation that had ancillary staff dedicated for each physician. For example, what does the ancillary staff do when the obstetrician is involved in a time-consuming labor and delivery case or when the obstetrician is on

leave or on temporary duty? Another problem evolves around the obstetrician's availability in the clinic because past performance showed that the OB/GYN clinic frequently experienced obstetrician's unavailability for at least 25% of the scheduled outpatient clinic hours. Hence, additional staffing requests cannot be supported with such a high obstetrician's unavailability percentage. Any extra perceived workload appeared farfetched and improbable since the obstetricians were frequently unavailable in the clinic. Instead of adding more staff members, outpatient clinic chiefs can streamline clinical operations by combining similar tasks of ancillary staff to reduce excess or non-productive time.

The last condition focused on leadership. Leaders must provide a productive day for ancillary staff and other employees because most workers receive great satisfaction and more workload when they are busy all day (Burton 11). In the Fort Campbell Pamphlet 600-1, "The Basic Standards of the 101st Airborne Division (Air Assault) and Fort Campbell," the Commanding General challenged all leaders to provide soldiers with a productive work day, thus reflecting a top-down approach for improving efficiency and promoting increased productivity. Finally, the Department of the Army (DA) charged all leaders with the fiduciary responsibility of properly managing and expending federal funds. The DA instituted hotlines or 1-800 numbers to encourage anyone, regardless of rank or position, to report fraud, waste, or abuse. Many leaders fulfilled this responsibility by providing soldiers and civilian employees with the means to achieve a productive day.

Research Question

The research question was to determine the best staffing model for identifying the ancillary staff requirements in selected outpatient clinics at Blanchfield Army Community Hospital.

Objectives

The objectives of this study were to:

1. Conduct a literature review of existing models that identify methods for maximizing the proper utilization of ancillary personnel and for delineating staffing figures for physician and ancillary staff in outpatient clinics.

2. Determine the number of available manhours for the last twelve months for both health care providers and ancillary staff in the following outpatient clinics: Family Practice, Surgery, Internal Medicine, Pediatrics, Obstetrics/Gynecology, Outpatient, and the Emergency Room.

3. Determine the total number of outpatient visits and, if possible, the total number of procedures for these same clinics over the same time period.

4. Determine the ambulatory work unit factors/weights for each of these clinics. These units controlled the intensity of resource consumption and were identified by the researcher as a control for the physician's time consumed during each patient visit and for the physician's specialty. Hence, clinic visits were weighted differently for the various medical and surgical specialties.

5. Ascertain if there were any health care extenders who, on a daily basis, contributed to the workload output (clinic visits). Identification of these health care extenders was accomplished through discussions with each clinic chief to gain an understanding of the

clinic operation and staff make-up or mix. Any ancillary staff positions that contributed to the output were counted as a health care extender of the physician rather than as an ancillary staff member. These health care extenders, in essence, had assumed the role of the provider and performed workload for the physician.

6. Determine the magnitude of inefficiency for these clinics, using the data discussed in Objectives 2-5. This magnitude was achieved via the selected efficiency technique, Productivity Assessment Support System (PASS), which is a derivative of the Data Envelopment Analysis (DEA).

7. Identify the most efficient and inefficient clinics from the PASS analyses and ultimately use these results in the staffing methods comparison.

8. Develop criteria for selecting the best staffing method. These criteria were written based on the methods identified in Objective 1.

9. Discuss with the clinic chief from each of the clinics identified in Objective 7 the impact each method had on the overall efficiency and operation of the clinic (subjective productivity).

10. Develop a selection matrix based on preestablished criteria and present recommendations to the DCA and DCCS. The staffing method meeting the most criteria was considered to be the best staffing method.

<u>Criteria</u>

The applicable criteria for this research included the following:

1. The researcher selected the staffing method based on the following preestablished criteria:

a. Feasibility - the method accepted by the Clinic Chiefs identified in Objective 7.

b. Patient Backlog - the method that produced the greatest patient backlog reduction (based on physician questionnaire or obtained from Automated Quality of Care Evaluation Support System - Patient Appointment Service supervisor).

c. Efficiency - the method that showed the best ratio in terms of the following units of measurement: (1) greatest output to input ratio; (2) greatest number of visits per hour; (3) lowest cost per visit; (4) fewest ancillary staff to physician ratio.

d. Reduction of Physicians' Nonclinical Duties - the method identified by the physician as reducing the most nonclinical duties (based on physician questionnaire).

e. Quality of Care - the method that improved the quality of care or the patient's condition or patient's satisfaction (based on physician questionnaire).

f. Physician Subjectivity - the method that the physicians selected as being the best (based on total scores on the physician questionnaire).

g. Overall Index of Productivity - the methodology that showed the best total score for criteria c and d.

2. The model selected had to be acceptable to the Deputy Commanders for Administration and Clinical Services.

Assumptions

For the purpose of this study, it was assumed that:

1. The monthly Medical Expense and Performance Reporting System (MEPRS), Uniform Chart of Accounts (UCA) data and the computations deriving the Ambulatory Work Units were accurate.

2. BACH has access to the PASS software package. If PASS is unavailable or if any unexpected problems arose (computer crash), the researcher would select the two clinics closest to the median Ambulatory Work Unit factor of the seven clinic factors.

3. The data collected for each selected outpatient clinic was representative of the clinic's productivity.

4. All manpower hours were properly credited to the reporting clinics.

Limitations

The study was constrained by the following factors:

1. This study methodology analyzed only one efficient and one inefficient outpatient clinic located within the hospital structure, thus, excluding all outlying troop medical and dental clinics. Since the emergency room (ER) is required to maintain a certain level of staffing in accordance with the Army and Health Services Command directives and the Joint Commission standards, an analysis in this area was felt to be futile; however, the ER was still tested in the PASS technique to provide that data and information to the Chief, Clinical Support Division and the DCCS. If the ER results ended up being identified as either the most efficient or inefficient clinic, then the next clinic in line would have been used.

2. This study analyzed only those factors affecting the efficiency and effectiveness of the ancillary staffing in the selected outpatient clinics. The study did not evaluate or compare physician efficiency or effectiveness.

3. The researcher had neither the time nor the resources to conduct a time/motion study of every task performed by each ancillary staff member.

Review of the Literature

In an environment of austere and limited resources, management must be accountable for its level of productivity. Today, ambulatory care is the most rapidly growing segment of health care; consequently, the Federal Government is redirecting its attention from the Prospective Payment System (PPS) to the outpatient area, where management techniques to improve efficiency are gaining popularity: "productivity measures are important for the construction of staffing, budgeting, and control mechanisms in the management of ambulatory care organizations" (Betka and Lacusta 12). This statement is espoused by the Army Medical Department, and these productivity measures (when influenced by medical, economic, and political reasons) can improve the efficiency of ambulatory care (Hudak and Mouritsen 283). Since the commanders or chief executive officers of medical treatment facilities (MTF) must carefully account for every dollar spent, they continually review and often adopt cost efficiency techniques to save resources. Nonetheless, the adoption of these efficiency techniques has been very difficult because the current method of reimbursing supply dollars for workload did not distribute these dollars according to resources consumed in delivering patient care. Reimbursements are based on the following workload criteria: admissions, bed days, and outpatient visits. Each criterion is weighted separately and combined to derive an overall medical care composite unit (MCCU). This MCCU computation is a system for distributing resources, a system considered unequitable because each criterion is weighted exactly the same for every MTF, regardless of the population demographics or the quantity of services the MTF provided. Moreover, each criterion is also weighted exactly the same for each

patient, regardless of the patient's presentation or condition. These inequities are the basis of workload credit for each MTF as well as for HSC's method of allocating resources. HSC does not provide any built-in mechanisms for rewarding efficiency or penalizing inefficiency; thus, the more MCCUs an MTF can generate, the more resources the MTF will ultimately receive.

This graduate management project analyzed efficiency in the staffing methods comparison. The most efficient clinic and the most inefficient clinic were identified and then analyzed in the staffing methods comparison to determine the best method for identifying ancillary staffing in outpatient clinics. This literature review focused on the following subjects:

1. Existing techniques to identify efficiency levels in ambulatory care settings.
2. Existing classification models or schemes.
3. Existing staffing methods or models.
4. Organizational behavior impact on changes in staffing.

Efficiency Techniques

Productivity monitoring in ambulatory care settings is considered dynamic because managers have several options when contemplating the use of an efficiency technique. Managers can use either the rudimentary techniques such as ratio comparisons or the more sophisticated and automated software application programs such as constrained facet analysis (Clark et al. 8) to ascertain efficiency levels. Regardless of which method used, the identification of a measurement tool that can determine efficiency levels for each clinic was crucial. The literature review of the different efficiency techniques answered the following questions:

1. Which statistical technique best determines efficiency in ambulatory care settings?
2. What are the advantages and disadvantages of each technique?
3. What inputs and outputs are required in order to use these techniques?
4. Which technique is best suited for this study?

The selected efficiency technique was not a stand-alone measurement for staffing clinics with resources, but provided the researcher with the necessary results of how efficiently the clinic operated over the 12 month period in 1988. Lewin and Morey assert that "the concept of measuring effectiveness and efficiency is based on the view of an organization perception of production systems, transforming multiple inputs (resources) into multiple outputs (goods and services) through organization, management, and technology (275). At the Blanchfield Army Community Hospital (BACH), multiple inputs like ancillary staff, equipment, and space, were used to produce one tangible output (workload) and several intangible outputs (trained medics or licensed practical nurses reduce the risk or number of potential compensatory events). To perform this production or transformation effectively and efficiently, each outpatient clinic has a well-defined organization, a staff, and a management team for guidance and assistance, all of which were described in the TDA and the HSC Organization and Functions Policy Regulation 10-1. Additionally, many clinics needed high technological equipment to stay abreast of state-of-the-art advances, so the staff had programmed these needs for future procurement. Moreover, the equipment was needed to perform work easier or more efficiently.

Although these equipment needs have helped clinics to improve efficiency, many department chiefs still exhibited an attitude that deters efficiency: The number of staff listed on the TDA belongs to the

department chief and to no one else. Whether the staff, physical plant, space, or budget are too small or large to accomplish the work, the number of ancillary staff will remain the same. Management does not have institute any automatic staff changes or transfers that are enacted to meet increasing demands or decreasing workload in other clinics. To exacerbate this problem, the department chief receives monthly reports loaded with efficiency indicators or measurements in tne form of ratios and other figures, often too complex to read or to interpret. These reports have not facilitated the department chief's fiscal responsibilities, but detered him from performing his patient care duties and, hence, the reports are often unused and discarded.

The problems associated with equipment and staff requirements obviously made it difficult for the department chief and the hospital commander to operate at peak productivity and efficiency. Therefore, the study's selected efficiency technique clearly illustrated comparisons that can be easily interpreted by the layman. Adjustments were necessary to the outputs to show fairness and equity for each of the different clinical specialties. These adjustments also accounted for the resource intensiveness of a patient visit in the specialty clinics.

The literature review revealed several different efficiency techniques, but only the following are discussed: simple ratios, constrained facet analysis, and data envelopment analysis. Both managers and CEOs working in service and manufacturing industries frequently use the simple ratios, which were represented by a numerator and denominator quotient. Simple ratios are rudimentary and, thus, are performed manually or with computers. With simple ratios, managers can compare current data with data from last year and with

predefined measurement standards. For example, in 1983 the service industry developed a simple ratio called paid hours per patient visit (PH/PV) for the Ambulatory Care Services Administration (Hodge et al. 31): Total PH/PV = Average Total FTEs X Working Hours/Total Number of Patient Visits. This formula required the number of direct care, clerical, and administrative full time equivalents; the number of working hours that the clinic was opened; the total number of patient visits; and the time period involved. This latter data element covers an annual period rather than a quarterly or semi-annual period so that temporary, sporadic, or seasonal fluctuations are eliminated.

In this service industry study, over three-quarters of the managers "felt that the reports were useful and understandable" (Hodge et al. 31). In most civilian hospitals, the greatest resource expense of the operating budget has been personnel costs for which simple ratios revealed potential personnel savings and provided managers justification for additional staffing.

If the Army Medical Department used the PH/PV ratio, then department chiefs would receive periodic feedback affecting their overall clinical operation. The chiefs could develop preestablished standards comparable with the results and standards of other departments or clinics. At the top-management level like HSC or the Office of the Surgeon General, commanders could use these ratios to ascertain which hospitals are over or under-staffed. Hospital commanders could also ascertain which departments are the most efficient. Like the civilian hospitals, the bulk of the military's operating budget is personnel costs, and simple ratios could identify areas for potential savings as well as justifications for additional manpower.

On the other hand, several disadvantages of simple ratios include cause and effect situations, averages and clinic visit inequities. Department chiefs or managers often examine each ratio carefully to ascertain a cause and effect for significant changes in ratios. Close examinations usually pinpoint changes in patient volume, which may be the cause of a decrease or increase in workload, and, if so, managers must determine whether these changes are trends or fluctuation. Simple ratios use average inputs and outputs, which may be efficient or inefficient, and certainly did not establish a true perspective of the clinic. A final drawback of simple ratios relates similarly to the problem military MTFs have experienced: a clinic visit is equal to any clinic visit, regardless of specialty. Hence, managers have to adjust their workload, due to the different clinical speciaities, prior to using these data in simple ratio formulas and, moreover, prior to instituting managerial decisions that increase or decrease the clinic's predefined production standards.

The second efficiency technique found in the literature review was the data envelopment analysis (DEA). An application of fractional linear programming, DEA measures the relative efficiency of activities performing the same tasks or functions. DEA follows the principle of "pareto optimality" to segregate an organization's overall efficiency into predefined classifications; e.g., technical or managerial. In this graduate management study, only the technical classification was necessary since it provided sufficient data for managers to bring any identified inefficient activities up to efficient levels. DEA denotes "the notion that the observed input data from the decision making unit (DMU) is being covered or enveloped from one side

by all inputs for all the DMUs and from the other side by all the outputs for all the DMUs" (Lewin and Morey 267). DEA has primarily been used in the public sector, where different activities perform the same tasks and because DEA adjusts for those variables not under management's control. DEA has also been applied in hospital settings, and the results were similar (Sherman 922). Nonetheless, DEA can ease managerial decision-making because it uses a single summary measure of relative efficiencies. Lewin and Morey describe several advantages of DEA:

1. Handles noncommensurate multiple outputs and inputs.
2. Not dependent upon a preestablished weight or value.
3. Handles qualitative and quantitative factors.
4. Is theory-based, transparent, and reproducible.
5. Is equitable and defensible. (267)

Charnes et al. depicted the mathematical derivation of DEA as "a model for measuring the efficiency of Decision Making Units" (668), a measurement which will define efficient and inefficient activities based on the number of outputs produced with a particular number of inputs. DEA simultaneously con iders various DMU outputs and inputs without knowing the efficient relative weights, which were necessary for computing simple ratios (Sherman 922). Furthermore, Charnes et al. state that "our intention is to provide a general set of concepts and methods that can be applied to a variety of public programs where profit, cost, and like considerations are not directly applicable" (699). DEA should therefore be used when managers have developed preestablished and agreed upon objectives.

DEA has many versatile features suitable for managerial application. For example, DEA synthesizes multiple variable inputs and outputs into a single measure of relative efficiency, a measure that shows an exact magnitude of input and output variables necessary to

attain the efficiency rating of 1 (one). DEA results give all efficient DMUs a figure of 1.0 (one) and all inefficient DMUs a figure of less than 1.0, the magnitude less than one is dependent upon the degree of inefficiency. With DEA, managers can decide with confidence and fairness how to properly distribute their resources.

Although DEA has been established as a versatile tool for measuring efficiency, DEA still has several disadvantages. In several cases, DEA overestimated the magnitude of efficiency for activities or organizations previously identified as inefficient. DEA also failed to identify data pertaining to the substitution and productivity rates on the frontier slope. Several authors ascribe these problems to the exclusion of the properties required to obtain the best results from DEA (Bessent et al. 1). DEA also omitted information used for planning purposes (Clark et al. 7).

The final efficiency technique found was the constrained facet analysis (CFA), which detects sources of inefficiency, identifies factors for correcting inefficiencies, and reveals several opportunities for improving operational effectiveness. Although quite similar to DEA, CFA allows managers the flexibility to plan and allocate resources more effectively than DEA and simple ratios. To achieve such flexibility, the concept of CFA can be explained as follows:

> The first to identify an efficiency frontier made up of operational units which achieve the highest level of output for their given levels of input. Then, an inefficient unit is compared to other units on the frontier to determine its degree of inefficiency. For any efficiency measurement to be important and useful, it is crucial to determine the appropriate comparison units on the frontier (the 'proper facet'). At the final iteration, the CFA model locates the proper facet made up of observed units with similar mixes of inputs and outputs. (Clark et al. 8)

CFA incorporates multiple inputs and outputs, but is considered best applied when integrated with decision support systems, an integration which allows managers with interactive data-base manipulation and modeling. Managers can ameliorate their decision-making effectiveness and the operational control of their organizations.

On the other hand, CFA results have shown a deleterious effect. The CFA results, obtained from the graphical analysis, are nonenveloped because of entries of inaccurate data elements. These nonenveloped results exhibited variables forming a maldistribution of the units on the efficiency frontier (Clark et al. 8).

In conclusion, each efficiency technique has a variety of attractive and unattractive characteristics. The purpose of this graduate management study was to identify the best staffing method for identifying the optimal ancillary staffing in the BACH outpatient clinics. Since the DEA technique came closest to facilitating this purpose, the technique was selected for use in the graduate management study. Furthermore, DEA can employ multiple inputs and outputs and can compare all clinics to the most efficient clinic. The DEA technique included input and output variable elements collected over the January 1 through December 31, 1988 period. The inputs' data elements included available physician manhours, available ancillary staff manhours, and quarterly operating expenses. The selected outputs' data elements included workload in the form of outpatient visits and the number of ambulatory procedures.

Classification Instruments

Classification instruments can measure the complexity of care provided by the nursing staff in a health care setting. Patient

classifications instruments measure productivity based on diagnosis, presenting complaint, reason for visit, signs and symptoms, staging, mortality, prognosis, response to therapy, and complications resulting from treatment. Classification instrument characteristics included several important aspects of the treatment patterns: the episode of care, the medical specialty, and the health care setting. Two of the most common classification instruments are prototype and factor evaluation. The former emphasizes descriptions of clients or patients typical in each classification category, and the latter uses a series of indicators, which were evaluated separately and, then, aggregated to determine the appropriate classification category. Examples of the factor evaluation instrument are the ambulatory care client classification instrument (ACCCI), which measures the complexity of nursing care needed to care for a patient, and the International Classification of Health Problems for Primary Care, which classifies problems by organ system involvement. Nevertheless, the most popular classification of diagnosis instruments was the International Classification of Diseases even though a large number of rubics were needed. These rubics, however, were condensed for the instrument to support cost-modeling or reimbursement systems (Fetter et al. 417).

Of the many classification instruments reviewed, only the following are discussed: ACCCI, ambulatory visit groups, and ambulatory work units. The first instrument, ACCCI, uses ranges of ambulatory care nursing practices and subsequently develops parameters for responsibilities and activities into a taxonomy of ambulatory care nursing activities. The taxonomy includes six responsible areas and over 44 activities or tasks which are necessary for proper performance

	Patient Counseling	
Client Advocacy	General Support	Clinic Procedures
Terminal/Chronic Illness		
	Health Care Maintenance	
General Assessment	Provide Information	Followup Assessment
Preventive Care Instruction		
	Primary Care	
Referral	Triage	Protocol Care
Physical	History	
	Patient Education	
General Instruction	Plan of Care	Individual Instruction
Standardized Instruction	Illness/Condition Program	Health Care Maintenance Program
	Therapeutic Care	
Surgical Preparation	Irrigations	Respiratory Treatments
Applications	Specimens	Measurement
Appliances	Recovery	Invasive
Non-invasive	Dressings	Medications
IV Medications	Blood Therapy	IV Therapy
	Normative Care	
Directing	Transporting	Communication
Chaperoning	Assisting	Preparation
Documents	System	Comfort
Coordination		

Figure 1. The Taxonomy of Ambulatory Care Nursing Activities.

Verran, Joyce. "Testing A Classification Instrument for the Ambulatory Care Setting." Research in Nursing and Health.

(see Fig. 1). Because the ACCCI requires several computations or measurements of nursing resources to perform each of the different responsibilities, the complexity characteristic is required (see Fig. 2). Ambulatory nursing care is described as a type of knowledge technology, which, in turn, makes the patient presentation even more important. The flow chart shown in Figure 2 reflects this knowledge technology by using several unfamiliar client problems, knowledge or strategy to solve problems. The types of tasks required to treat a patient condition determine the ACCCI scores. As the ACCCI score increases, so does the degree and complexity of care required (Verran 279). The ACCCI instrument does, however, reflect the most thorough analysis of all the instruments and also gives the most equitable credit for the resources consumed in the care given to a patient. The ACCCI also considers both the patient presentation and the tasks required to treat the patient's condition.

Verran tested the ACCCI instrument for reliability and generalization and found it a reliable measurement of patient complexity. On the other hand, the test for generalizability as a patient classification instrument was found to be dependent upon the type of service provided. This dependence is considered to be a common fault for testing the generalizability in many instruments. This fault is due to the type of care and usually varies by clinic specialty. Verran states that the ACCCI instrument "explains only 50% of the nursing care complexity in ambulatory care" (279) and does not consider the resource intensity of other taff members such as receptionists and

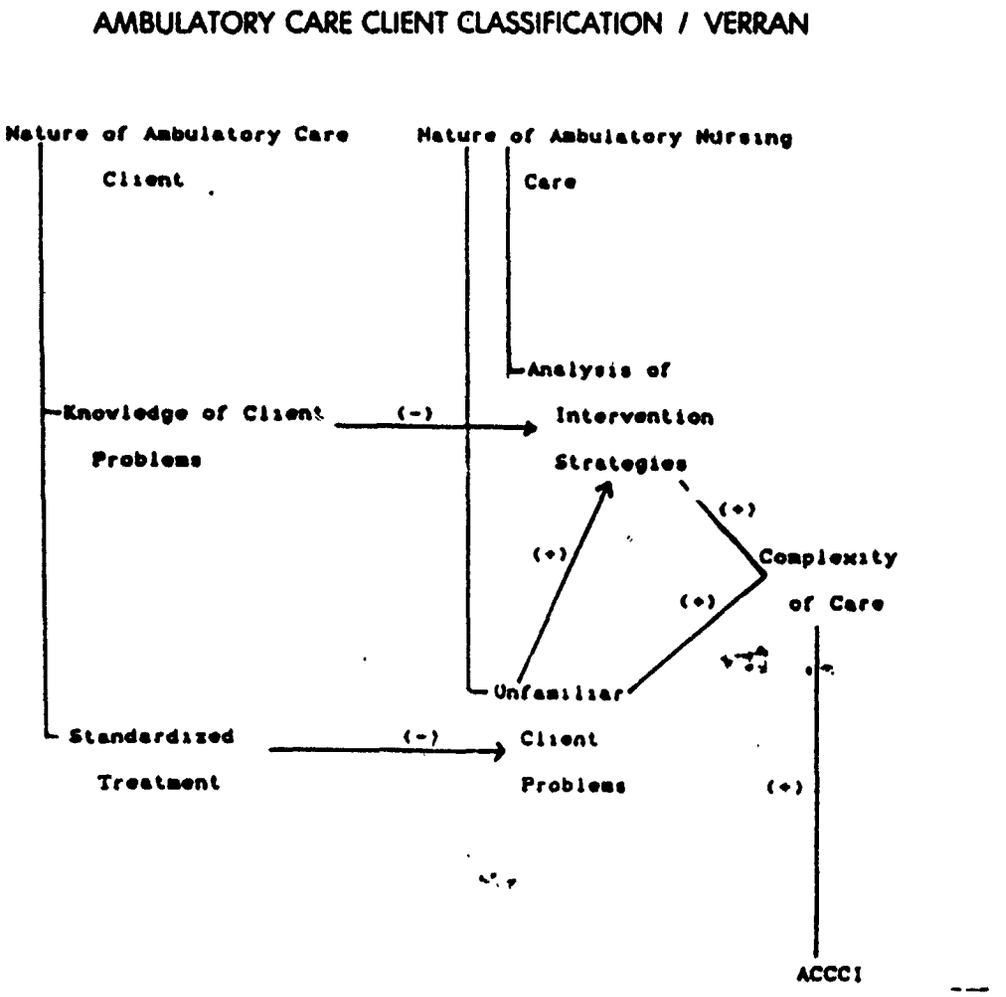


Figure 2. Conceptual Perspective: Delineation of Ambulatory Nursing Care Complexity.

Verran, Joyce. "testing A Classification Instrument for the Ambulatory Care Setting." Research in Nursing and Health.

technicians. Nevertheless, ACCCI is still a subjective measurement of complexity, which has exacerbated the problem, and is considered to be the best available measurement of nursing care complexity.

One possible adoption for both federal and state government medical treatment facilities in measuring ambulatory care productivity is the ambulatory visit groups (AVGs). AVGs closely parallel the PPS's system of diagnosis-related groups because of its use of different variables depicted on a flow chart or tree diagram. These variables are based on the patient's presentation, whether the patient is old or new, the problem is old or new (see Fig. 3). AVGs are described as a measurement of a physician's productivity since they measure an exact number of visits over a predefined period of time. Hence, Fetter et al. controls for the patient presentation contending that "a physician with a higher proportion of relatively time-intensive visits could be expected to have, on the average, lower productivity than one with a less intensive set of visits" (418). If the patient presentation is not controlled, then a patient visit would be equal to a patient visit, regardless of or condition (diagnoses). The inability to control the patient presentation has been clearly illustrated in the military health care reporting system, since the data in the Medical 302 Reports reflect only the total number of outpatient visits. The Medical 302 Reports do not adjust the total number of outpatient visits for the patient-physician time each of the different physician specialists spend with each patient or for the patient's presentation or diagnosis. Furthermore, the problem became more complex since Health Services Command distributes resources based on the medical care composite units (MCCU). The MCCU accounts for the workload produced at a medical treatment facility and

does not adequately consider the physician's time, the patient condition, or presentation. The physician's time as the labor intensiveness of the patient-physician encounter can be used to properly account for the patient presentation and the physician's specialty. However, introducing any methodology to determine the amount of time the physician spends during a patient encounter would involve an extensive time/motion study. The time necessary to conduct a thorough study is unavailable and, therefore, improbable for this graduate management project. However, this graduate management project cannot overlook the physician's time spent during the patient-physician encounter and, hence, the project adjusts the workload by using the ambulatory work unit (AWU). This AWU is a derivative of all the resources consumed in the production of the patient-physician encounter.

The final classification instrument reviewed is the AWU study, which provides more equitable credit for an ambulatory visit than the current military workload system (MCCU). The results of this AWU study concluded that an outpatient visit in one clinic is not equal to an outpatient visit in a more specialized clinic. Optenberg et al. mathematically computed the resource intensity of an outpatient visit for equitably distributing resources, and, as a result, several weighted factors were derived according to a physicians' specialty. Furthermore, the AWU study results affirmed that the AWU factors as being very reliable since a high correlation existed between the AWU weighted factors and the PPS diagnosis-related groups (xxix - xxx). Therefore, the graduate management study used these weighted AWU factors to account for the physician's time and specialty and for the resources consumed in the patient-physician encounter.

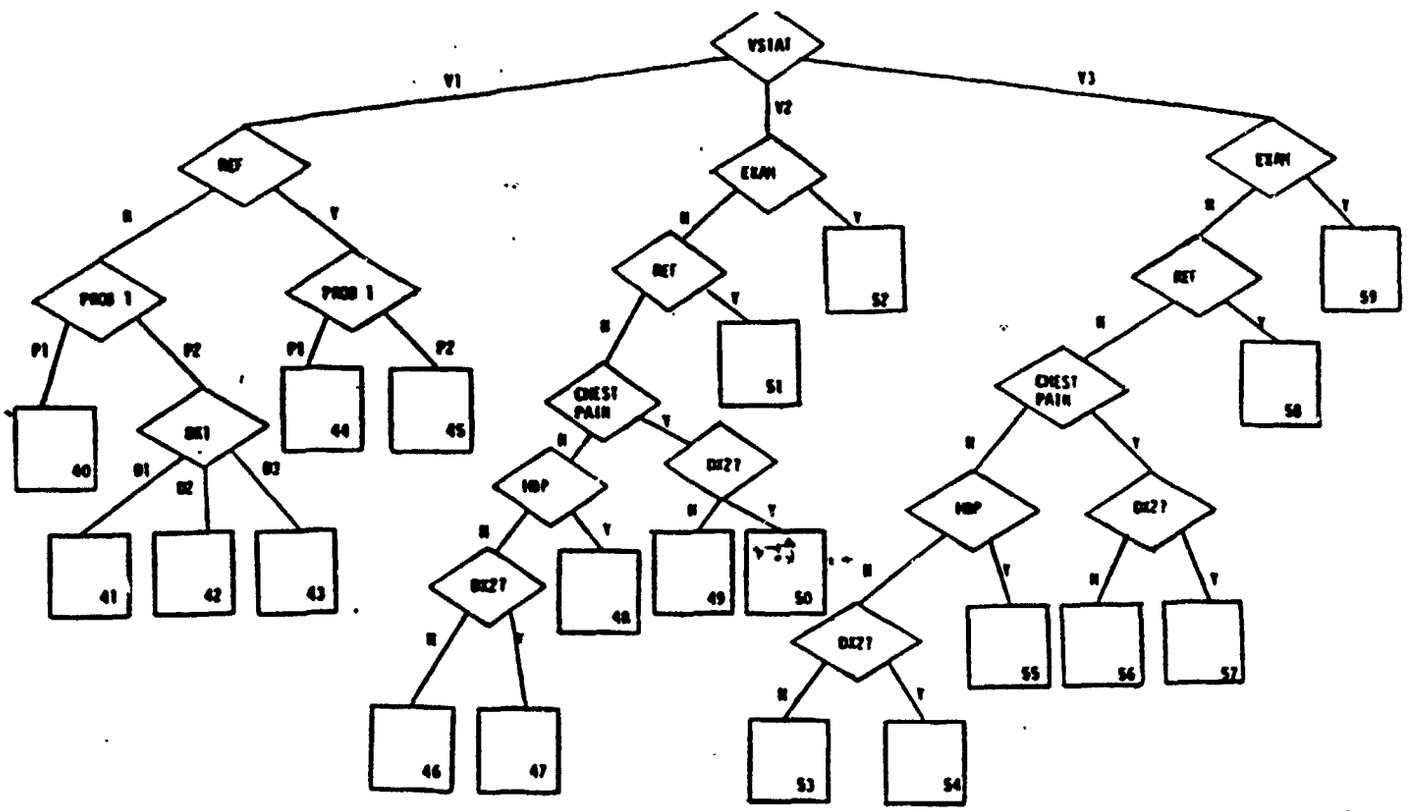


Figure 3. Tree Diagram Illustrating Partitioning of Disorders of the Circulatory System. -

Fetter, Robert B., et al. "Ambulatory Visit Groups: A Framework for Measuring Productivity in Ambulatory Care." Health Services Research.

Staffing Method Tables

Many staffing methods encompass a combination of several classification instruments and other variables that influence clinic operations. For many years, the Army Medical Department (AMEDD) used one staffing method to determine the staffing tables for clinics. This method is the DA Pamphlet 570-557 (DA Pam 570-557) Staffing Guide for Army Medical Department Activities. This pamphlet defines manpower tables that allocate a designated number of providers and ancillary staff per an average number of clinic visits. However, this method has significant pitfalls: it considers neither the physician's time or specialty nor the patient condition. With the use of the AWU weighted factors previously described, the negative impact of these pitfalls should be reduced.

In the literature review, the following staffing elements were listed as critical components of any manpower staffing method: physical layout, providers, level of nursing care, volume indicators, medical considerations and expectations, legal considerations, and support staff. Because of time limitations, this graduate management study considered only the providers, volume indicators and support staff elements. The DA Pam 570-557 method uses a systematic chart or table for determining the required manpower based on a predetermined number of workload or outputs; e.g., outpatient visits, inpatient days, or admissions. The manpower become the staffing requirements for a particular clinic, requirements which are then reduced by a specified percentage (approximately 15%) to derive the medical treatment facility's authorizations. These authorizations are not what the DA Pam 570-557 staffing document indicated as needed by the clinic to do the

work. The authorization of fewer staff members in clinics than what the clinic actually required has been the trend within the AMEDD; therefore, medical treatment facilities are charged with doing more output with less input.

With the DA Pam 570-557 method, the manpower requirements are reviewed every three years by a manpower survey team. This team analyzes the clinic's past performance to ultimately derive new staffing requirements. The surveyors observe each clinic's physical layout and each provider's and ancillary staff member's performance. However, the surveyor's analysis excludes any considerations of efficiency. If the surveyors increase the manpower requirements, then the DA Pam 570-557 yardstick tables are used. One of these yardstick tables equals to a number of physicians and other staff members per quantity of workload over a year's period of time. As a result of this manpower survey, any new requirements listed on TDA are still subject to a 10-15% reduction to derive the number of authorizations.

In the event an adjustment to a work center's staffing is warranted prior to the scheduled three-year manpower survey anniversary, the work center would initiate an Interim Schedule X for its perceived new manpower requirements. This Interim Schedule X would be completed in accordance with the guidelines in the DA Pam 570-557 and forwarded to HSC for approval. However, submission would only occur if the work center had experienced an increase in workload of greater than ten percent over a 6 - 12 month period or if the organization had been assigned a new mission by the host installation.

A final drawback of the DA Pam 570-557 method is the workload units used in determining staffing requirements. In outpatient clinics, the

workload units are measured as an outpatient visit that shows one visit equals one visit, regardless of the patient presentation, condition, or procedure. Moreover, the workload units do not consider the physician's specialty or time spent with a patient. This final drawback resembles the same problems experienced by civilian clinics, which receive full compensation from cost-plus or fee-for-service reimbursements. Military clinics, however, receive the exact same reimbursement for all workload, regardless of how expensive the workload. Nonetheless, the DA Pam 570-557 method remains the only acceptable Army method for allocating manpower in outpatient clinics at this time.

Understanding the problems associated with the DA Pam 570-557 method, HSC focused its efforts in a study, called the DoD Joint Healthcare Manpower Standards Manual (JHMS). Resulting from a Blue Ribbon Panel on sizing DoD medical treatment facilities, the Assistant Secretary of Defense, Health Affairs, in July 1985 directed the JHMS study. The underlying goal was to develop common manpower standards for most of the work centers in the DoD medical system. This new staffing method identifies the manpower staffing needs based on workload performance standards. In the study's initial phase, the joint services project team adopted thirty-three first generation standards for implementation in the Department of Defense (DoD) Joint Healthcare Manpower Standards Manual (5). Although still in the testing stages, the JHMS will pattern standards similar to the Air Force TDA preestablished standards. Once fielded, the JHMS method will supersede the DA Pam 570-557 staffing method. The purpose of the JHMS method is "to ensure that the peacetime staffing requirements of Military Health Services System (MHSS) provide quality medical care in a productive

environment" (5). The JHMS method has several advantages that lay the foundation for all healthcare standards: a common methodology, format, and terminology. Functions and common manpower standards for each clinic are established to avoid confusion and misinterpretation. The JHMS method will ultimately develop, test, and evaluate these common manpower standards and will ultimately determine manpower requirements for future use by the DoD community. The proponents of the JHMS method advocated these common manpower standards for use as a prescription for a uniform process to determine the staffing requirements in clinics. Furthermore, their conclusions affirmed a need to conduct management audits of manpower and workload data to verify the standards have been applied appropriately.

Organizational Behavior Impact

Chief executive officers (CEOs) in health care institutions have rapidly adopted effective management practices common in the manufacturing industry. Governing boards meticulously evaluated the CEO's performance on the health care institution's annual net income, which, in turn, has influenced many CEOs to base decisions strictly on cost. Statistical tools that measure costs, productivity, and efficiency are frequently used to determine an organization's overall productivity index. Many CEOs, however, are unaware that achieving organizational success comes at the expense of the workers. This expense can be associated with several deleterious effects on the worker and the organization. These effects have been shown to inhibit employees' innovation and performance (Skinner 41; Ehrat 6; Graham 24), which stymie organizational growth and success. Hence, CEOs should first consider the human effects on the organization prior to implementing

management changes for increasing efficiency or productivity. CEOs should consider Skinner's comments on the human effects:

> Who among our young today wishes to work in an environment where one is told what to do, how to do it, and when to do it; is measured in minutes and sometimes seconds; is supervised closely to prevent any inefficiencies; and is forced by assembly lines or machines to produce at a rapid and relentless pace? (41)

Stifling human innovation and initiative with unrealistic organizational goals and objectives can lead only to the demise of the CEO.

Many authors have written on the positive outcomes of mandating efficiency measures or imposing quantitative measures of productivity (Covaleski and Dirsmith 17; Whitney 168; Wiley and Campbell 7; Charnes et al. 8; Betka and Lacusta 12; McGuire 72). However, these outcomes stifle anticipated or projected progress and productivity because the employees are bitter and become counterproductive. CEOs should become intimately familiar with Skinner's question as stated above to carefully analyze the human effects before making any decision based on just statistics. In the military medical treatment facilities, managers must carefully analyze the human behavior aspect since unhappy employees negatively affect our patients' outcomes and, moreover, lose expected workload as a result of a "Lack of Care" message perceived by the patients. This loss of workload eventually reduces future budget allocations for the medical treatment facility (Hudak and Mouritsen 282).

In addition to analyzing the productivity index and the negative effects impacting on workers, CEOs must comply with federal and state laws and regulations. Quality assurance plans, numerous regulatory standards, and stringent Joint Commission standards have required CEOs to demand high quality services not only to remain operational and

accredited, but also to retain loyal patients. To achieve high quality services, CEOs should foster an environment for highly educated and professional employees and non-employees (providers) so that quality care becomes second nature. A CEO's decision often determined the compliance level of state and federal regulations, and with current regulatory agencies concentrating on quality care and cost containment, CEOs are streamlining operations, exploiting money-making services or diagnoses, and continuing to bring in competent medical staff members. Making these decisions are extremely difficult because of competing variables. For example, the effects of implementing PPS dramatically changed the manner in which CEOs conducted business, for no longer are patients kept in the hospital longer than actually needed. Additionally, many productivity indicators have been implemented to assure that patients are discharged appropriately. With the PPS regulation, CEOs have learned twelve lessons regarding productivity: one notable lesson involving productivity in the inpatient care arena described management as no longer unilaterally defining the productivity standards, but rather, developing these standards through mutual agreements between management and the providers (Johnson 27, 54).

Military hospital commanders or CEOs should thoroughly review and analyze the lessons learned by civilian medical institutions to avoid the pitfalls and difficulties of regulations and human behavior. Many civilian CEOs have already discovered federal and other regulatory loopholes such as shifting many inpatient procedures and surgeries into outpatient or same-day services. Military CEOs should also adopt these innovative ideas into their day-to-day operations. Hospital strategic plans for complying with new regulations and for developing innovative

changes often required a behavioral change in the physician's private practice patterns. Thus, CEO should design a plan that co-opts the medical staff with the hospital's strategic plan, which will increase the chances of success and survival. Finally, outpatient surgeries have grown over 174% since 1979 (Nathanson 63) and with an increasing demand for ambulatory services, both Federal and State Governments are directing regulatory changes that contain costs and minimize cost shifting.

Research Methodology

A detailed literature search identified existing models and methods for providing management with the opportunity to achieve optimal staffing of ancillary personnel in outpatient clinics. Several automated statistical techniques, such as DEA, delineate efficiency levels in outpatient clinics, and these techniques were discussed in detail, including the advantages and disadvantages. All applicable DoD, DA, HSC, Fort Campbell Installation, and Blanchfield Army Community Hospital regulations were reviewed to identify any existing efficiency techniques.

From the literature review, criteria were identified and developed into a selection matrix for determining the better staffing model. Communication and coordination with manpower chiefs at HSC, the Academy of Health Sciences, and the MEDDAC were made to ascertain any unknown staffing variables or any hidden pitfalls frequently associated with efficiency studies. Clinic chiefs were interviewed to determine if any nurse practitioners or physicians' assistants performed services similar to those of a physician, for these individuals were expected to generate outpatient visits. If any nurse practitioners or physicians' assistants

were identified, then their inputs were counted as physician manhours rather than as ancillary staff manhours.

The calendar year 1988 twelve months of the variables listed below were collected and used in the efficiency technique (PASS) computations:

1. available physician manhours
2. available ancillary staff manhours
3. outpatient clinic visits
4. ambulatory surgery workload
5. ambulatory work unit factors/health care unit

These data were entered into the PASS technique to determine the most efficient clinic and the most inefficient clinic, information which was used in the staffing methods comparison. The staffing method satisfying the highest number of criteria was selected as the best method and recommended to the Commander, DCA and DCCS for use at Blanchfield Army Community Hospital.

CHAPTER II
DISCUSSION

The determination of the best staffing method encompassed four phases: (a) data collection, (b) analysis of the results from the productivity analysis support system (PASS), (c) comparison of the two staffing models and (d) selection of the best staffing model. Each phase was completed prior to the beginning of the next phase.

Data Collection

The data collection phase involved an analysis of manpower expense performance report system (MEPRS), uniform chart of accounts (UCA), and Medical 302 Report data to retrieve those data elements necessary to conduct the study. The researcher also discussed with each clinic chief the exact number of physicians and ancillary staff members who generated clinic visits. These discussions revealed these numbers and also the types of ambulatory procedures performed routinely in the clinic. These time-consuming efforts were instrumental in assuring the collection of accurate data.

The exorbitant amount of data collected for each clinic was compiled into the three input and the two output data elements (Appendix G). The input data elements were obtained from MEPRS and UCA and included physician manhours, ancillary staff manhours and clinic expenses. The output data elements included the ambulatory work units (AWU) and ambulatory surgeries or procedures (AMB) and were obtained from the Medical 302 Report and the Patient Administration Systems and Biostatistics Activity (PASBA) data, respectively (Appendix H and I). The AWU used the outpatient clinic visits and the weighted AWU factor, which were obtained from the Optenberg AWU study. Each clinic's AWU was

derived from the product of the total outpatient clinic visits and its respective weighted AWU factor (Appendix H).

The data are truly representative of each clinic's performance since workload from 1988 was obtained for all five data elements and then the descriptive statistics were computed (Appendix I). Computing the AWU output descriptive statistics required the collection of total outpatient clinic visits for 1988. The Emergency Room (ER) had the highest number (49,420) and the General Surgery Clinic had the least (8,193). The clinic visits' mean for all seven clinics was 32,174. The second requirement to compute the AWU data element was the collection of the weighted AWU factor for each clinic. The Internal Medicine Clinic had the highest weighted AWU factor (.0395), and the pediatrics clinic had the lowest (.0200). The mean weighted AWU factor for all seven clinics was .0293. These weighted AWU factors were introduced to account for the physician's time and specialty. The AWU total was determined by multiplying the total clinic visits by the respective clinic weighted AWU factor. This AWU derivation showed that the ER (1656) had the highest total AWU and the General Surgery Clinic the least (283). The mean for all seven clinics was 904 AWU (Appendix H).

The next output data element was ambulatory surgeries or procedures, which included the different scoping procedures (endoscopies, proctoscopies) and minor surgeries or procedures (EKG tests) routinely done in the clinics. The Internal Medicine Clinic had the highest number of ambulatory surgeries or procedures (925) for 1988. These procedures and minor surgeries took approximately one hour of the physician's time to complete. Most clinic chiefs indicated that no procedures actually required more time to complete than a routine

outpatient clinic visit. After several conversations with representatives from PASBA, PAD, and the quality assurance coordinator, the consensus was that a minimum annual base of 200 procedures or surgeries was appropriate. These representatives insisted that several ambulatory surgeries or procedures did in fact require more time than a routine clinic visit and because these ambulatory surgeries or procedures required more time than a clinic visit, each procedure was weighted as 1.0 (one) output unit. The mean for the seven clinics was 360 ambulatory surgeries or procedures (Appendix I).

To produce the aforementioned two outputs, three input data elements were required. The first input data element, total annual expenses, showed that the ER had the highest ($3,357,615) and the General Surgery Clinic had the least ($486,313). These expenses represented a clinic's entire operational expenses: overhead, utilities, military and civilian salaries. The mean expense figure for the seven clinics was $1,733,254 (Appendix I).

The final descriptive statistic analyzed the last two input data elements: the ancillary staff and physician staff manhours. The General Surgery Clinic had the lowest ancillary staff manhours (8,635), and the ER had the highest (52,152). The large number of manhours used by the ER was expected because of the level II Emergency Room opened twenty-four hours a day, seven days a week. The clinic with the next highest number of ancillary manhours was the obstetrics and gynecology clinic (24,078). The mean ancillary staff manhours for the seven clinics was 20,115 (Appendix I). An interview with each clinic chief revealed that several non-physicians generated outpatient clinic visits or workload: physicians' assistants (PA), nurse practitioners, and midwives.

Therefore, the total manhours for these particular non-physicians were credited to the physician manhour category and removed from the ancillary staff manhour category. Of the seven clinics, the Family Practice and General Surgery Clinics did not have any non-physicians generating workload (Appendix I).

Like the ancillary manhours category, the General Surgery Clinic also had the lowest number of physician manhours (6,469). The obstetrics and gynecology clinic had the highest physician manhour input (17,825). The mean physician manhours for all the clinics was 11,066 (Appendix I).

PASS Analyses and Results

Upon completion of the data collection phase, the grand total for each input and output data elements was entered into the PASS application. Not only did the PASS application have to be learned, but the Database-Three Plus (DBASE) application had to be learned in order to operate the PASS application, requiring many hours of reading documentation and experimenting with the DBASE application tutorials. Like the data collection phase, learning these software applications was arduous and time-consuming. Data entry, however, into DBASE was quite simple, and the subsequent menu-driven PASS application generated the following results: the most efficient clinic and the most inefficient clinic. These results were revealed to the command element (Commander, DCA, and DCCS), who were not at all alarmed. Even before the PASS analyses, the commander had identified that the Internal Medicine Clinic would be the most efficient and the OB/GYN Clinic the most inefficient, and the PASS results confirmed his intuition. Furthermore, these results identified not just one, but three, efficiently operating clinics: Family Practice, Internal Medicine, and General Surgery (Appendix J).

The PASS provided two separate analyses for interpretation of results: (1) efficient outputs for input levels and (2) efficient inputs for output levels. After meticulous scrutiny of these two analyses, no significant differences existed between them, and henceforth both analyses will be discussed together as one analysis. Since three clinics were determined to be equally efficient, no further adjustments of the inputs or outputs were necessary. Several conclusions can be drawn from these results. First, the efficiency in the Family Practice Clinic was attributed to its high AWU production (output) and its low physician manhour (input). In fact, Family Practice had the second highest number of AWUs in the descriptive statistics analyses. The second conclusion indicated that the Internal Medicine Clinic's efficiency was attributed to a high AWU production (output) and a low ancillary manhours (input). The clinic's descriptive statistics reflected the highest number of ambulatory surgeries and procedures and the second highest AWU output. The third and final conclusion indicated that General Surgery's efficiency results were attributed to a high number of ambulatory surgeries or procedures (output) as well as to an equal balance of low ancillary manhours and low expenses (inputs). The clinic had the second highest number of ambulatory surgeries or procedures and the lowest number of inputs (expenses, ancillary and physicians' manhours). The results from the three clinics indicated that each clinic used variations of the same or different data elements to achieve the highest efficiency rating (1).

In addition to producing efficient clinics, the PASS results showed that the four remaining clinics were all inefficient (Appendix J). The most inefficient clinic was Obstetrics and Gynecology (OB/GYN). The PASS

multiplier indicated that OB/GYN should have had 78.99% more outputs to improve its 55.87% relative efficiency to 100%. In other words, OB/GYN's amount of inputs relative to the other two clinics located on its efficiency frontier showed that OB/GYN's AWU output should have been 1779.483 (an 80% increase from its current output), and the number of ambulatory surgeries or procedures should have been 358 (a 79% increase from its current output). Another way of looking at these results can be explained as follows: if the OB/GYN clinic were to become as efficient as the two clinics on its efficiency frontier, then the OB/GYN Clinic should have produced its output data elements (AWU and ambulatory surgeries or procedures) with only 55.87% of its inputs (expenses, ancillary and physicians' manhours). The clinic's inefficiency was due to an insufficient AWU output and to excess ancillary and physician manhours. The two clinics located on the OB/GYN Clinic's frontier were Family Practice and General Surgery.

The remaining clinics -- outpatient clinic, emergency room, pediatrics -- were also inefficient, but were not as inefficient as the OB/GYN Clinic (Appendix J). These clinics' PASS results showed that each clinic did not completely envelope, which means the clinics fell outside the efficiency frontier (see U and D, Fig. 4), and further PASS explorations did not alter these results.

One of the objectives of the graduate management study was to use just one efficient clinic and one inefficient clinic for the staffing methods comparison. The PASS results identified the one inefficient clinic, but also identified three efficient clinics. Therefore, further PASS explorations were required to derive just one efficient clinic. An iteration of the PASS exploration using just the three clinics showed

that all three still remained efficient (Appendix K). A second iteration of the PASS exploration included three data elements defining the efficiency frontier: the AWU output, the ancillary and physician manhour inputs. Thus, the PASS exploration included all seven clinics, but removed the ambulatory surgeries or procedures (output) and the expenses (input), leaving just one output and two input data elements. The results showed that the Family Practice Clinic alone was the most efficient (Appendix L) and that the General Surgery Clinic, surprisingly, was the most inefficient. The PASS multiplier for the General Surgery Clinic indicated that the clinic should have produced 168% more output to improve its 37.26% relative efficiency to 100%. In fact, the AWU total should have been increased from its current output of 282.659 to a total of 758.612 for the same amount of inputs available. The raw data equivalent would be approximately 2,100 more outpatient clinic visits for 1988. An explanation for this productivity deficit was found in the initial PASS results (Appendix J), which ascribed the General Surgery Clinic's output efficiency to its high number of ambulatory surgeries and procedures. The removal of this clinic's key data element, which had determined its high level of efficiency in the initial PASS exploration, was instrumental in the

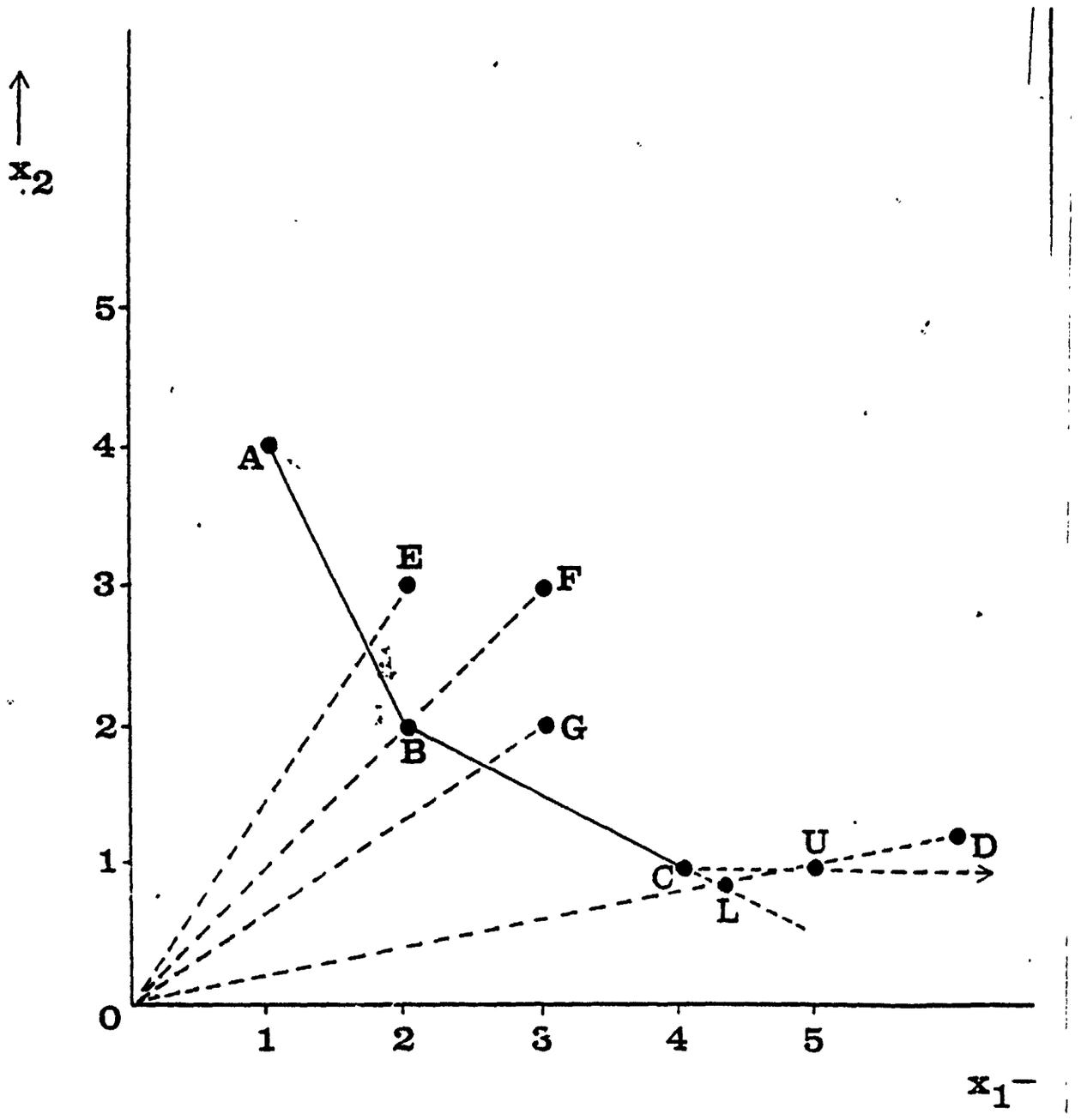


Figure 4. Graphical Analysis of Nonenveloped Clinics.

Lewin and Morey. "Measuring the Relative Efficiency and Output Potential of Public Sector Organizations: An Application of Data Envelopment Analysis." Journal of Policy Analysis and Information Systems.

General Surgery Clinic's low efficiency results. Since ambulatory surgeries and procedures did not significantly contribute to the efficiency level in the Family Practice and Internal Medicine Clinics, both clinics remained relatively efficient.

Three efficient clinics remained in the study, but further PASS explorations were required to obtain just one efficient clinic. Bias may be an explanation for producing such different results during the previous exploration that used just one output data element, and the third PASS exploration included both the ambulatory surgeries and procedures and the AWU data elements (outputs). The input data elements included the ancillary and physician manhours. The results again were the same as for the initial PASS results: all three clinics were on the efficiency frontier (Appendix M). Therefore, three iterations of PASS explorations have produced the same three efficiently operating clinics.

The majority of an outpatient clinic's workload involves the patient-physician encounter. The fourth iteration of the PASS exploration, therefore, used the other workload output data element, ambulatory surgeries and procedures, as the single output data element. However, an exploration would not show fair representation or exact measurement of a clinic's productivity since the majority of workload is the AWU total, not the ambulatory surgeries and procedures. Nevertheless, the PASS iteration was performed, and the results showed that the Internal Medicine Clinic was the most efficient clinic, with the General Surgery Clinic was just a few percentage points behind. The Family Practice Clinic, on the other hand, was the most inefficient clinic (Appendix N). In fact, the clinic required almost 400% more output to improve its 20.9% relative efficiency to 100%. The descriptive

statistics analyses derived in the data collection phase can explain why the Family Practice Clinic's had such low results: the clinic produced the least number of ambulatory surgeries and procedures, and ascribed its high efficiency results to a high AWU production.

In conclusion, the OB/GYN Clinic was the most inefficient clinic and several PASS iterations showed that efficiency in each of the three efficient clinics was dependent upon specific input or output data element. Removing any one of these elements dramatically changed the magnitude of efficiency in at least one of the clinics. Therefore, because the Internal Medicine Clinic remained relatively efficient and extremely close to the highest efficiency level during all iterations, Internal Medicine was chosen as the most efficient clinic of all seven clinics. Hence, the Internal Medicine Clinic, as the most efficient clinic, and the OB/GYN Clinic, as the most inefficient clinic, are the two clinics used in the staffing methods comparison.

Comparisons of the Staffing Methods

The comparison of the two staffing methods began with a determination of the Internal Medicine and OB/GYN clinics' precise number of staff members as recognized by each of the two staffing methods. The first staffing method, DA Pam 570-557, prescribed different manpower standards for each of the two clinics, but only in terms of the number of staff members per a certain number of clinic visits. The most efficient clinic, Internal Medicine, received manpower allocations based on the following standards: one department chief (page 2-7, Appendix O) per clinic and one internist per 300 outpatient clinic visits (Page 2-19, Appendix O). In calendar year (CY) 1988, the clinic experienced a monthly average of 1,570 clinic visits, and, hence, the

total physician allocations were 5.23 or 5 internists. The pamphlet allocated one nurse practitioner and five ancillary staff (page 2-18, Appendix O). The actual average monthly staffing for 1986 was 6.49 internists, 1.84 nurse practitioners, and 6.42 ancillary staff members. Comparing the manpower allocations from the DA Pam 570-557 method with those manpower from the actual average monthly clinic staffing in CY 1988 showed a close correlation (see Table 1). However, the DA Pam 570-557 method allocated staffing inadequate for the clinic to even operate at the same level as it had in CY 1988.

The OB/GYN Clinic manpower standards described in the DA Pam 570-557 method based physician staffing on a predefined number of clinic visits. The basis of allocation for the OB/GYN Clinic was considerably different than allocations for the Internal Medicine Clinic: one OB physician per 525 OB outpatient clinic visits and one GYN physician per 400 GYN outpatient clinic visits. These quantifiable standards are considerably higher for the OB/GYN Clinic than for the Internal Medicine, a difference which can be explained with the use of the conclusions from the Optenberg AWU study. The conclusions stated that weighted AWU factors derived for each clinic were based on the resource intensiveness of the practice for which the Internal Medicine had the highest weighted factor. In CY 1988, the OB/GYN Clinic experienced a monthly average of 1,721 OB and 1,615 GYN outpatient clinic visits. The clinic therefore required three OB and four GYN physicians, or seven OB/GYN physicians. The ancillary staff allocations were eight staff members (page 2-23, Appendix P). The nurse midwives and practitioners were not included in the DA Pam 570-557 method and a local appraisal was required. Since these figures were unavailable, the total number of

nurse midwives and practitioners for CY 1988 would be used: 3.2 midwives and two nurse practitioners. The average monthly staffing in CY 1988 was 7.89 OB/GYN physicians and 3.2 nurse midwives. The remainder of the staffing comprised 1.1 nurse practitioners and 11.7 ancillary staff members (see Table 1).

The manpower allocations between the DA Pam 570-557 method and the actual CY 1988 average monthly staffing were very different (see Table 1). The DA Pam 570-557 method allocated four fewer staff members in OB/GYN and two fewer in Internal Medicine, with the greatest staff decrease in the ancillary staff positions. Hence, the DA Pam 570-557 standards equitably distributed the staff allocations in the inefficient OB/GYN Clinic.

Comparing the two clinics with the DA Pam 570-557 method and the actual CY 1988 average monthly staffing showed that the figures correlated more closely in the Internal Medicine Clinic than in the OB/GYN Clinic. The greatest staffing difference for both clinics was shown in the ancillary staff manpower positions (see Table 1). When reviewing the efficiency differences between the two clinics and how each clinic was staffed by the DA Pam 570-557 method, the distributions were equitable because OB/GYN received less staffing than what the clinic was staffed in CY 1988. Moreover, the staffing differences between the actual CY 1988 average monthly staffing and the allocations from the DA Pam 570-557 method showed that almost 100% more manpower was reduced in the OB/GYN Clinic than in the Internal Medicine Clinic (Delta 4.6 to 2.3). Since the reductions in the OB/GYN were twice that

of the Internal Medicine Clinic, the DA Pam 570-557 method allocated manpower more conservatively and efficiently than the actual CY 1988 average monthly staffing.

Table 1.
DA PAM 570-557 Method Summary of Manpower Allocations.

Staff Positions	Int Med		OB/GYN	
	Allotted	On-Hand	Allotted	On-Hand
Physicians	6	6.5	7	7.9
Other Healthcare Providers	1	1.8	5.2	5.2
Ancillary Staff Members	5	6.4	8	11.7
TOTALS	12	14.7	20.2	24.8

The second staffing method was the Joint Healthcare Manpower System (JHMS) which utilized preestablished standards to allocate staffing. The manpower tables were established according to a range or parameter of clinic visits. The JHMS method used a monthly provider man-hour availability factor of 145 hours for computing manpower allocations. This method did not prescribe one physician per so many clinic visits as did the DA Pam 570-557 method. Rather, it developed several clinic visit ranges that increased the number of providers or ancillary staff by one count for every increase of approximately 200 - 250 clinic visits. The most efficient clinic, Internal Medicine, experienced a monthly average of 1,570 clinic visits, which is in the range of 1551 - 1809 clinic visits, and the resulting manpower distribution was one department chief, six internists, two registered nurses, and eight ancillary staff members (Appendix Q). The average CY 1988 average monthly staffing was 6.49 internists, 1.84 nurse practitioners, and 6.42 ancillary staff members. Comparing the 17

allocations from the JHMS method with the 14.7 allocations from the actual CY 1988 average monthly staffing showed a close correlation (see Table 2). In fact, the delta or difference was 2.3 members, with all staffing positions increasing. This manpower allocation delta was the exact difference shown in the DA Pam 570-557 method, except the JHMS provided a manpower increase rather than a decrease. The Internal Medicine Clinic's manpower allocations from these two staffing methods were completely opposite that of the actual CY 1988 average monthly staffing. In other words, the JHMS method provided the Internal Medicine Clinic with more staff members.

Table 2.
JHMS Method Summary of Manpower Allocations.

Staff Positions	Int Med		OB/GYN	
	Allotted	On-Hand	Allotted	On-Hand
Physicians	7	6.5	6	7.9
Other Healthcare Providers	2	1.8	5	5.2
Ancillary Staff Members	8	6.4	14	11.7
TOTALS	17	14.7	25	24.8

The standards used to determine the JHMS method staffing allocations for the Internal Medicine Clinic were similar for the OB/GYN Clinic, but added the average monthly number of deliveries. In CY 1988, the service experienced a monthly average of 132 deliveries, 1,721 OB and 1,615 GYN outpatient clinic visits, or a total of 3,336. The clinic visit range for these data under the JHMS method for OB/GYN was 2666 - 2794 monthly clinic visits and 129 - 140 deliveries. Unlike the DA Pam 570-557 method, the JHMS method provided allocations for nurse midwives. The overall manpower requirements were six OB/GYN

physicians, four nurse midwives, and 13 ancillary staff members (Appendix R). The difference between the actual number of clinic visits and the JHMS method's maximum number of the clinic visit parameters was used to determine the number of nurse practitioners. This difference of 342 clinic visits equated to one nurse practitioner and one technician. The actual CY 1988average monthly staffing was 7.89 OB/GYN physicians, 3.2 nurse midwives. 1.1 nurse practitioners, and 11.7 ancillary staff. Like the Internal Medicine Clinic, the OB/GYN Clinic's results showed a strong or positive correlation between the JHMS allocated manpower and actual CY 1988 average monthly staffing (see Table 2). Staffing allocations using the JHMS method and the actual CY 1988 average monthly staffing revealed no significant differences, but the JHMS method provided the inefficient OB/GYN Clinic with the same manpower as the clinic was staffed in CY 1988. Staffing an inefficient clinic with the same number of workers as it used in the CY 1988 indicated that the JHMS method did not have efficiency standards for distributing manpower. The JHMS method allocations were also opposite the staffing allocated by the DA Pam 570-557: the JHMS method allocated one more nurse practitioner and several more ancillary staff members, but reduced the number of OB/GYN physicians. Upon presentation of these figures to the OB/GYN Chief, his comments were quite negative because of the reduction in the number of OB/GYN physicians. The chief welcomed the increased ancillary staffing, but cited the OB/GYN physicians' reduction as unacceptable.

The JHMS method manpower requirements and the actual CY 1988 average monthly staffing showed a much closer correlation in the

Internal Medicine Clinic than in the OB/GYN Clinic. The allocations distributed for all of the various staff positions saw the greatest change or delta in the total number of physicians, more specifically, the physicians' assistants, nurse practitioners, and other healthcare providers. The total OB/GYN Clinic manpower was allocated similarly by both the JHMS method and the actual CY 1988 average monthly staffing for the inefficient OB/GYN Clinic, but the JHMS allocated greater manpower than the actual CY 1988 average monthly staffing to the Internal Medicine Clinic.

The 1988 table of distribution and allowances (TDA) for the Internal Medicine Clinic and the OB/GYN Clinic are shown in Appendix S and T, respectively. The Internal Medicine Clinic staffing figures for all methods are illustrated in Table 3. The OB/GYN Clinic's

Table 3.
Comparison of staffing methods and TDA for the Internal Medicine Clinic.

Position	570-577	JHMS	TDA
C, Department of Medicine	1	1	1
Internist	5	6	3
Nurse Practitioner	1	2	1
Practical Nurse	0	0	1
Medical Specialist or Tech	4	6	2
Administrative Personnel	1	2	1
TOTAL	12	17	10

manpower distribution are shown in Table 4. Based on an anecdotal observation, the clinics received greater manpower allocations with the JHMS method than with the DA Pam 570-557 method, the TDA, and the actual CY 1988 average monthly staffing. The JHMS evidently

disregarded standards for efficiency, however, a closer observation revealed that the JHMS method allocated more Internists and fewer OB/GYN physicians than the DA Pam 570-557 method; therefore, the JHMS method increased the physician staffing in the more efficient clinic.

Table 4.
Comparison of Staffing Methods and TDA for the OB/GYN Clinic.

Position	570-577	JHMS	TDA
OB/GYN Physicians	7	6	5
Midwives	3.2	4	3.2
Nurse Practitioners	2	1	2
Registered/Clinical Nurse	1	2	1
Clinic NCOIC	1	0	1
Medical Specialist	3	7	4
Practical Nurse	0	0	2
Nurse Assistants	0	3	3
Administrative	3	2	3
Totals	20.2	25	24.2

Any increase in the number of physicians will obviously generate additional outputs, and, for this particular reason, the JHMS method was selected over the DA Pam 570-557 method by the Internal Medicine Clinic chief and not the OB/GYN chief.

The better staffing method will be ascertained by using the seven criteria listed in the research design. These seven criteria included: feasibility, patient backlog, efficiency, reduction of the physician's nonclinical duties, quality care, physicians' subjectivity, and the overall index of productivity. These criteria were answered with interviews and from the responses of the physician's questionnaire (Appendix U). On the questionnaire, method A was the DA Pam 570-557 method, and method B was the JHMS method. The

first criterion pertained to the feasibility of the staffing methods, which was interpreted as that clinic chosen by the clinic chief as the most appropriate for private practice pattern (question #10), freedom to practice (question #1 and #2), and greater flexibility (question #6 and #7). The OB/GYN chief's preferences were ambivalent toward both methods, but the Internal Medicine Chief responded favorably for the JHMS method in four of these five questions (Appendix U).

The patient backlog criterion was answered with several questions from the questionnaire. These questions were increased workload (#4), improved access (#8), and more time to treat patients (#9). The clinic chiefs' responses differed: the Internal Medicine Chief favored the JHMS method, and, conversely, the OB/GYN chief favored the DA Pam 570-557 method. Since the JHMS method provided a greater number of physicians to the Internal Medicine Clinic (see Table 4), the JHMS method had the greater potential to reduce the patient backlog. This method showed no provider staffing differences for the OB/GYN Clinic, differences which should have been favored by the OB/GYN Chief, but, ironically, he chose the DA Pam 570-557 method.

The next criterion pertained to the perceived degree of efficiency in each staffing method. This degree of efficiency was determined by analyzing how each method allocated manpower to the efficient and the inefficient clinics. This efficiency criterion is divided into four separate measurements: anecdotal, physician to ancillary staff ratio, increased outputs, and lowest expenses. The first efficiency measurement analyzed anecdotal observations of staff allocations by each of the two staffing methods and the actual CY 1988

average monthly staffing. The JHMS method provided sufficient staff members for the two clinics, irrespective of the operational efficiency of each clinic. In fact, the JHMS method increased the total number of staff members by 2.3 members in the Internal Medicine Clinic and 0.2 members in the OB/GYN Clinic. This method rewarded the more efficient clinic, yet staffed the inefficient clinic similarly to the actual CY 1988 average staffing. The other method, the DA Pam 570-557, standards appeared to be more conservative than those of the JHMS method for manpower distribution because the DA Pam 570-557 allocated fewer manpower for both clinics. The DA Pam 570-557 method even reduced the efficient clinic by 2.7 members, staffing which was primarily physicians and nurse practitioners (see Table 1 and 2), thus having a resulting negative effect on output (clinic visits). This negative effect may eventually transform a previously efficient clinic into an inefficient clinic. The DA Pam 570-557 method obviously does not include standards for rewarding efficiency, but rather, standards to deter it.

Since the JHMS method allocated more physicians than the DA Pam 570-557 method, then it should generate more clinic visits. The second measurement of efficiency analyzed the ancillary staff to physician/provider ratio, where a one to one ratio was desired by the clinic chiefs. The ancillary personnel would enhance the physicians' ability to practice. The two physician chiefs felt that their desired ratio would, in effect, provide sufficient chaperones and medical aides so that physicians could spend little to no time waiting on the support staff. The JHMS method showed a lower ancillary staff to provider ratio than the DA Pam 570-557 method (see Table 5).

Table 5.
Ancillary Staff to Physician Ratios.

	Internal Medicine		OB/GYN	
	DA Pam 570-557	JHMS	570-557	JHMS
Providers	7	9	12.2	11
Ancillary	5	8	8	14

The DA Pam 570-557 method provided fewer ancillary staff members for each provider for both clinics, fewer staff which is contrary to both clinic chiefs' desires to have ample ancillary staff. Hence, both chiefs selected the JHMS method as having the best ratio suited for their clinic practice. This measurement was also affirmed by the answers obtained from the questionnaire (question #3, Appendix U).

The final two measurements for evaluating the efficiency of the staffing methods analyzed the staffing methods that had the greatest increase the clinic visits and the greatest reduction in operational expenses. These two measurements go hand in glove and, therefore, will be discussed together. An increase in the number of providers (physicians and ancillary staff) increases the workload and, simultaneously, increases the operating expenses. The increase in expenses negated any positive effect from an increase in workload. To determine which method was better, the responses from questions on the questionnaire pertaining to increased workload and improved access for patients (question #4 and #8) were used. The OB/GYN Chief did not respond to the workload question, but he did answer in favor of the DA Pam 570-557 method for improving access. On the other hand, the Internal Medicine Chief responded favorably for the JHMS method on

both questions (Appendix U). Hence, these responses showed that the JHMS method was better than the DA Pam 570-557.

In addition to the feasibility and efficiency criteria, a criterion identifying the reduction in the physician's nonclinical duties was used. Determining the percentage of nonclinical duties that can be eliminated or reduced was obtained from the questionnaire responses (question #9) and from the interviews with each clinic chief. The OB/GYN chief responded favorably to DA Pam 570-557 method, and the Internal Medicine Chief responded favorably to the JHMS method. Further analysis was therefore necessary to determine the better method for reducing the physician's nonclinical duties. Several more questions on the survey were reviewed to ascertain if any questions supported a reduction of nonclinical duties and the following were selected: the method showing the better ancillary staff to physician ratio (#3) and the greater flexibility for physicians to provide medical care (#7). Both chiefs indicated that the JHMS method provided greater flexibility and more ancillary staff and thus a better ratio. Therefore, the JHMS was better since the chiefs selected it as the better method for reducing physician's nonclinical duties.

Quality care was considered an ambiguous subject, yet worthy of discussion with each clinic chief. Determining which method had the greater potential for improving quality care encompassed an initial identification of quality care characteristics. During interviews and discussions with each clinic chief, both indicated that more ancillary staff was vital in freeing physicians to concentration quality care. However, both chiefs stated that a preliminary review of the staffing

methods revealed insufficient information and numbers to decide on either method. Hence, both chiefs' comments that the more ancillary staff, the greater opportunity for improving quality care were the basis for selecting the better method. Since the JHMS method had the greater number of ancillary staff and the better ancillary staff to physicians ratio, this method was selected as meeting the quality of care criterion.

The next criterion used for selecting the better staffing method involved an aggregation of all scores from the physicians' questionnaire into the physicians' subjectivity scores. Based on the interviews and the responses from the questionnaires, the JHMS method had an aggregate score of 12 and the DA Pam 570-557 method a five (see Table 6). Hence, the JHMS method showed the highest overall score and, hence, selected as the better method.

Table 6.
Summary of Physician Subjectivity Scores.

Question No.	JHMS Method		DA Pam 570-557	
	IMC	OB/GYN	IMC	OB/GYN
1	x			x
2	x	x		
3	x	x		
4	x			
5	x			
6			x	x
7	x	x		
8	x			x
9	x			x
10	x			
TOTAL	9	3	1	4

The final criterion used in the selection of the staffing method was the overall productivity index, which combines the scores from the criteria reduction of nonclinical duties and efficiency. The former criterion reflected the JHMS method as the better method; however, the latter criterion, efficiency, was not as straightforward because of the analysis of four separate measurements: anecdotal, ancillary staff to provider ratio, increased outputs, and lowest expenses. In this efficiency criterion, the JHMS method was selected over the DA Pam 570-557 for all measurements except lowest expenses, which was better in the DA Pam 570-557 method. Nonetheless, the JHMS received three points for meeting three of the four measurements in the efficiency criterion. Overall, the JHMS was the better method.

Selection of the Best Staffing Method

The selection of the best staffing method was determined by that method meeting the most number of criteria. Each of the seven criteria was discussed in detail and these results are listed in Table 7. Five questions on the questionnaire pertaining to the first criterion, feasibility, were selected by the two clinic chiefs with a majority of responses in favor of the JHMS method. These responses were 6 out of 10 in favor of the JHMS method. The patient backlog question was not answered by the OB/GYN chief, but the Internal Medicine Clinic Chief favored the JHMS method. In the four measurements for efficiency, the JHMS met three of the four. The other criteria, reduction of nonclinical duties and the quality of care, were not answered by the OB/GYN Clinic Chief, but the Internal Medicine Clinic Chief responded in favor of the JHMS method. The criterion physician subjectivity was based on that method receiving

the greatest number of favorable answers on the questionnaire, which proved to be the JHMS (see Table 6). Finally, the productivity index clearly showed that the JHMS method had the higher scores. The JHMS

Table 7.
Staffing Methods Selection Matrix

Criteria	DA Pam 570-557	JHMS
1. Feasibility	3	6
2. Patient Backlog	0	1
3. Efficiency	1	3
4. Reduce Nonclinical Duties	0	1
5. Quality Care	0	1
6. Physician Subjectivity	5	12
7. Productivity Index	1	4
TOTAL	10	28

method had a combined criteria score of 28 and the DA Pam 570-557 method a score of ten. Without a doubt, the JHMS method met the majority of the criteria and, therefore, was selected as the better staffing method for identifying ancillary staffing in the outpatient clinics at Blanchfield Army Community Hospital.

CHAPTER III
CONCLUSIONS AND RECOMMENDATIONS

Conclusions

A general conclusion of this research effort is that the comparison of the two staffing methods showed a significant difference which favored the JHMS method. The research methodology had been successful in accomplishing several of the study's objectives: (1) two clinics were identified for further study; (2) the physicians selected the method with the greatest number of staff members; and (3) the comparison of the two methods revealed that the best method was the one with the greatest number of ancillary staff. Regardless of the staffing method identified, the physicians still desired a method that was flexible. The DA Pam 570-557 method's standards did not meet the physicians' desires because of the method's inflexibility. In other words, this method required tremendous bureaucratic red tape to obtain additional staffing allocations. The JHMS method, on the other hand, provided ample staffing to increase productivity and, consequently, met the physicians' desires to have ample ancillary staff available. With the JHMS method, clinic chiefs would not have to do more work with less staff over several years before receiving additional staffing. For example, the DA Pam 570-557 required a productivity increase by at least 10% before any additional staffing can be requested (via Schedule X process). The JHMS method is a new design, and unfortunately the physicians have yet to experiment with it. Nonetheless, the JHMS method's standards allowed physicians more flexibility and the additional staffing necessary to increase productivity.

Application of this research methodology can be used at other MEDDACs and MEDCENs to determine the better staffing method. The JHMS method showed reliability in the staffing parameters and thus provided adequate manpower as well as efficient allocations. The use of the PASS program application provided a clinic's efficiency levels to the extent that the Commander prudently made hard decisions regarding the distribution of manpower.

Recommendations

In light of the observations and results of the graduate management project, the following recommendations are made:

1. Blanchfield Army Community Hospital should begin using the JHMS method for distributing manpower to all the outpatient clinic work centers. Furthermore, the staffing requirements listed in the staffing tables must be equal to the actual number of staffing received by the clinic. Any capitated percentage applied to these manpower requirements should not be used.

2. The Chief, Resource Management Division, MEDDAC, should purchase the PASS program for tracking the efficiency of all clinical departments and services.

3. Greater efforts should be made to determine the reasons for inefficiencies; moreover, suggestions and recommendations for resolution should be made.

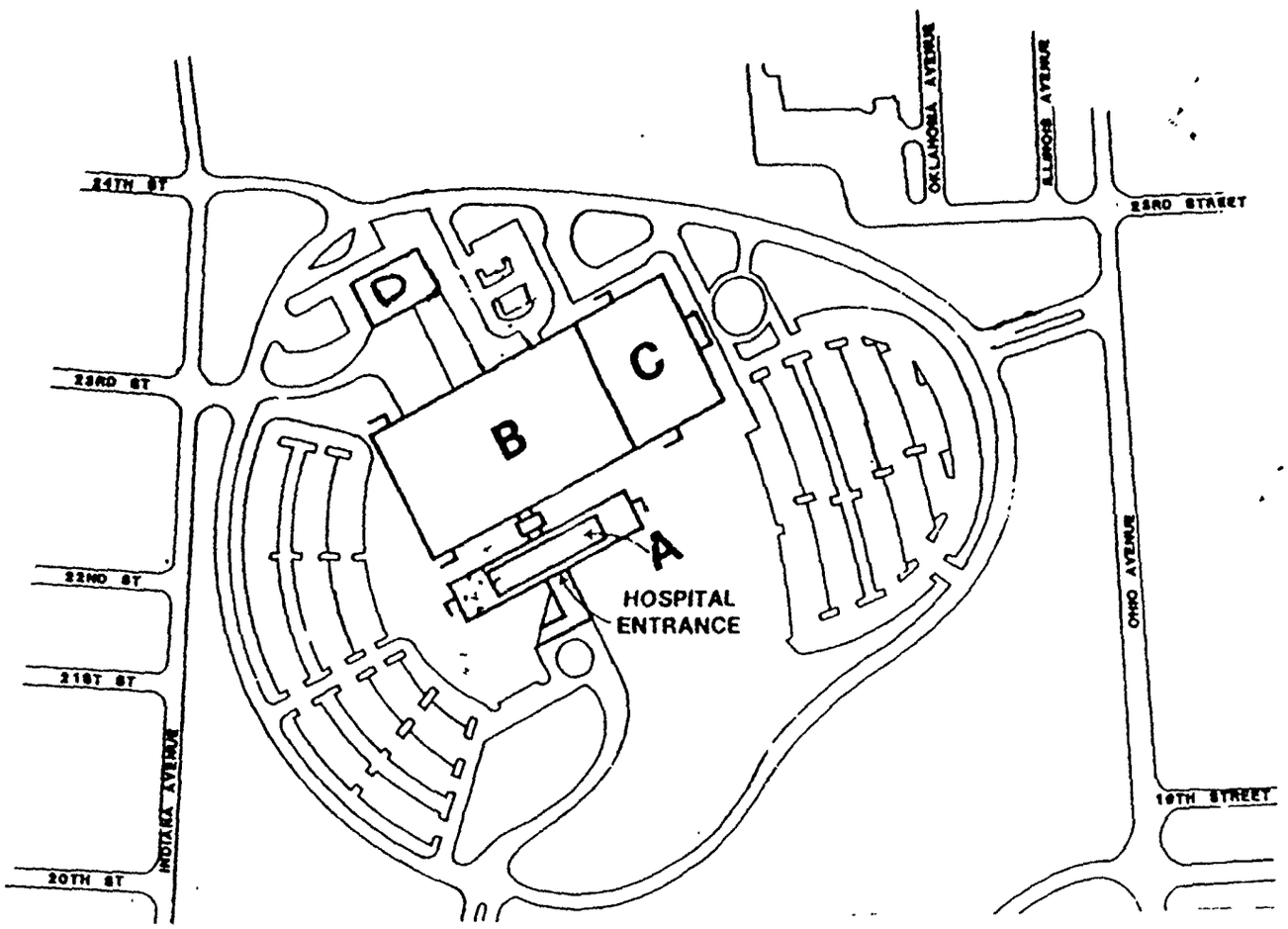
4. The MEDDAC Commander should provide efficiency levels to administrators and clinic chiefs to inform them that this information would be used as a basis for allocating resources in the future.

Appendix A

Blanchfield Army Community Hospital

Physical Plant Layout

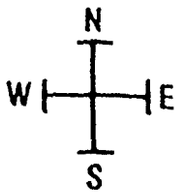
COL FLORENCE A. BLANCHFIELD ARMY COMMUNITY HOSPITAL



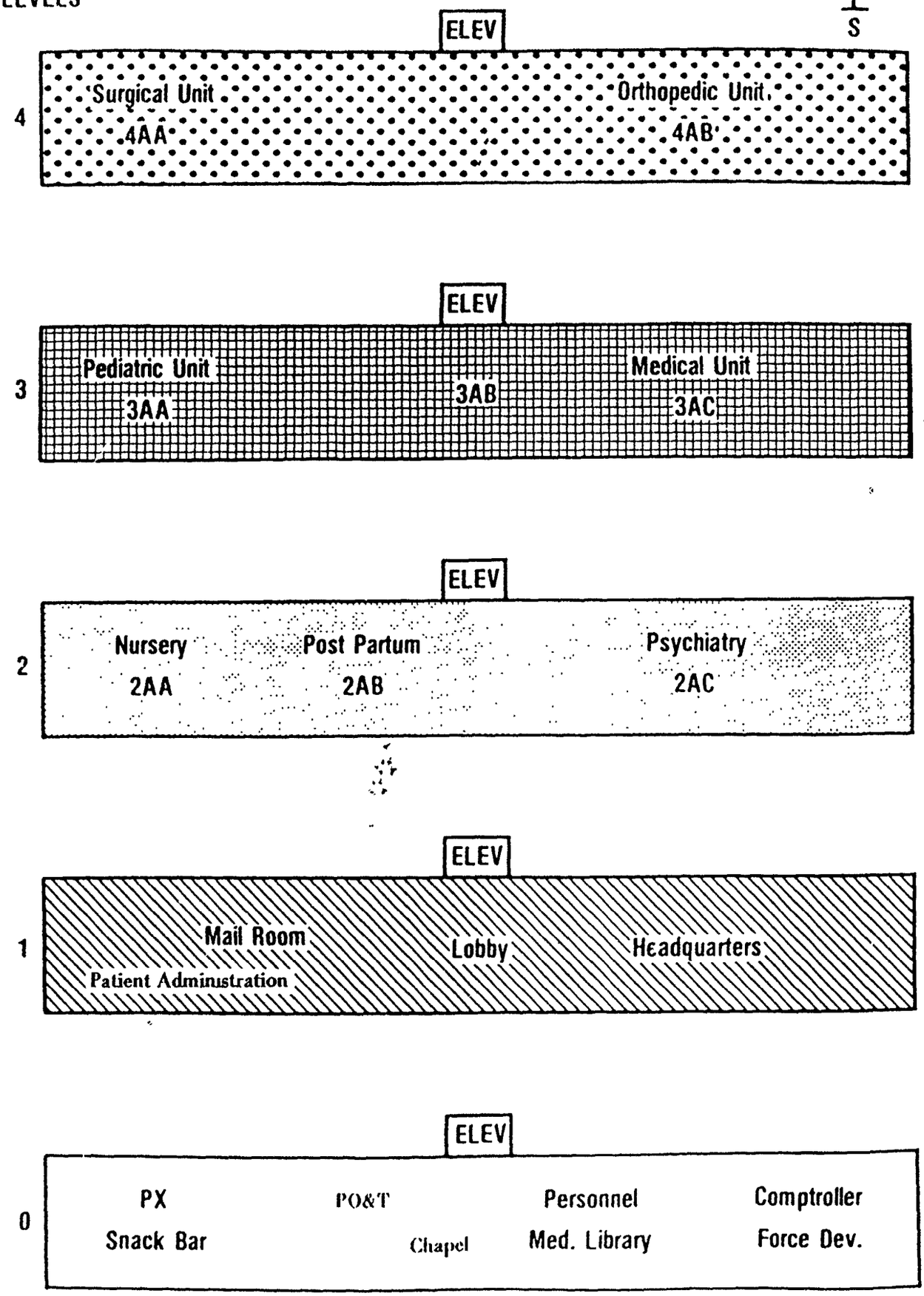
Appendix B

Building "A" Physical Layout

BUILDING A (facing main entrance)



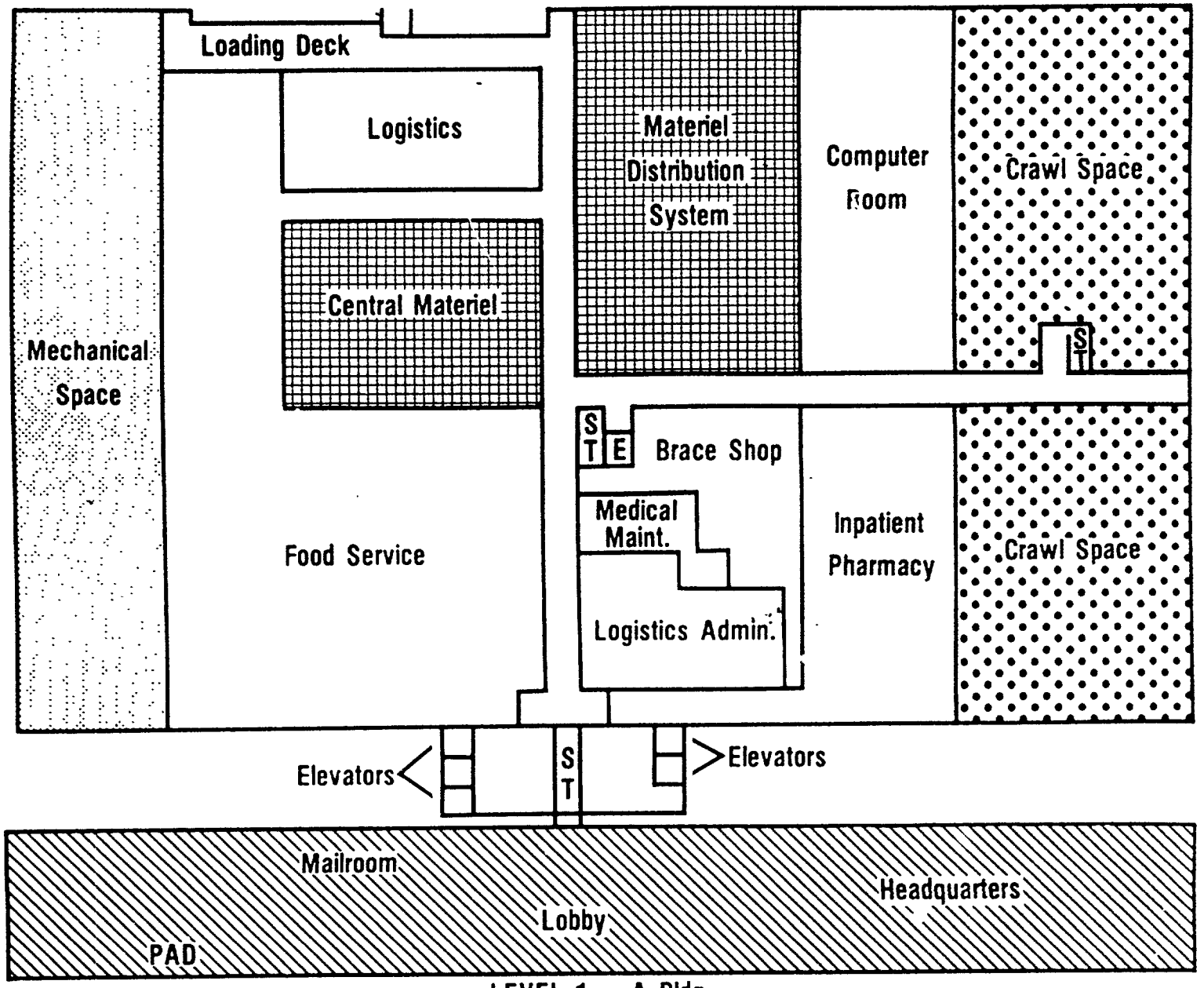
LEVELS



Appendix C

Building "B" Physical Layout

BUILDING B LEVEL 1

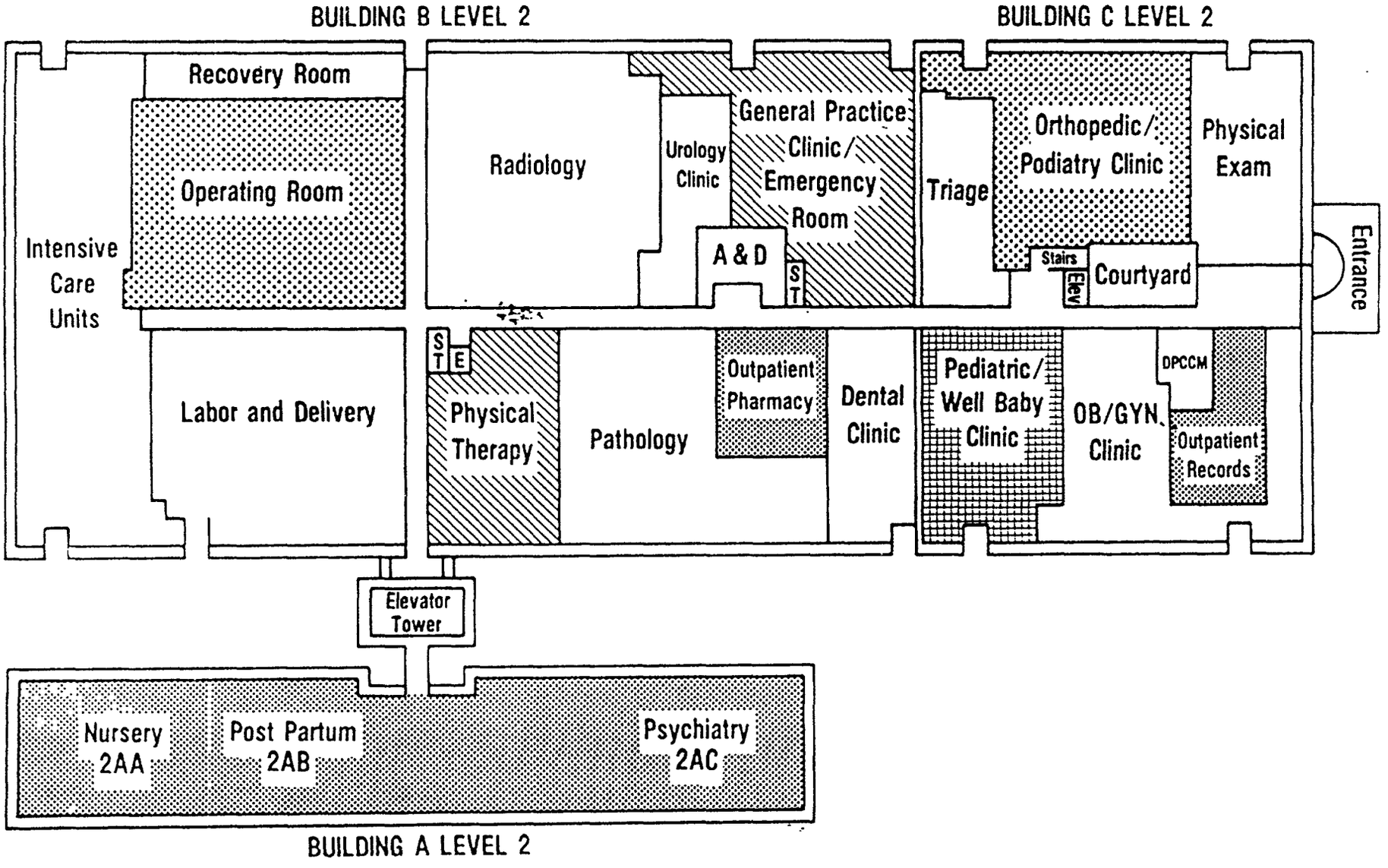


LEVEL 1 A Bldg

15-056/G383-2/AF82

Appendix D

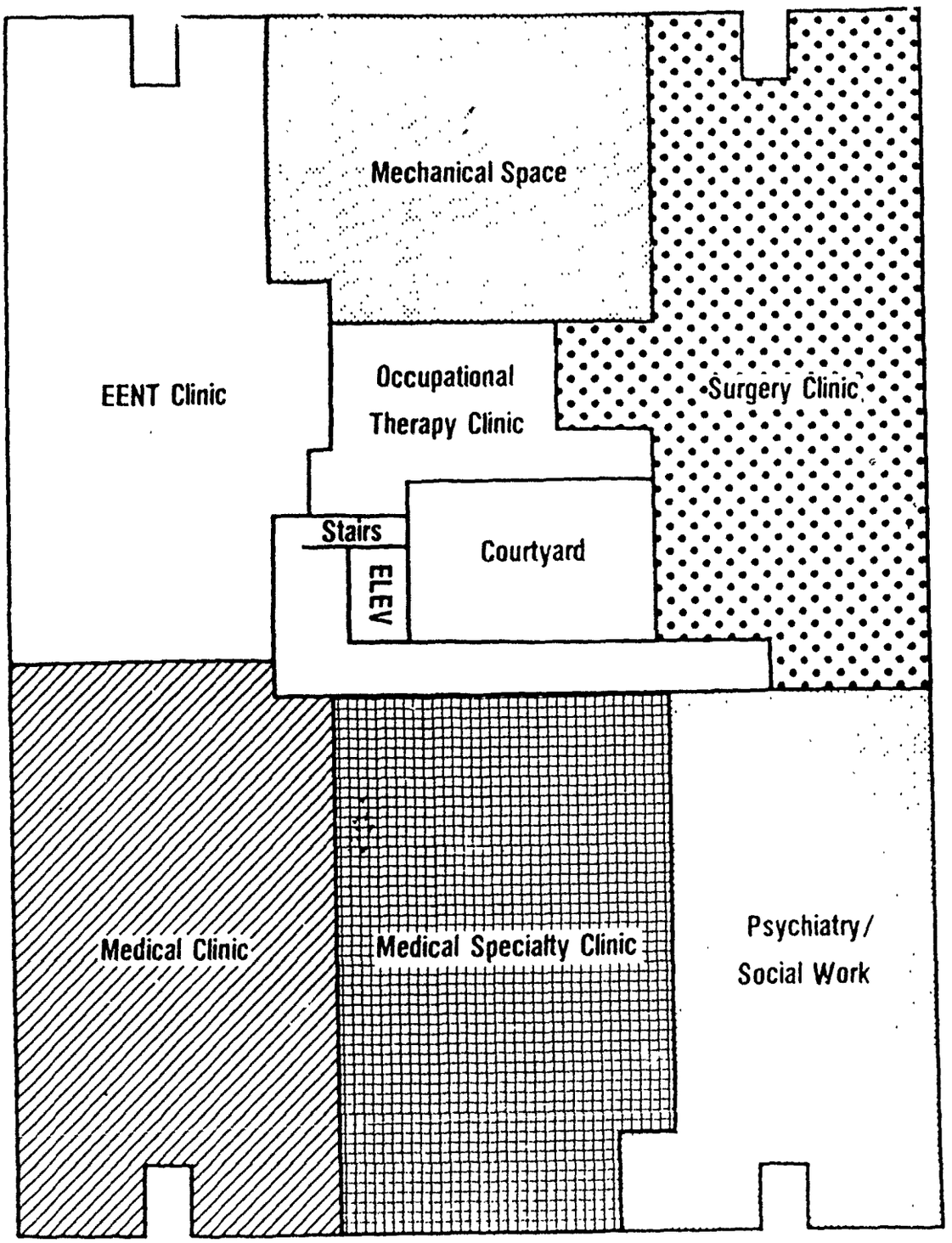
Building "B" & "C" Physical Layout



Appendix E

Building "C" Physical Layout

BUILDING C LEVEL 3



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Appendix F

Definitions

Definitions

Ancillary Staff Members - All personnel who provide support to the health care physician in the outpatient clinic environment are considered ancillary staff members.

Efficiency - The data envelopment analysis technique will determine the magnitude of efficiency for each clinic. This technique will compare the inputs and resulting outputs of each clinic.

Health Care Physician or Extender - A professional or paraprofessional who delivers direct and unsupervised patient care. This may include a non-physician paraprofessional such as a Physician's Assistant or Midwife.

Inefficiency - Sherman defines it as if a hospital could have produced the same amount and quality of patient care and other outputs with fewer resources than it consumed or if it could have produced greater amounts of its output with the same amount of resources it used.

Productivity - Fetter defines productivity as the relative delivery capability of a given quantity of labor of some given type and value. He stresses the principal element of cost remains physician time.

Appendix G

Input and Output Data Elements for All Clinics

Input and Output Data Elements for All Clinics.

CLINIC	INPUTS			OUTPUTS	
	ANC HRS	PHY HRS	EXPENSES($)	AMB	AWU
Outpatient Clinic	12,496	6,946	612,446	200	422
Emergency Room	52,152	14,098	3,356,615	200	1,656
Family Practice	15,378	10,422	1,829,517	200	1,349
Internal Medicine	8,776	12,649	1,353,220	925	744
Pediatrics	19,291	9,046	2,061,212	200	878
General Surgery	8,635	5,469	486,313	593	283
OB/GYN	24,078	17,835	2,432,457	200	994

Appendix H

Total Ambulatory Work Units Using Outpatient Clinic Visits and Ambulatory Work Units for All Clinics

Ambulatory Work Units for All Clinics.

CLINIC	Clinic Visits	AWU Factor	Total AWU
Outpatient Clinic	16,061	.0263	422
Emergency Room	49,420	.0335	1,656
Family Practice	48,753	.0268	1,349
Internal Medicine	18,835	.0395	744
Pediatrics	43,923	.0200	878
General Surgery	8,193	.0345	283
Obstetrics	20,650	.0260	537
Gynecology	19,381	.0236	457

Appendix I

1988 Descriptive Statistics for All Clinics

1988 Descriptive Statistics for All Clinics.

CLINIC	Clin Vst	AWU	AMB	ANC HRS	PHY HRS	EXPENSES
Outpatient Clinic	16,061	422	200	12,496	6,946	$ 612,446
Emergency Room	49,420	1656	200	52,152	14,098	3,357,615
Family Practice	48,753	1349	200	15,378	10,422	1,829,517
Internal Medicine	18,835	744	925	8,776	12,649	1,353,220
Pediatrics	43,923	878	200	19,291	9,046	2,061,212
General Surgery	8,193	283	593	8,635	6,469	486,313
Obstetrics	20,650	537	100	24,078*	17,835*	2,432,457*
Gynecology	19,381	457	100			
Mean	32,174	904	360	20,115	11,066	1,733,254

* denotes combined OB & GYN figures

Appendix J

PASS Analysis Using All Data Elements for All Clinics

```
Reading Problem Data
Beginning DEA Optimization
Unit: 198901011      1    (No.   1 of    7) Upper Bound Efficiency:      0.9773
Unit: 198901011      2    (No.   2 of    7) Upper Bound Efficiency:      0.9076
Unit: 198901011      3    (No.   3 of    7) Upper Bound Efficiency:      1.0000
Unit: 198901011      4    (No.   4 of    7) Upper Bound Efficiency:      1.0000
Unit: 198901011      5    (No.   5 of    7) Upper Bound Efficiency:      0.8104
Unit: 198901011      6    (No.   6 of    7) Upper Bound Efficiency:      1.0000
Unit: 198901011      7    (No.   7 of    7) Upper Bound Efficiency:      0.5587
Beginning CFA Optimization
Unit: 198901011      1    (No.   1 of    7) Lower Bound Efficiency:      0.8144
Unit: 198901011      2    (No.   2 of    7) Lower Bound Efficiency:      0.7697
Unit: 198901011      5    (No.   5 of    7) Lower Bound Efficiency:      0.7759
Unit: 198901011      7    (No.   7 of    7) Lower Bound Efficiency:      0.5587

DEA/CFA Optimizer Performance
-----------------------------

   Input Start Time   : 14:57:20
   DEA Start Time     : 14:57:20
   CFA Start Time     : 14:57:22
   Finish Time        : 14:57:25
   Total DEA Pivots   :        23
   Total CFA Pivots   :        27
```

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 1 : OPC
Date: 01/01/89

Efficiency: 81.440 to 97.730

Multiplier for Adjusting Output Levels = 1.2279

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	245.580	9.360	
AWU	422.400	518.664	72.146	

Total: 81.506 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	12496.000	33.739	
EXPENSES	612446.000	61.245	
PHYHRS	6946.000	0.000	1619.149

Total: 100.000 PERCENT

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 1 : OPC
Date: 01/01/89

Efficiency: 81.440 to 97.730

Multiplier for Adjusting Input Levels = 0.8144

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
MB	200.000	9.360	
WU	422.400	72.146	
	Total:	81.506 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
NCHRS	12496.000	10176.742	33.739	
XPENSES	612446.000	498776.022	61.245	
HYHRS	6946.000	5656.822	0.000	1619.149
		Total:	100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 2 : EMERGENCY CARE
Date: 01/01/89

Efficiency: 76.970 to 90.760

Multiplier for Adjusting Output Levels = 1.2992

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution to Efficiency	Shortage
AMB	200.000	259.841	9.480	
AWU	1655.570	2150.929	67.547	

Total: 77.027 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	52152.000	20.861	
EXPENSES	3357615.00	0.000	886514.210
PHYHRS	14098.000	78.949	

Total: 100.000 PERCENT

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 2 : EMERGENCY CARE
Date: 01/01/89

Efficiency: 76.970 to 90.760

Multiplier for Adjusting Input Levels = 0.7697

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
MB	200.000	9.480	
WU	1655.570	67.547	
	Total:	77.027 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
NCHRS	52152.000	40141.394	20.861	
XPENSES	3357615.00	2584356.27	0.000	886514.210
HYHRS	14098.000	10851.231	78.949	
	Total:	100.000 PERCENT		

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	200.000	14.940	
AWU	1348.817	1348.817	85.110	
		Total:	100.050 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	0.000	
EXPENSES	1829517.00	0.000	
PHYHRS	10422.000	100.051	
	Total:	100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	14.940	
AWU	1348.817	85.110	
	Total:	100.050 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	15378.000	0.000	
EXPENSES	1829517.00	1829517.00	0.000	
PHYHRS	10422.000	10422.000	100.051	
	Total:		100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	925.000	925.000	3.885	
AWU	743.982	743.982	96.271	

Total: 100.156 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8776.000	100.046	
EXPENSES	1353220.00	0.000	
PHYHRS	12649.000	0.000	

Total: 100.000 PERCENT

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	925.000	3.885	
AWU	743.982	96.271	
	Total:	100.156 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8776.000	8776.000	100.046	
EXPENSES	1353220.00	1353220.00	0.000	
PHYHRS	12649.000	12649.000	0.000	
		Total:	100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 5 : PEDIATRICS
Date: 01/01/89

Efficiency: 77.590 to 81.040

Multiplier for Adjusting Output Levels = 1.2888

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
MB	200.000	257.765	16.260	
WU	878.460	1132.182	61.404	

Total: 77.664 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
NCHRS	19291.000	13.504	
XPENSES	2061212.00	0.000	500537.759
HYHRS	9046.000	86.842	

Total: 100.000 PERCENT

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 5 : PEDIATRICS
Date: 01/01/89

Efficiency: 77.590 to 81.040

Multiplier for Adjusting Input Levels = 0.7759

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	16.260	
AWU	878.460	61.404	
	Total:	77.664 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	19291.000	14967.887	13.504	
EXPENSES	2061212.00	1559294.39	0.000	500537.759
PHYHRS	9046.000	7018.791	86.842	
	Total:		100.000 PERCENT	

Date: 04/24/99

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	593.000	593.000	99.980	
AWU	282.659	282.659	0.000	

Total: 99.980 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8635.000	69.080	
EXPENSES	486313.000	48.631	
PHYHRS	6469.000	0.000	

Total: 100.000 PERCENT

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	593.000	99.980	
AWU	282.659	0.000	
	Total:	99.980 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8635.000	8635.000	69.080	
EXPENSES	486313.000	486313.000	48.631	
PHYHRS	6469.000	6469.000	0.000	
		Total:	100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 7 : OB/GYN
Date: 01/01/89

Efficiency: 55.870 to 55.870

Multiplier for Adjusting Output Levels = 1.7899

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	357.974	1.540	
AWU	994.197	1779.483	54.283	
		Total:	55.823 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	24078.000	0.000	1595.746
EXPENSES	2432457.00	0.000	
PHYHRS	17835.000	0.000	1870.088
	Total:	100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 7 : OB/GYN
Date: 01/01/89

Efficiency: 55.870 to 55.870

Multiplier for Adjusting Input Levels = 0.5587

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	1.540	
AWU	994.197	54.283	
	Total:	55.823 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	24078.000	13452.379	0.000	1595.746
EXPENSES	2432457.00	1359013.73	0.000	
PHYHRS	17835.000	9964.414	0.000	1870.088
	Total:	100.000 PERCENT		

Appendix K

Exploration Results of PASS Analysis Using Only the FP, IMC, and GSC Clinics and All Data Elements

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report fo Fac: FAC
Hospital i : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	14.940	
AWU	1348.817	85.110	

Total: 100.050 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	15378.000	0.000	
EXPENSES	1829517.00	1829517.00	0.000	
PHYHRS	10422.000	10422.000	100.051	

Total: 100.000 PERCENT

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	200.000	14.940	
AWU	1348.817	1348.817	85.110	
		Total:	100.050 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	0.000	
EXPENSES	1829517.00	0.000	
PHYHRS	10422.000	100.051	
	Total:	100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	925.000	925.000	3.885	
AWU	743.982	743.982	96.271	
		Total:	100.156 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8776.000	100.046	
EXPENSES	1353220.00	0.000	
PHYHRS	12649.000	0.000	
	Total:	100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	925.000	3.885	
AWU	743.982	96.271	
	Total:	100.156 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of I puts	Excess
ANCHRS	8776.000	8776.000	100.046	
EXPENSES	1353220.00	1353220.00	0.000	
PHYHRS	12649.000	12649.000	0.000	
	Total:		100.000 PERCENT	

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	593.000	593.000	99.980	
AWU	282.659	282.659	0.000	

Total: 99.980 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8635.000	69.080	
EXPENSES	486313.000	48.631	
PHYHRS	6469.000	0.000	

Total: 100.000 PERCENT

Date: 04/24/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	593.000	99.980	
AWU	282.659	0.000	

Total: 99.980 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8635.000	8635.000	69.080	
EXPENSES	486313.000	486313.000	48.631	
PHYHRS	6469.000	6469.000	0.000	

Total: 100.000 PERCENT

Appendix L

Exploration Results of PASS Analysis Using Only the FP, IMC, and GSC Clinics and All Data Elements Except Expenses and Ambulatory Surgeries or Procedures

Date: 04/20/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
RWU	1348.817	1348.817	100.082	

Total: 100.082 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
RNCHRS	15378.000	0.000	
PHYHRS	10422.000	100.051	

Total: 100.000 PERCENT

Date: 04/20/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AWU	1348.817	100.082	
	Total:	100.082 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	15378.000	0.000	
PHYHRS	10422.000	10422.000	100.051	
		Total:	100.000 PERCENT	

Date: 04/20/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 96.580 to 96.580

Multiplier for Adjusting Output Levels = 1.0354

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AWU	743.982	770.327	96.718	
		Total:	96.718 PERCENT	

INPUTS

	Input Levels		Relative Productivity of Inputs	Excess
ANCHRS	8776.000		100.046	
PHYHRS	12649.000		0.000	6472.355
		Total:	100.000 PERCENT	

Date: 04/20/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 96.580 to 96.580

Multiplier for Adjusting Input Levels = 0.9658

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AWU	743.982	96.718	
	Total:	96.718 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8776.000	8475.861	100.046	
PHYHRS	12649.000	12216.404	0.000	6472.355
	Total:		100.000 PERCENT	

Date: 04/20/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 37.260 to 37.260

Multiplier for Adjusting Input Levels = 0.3726

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
?WU	282.659	37.339	

Total: 37.339 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
?NCHRS	8635.000	3217.401	100.166	
?HYHRS	6469.000	2410.349	0.000	229.823

Total: 100.000 PERCENT

Date: 04/20/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 37.260 to 37.260

Multiplier for Adjusting Output Levels = 2.6838

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AWU	282.659	758.612	37.339	
		Total:	37.339 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8635.000	100.166	
THYHRS	6469.000	0.000	229.823
		Total: 100.000 PERCENT	

Appendix M

Exploration Results of PASS Analysis Using Only The FP, IMC, and GSC Clinics And All Data Elements Except Expenses

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	200.000	14.940	
AWU	1348.817	1348.817	85.110	

Total: 100.050 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	0.000	
PHYHRS	10422.000	100.051	

Total: 100.000 PERCENT

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	14.940	
AWU	1348.817	85.110	
	Total:	100.050 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	15378.000	0.000	
PHYHRS	10422.000	10422.000	100.051	
		Total:	100.000 PERCENT	

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	925.000	925.000	3.885	
AWU	743.982	743.982	96.271	

Total: 100.156 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8776.000	100.046	
PHYHRS	12649.000	0.000	

Total: 100.000 PERCENT

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	925.000	3.885	
AWU	743.982	96.271	
	Total:	100.156 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8776.000	8776.000	100.046	
PHYHRS	12649.000	12649.000	0.000	
		Total:	100.000 PERCENT	

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
MB	593.000	593.000	99.980	
WU	282.659	282.659	0.000	

Total: 99.980 PERCENT

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
NCHRS	8635.000	42.311	
HYHRS	6469.000	57.574	

Total: 100.000 PERCENT

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
RMB	593.000	99.980	
RWU	282.659	0.000	

Total: 99.980 PERCENT

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
RNCHRS	8635.000	8635.000	42.311	
PHYHRS	6469.000	6469.000	57.574	

Total: 100.000 PERCENT

Appendix N

Exploration Results of PASS Analysis Using Only the FP, IMC, and GSC Clinics and All Data Elements except AWU

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 20.040 to 20.930

Multiplier for Adjusting Output Levels = 4.9900

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	998.004	20.040	
		Total:	20.040 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	44.596	
PHYHRS	10422.000	55.237	
	Total:	100.000 PERCENT	

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 3 : FAMILY PRACTICE
Date: 01/01/89

Efficiency: 20.040 to 20.930

Multiplier for Adjusting Input Levels = 0.2004

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	200.000	20.040	
	Total:	20.040 PERCENT	

INPUTS

	Input evels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	15378.000	3081.751	44.596	
PHYHRS	10422.000	2088.569	55.237	
		Total:	100.000 PERCENT	

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	925.000	925.000	99.992	
		Total:	99.992 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8776.000	100.046	
PHYHRS	12649.000	0.000	
	Total:	100.000 PERCENT	

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 4 : INTERNAL MEDICINE
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	925.000	99.992	
	Total:	99.992 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8776.000	8776.000	100.046	
PHYHRS	12649.000	12649.000	0.000	
		Total:	100.000 PERCENT	

Date: 04/21/89

BACH Productivity Analysis

Efficiency Reports for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Output Levels = 1.0000

OUTPUTS

	Output Levels	Adjusted Output Levels	Percent Contribution To Efficiency	Shortage
AMB	593.000	593.000	99.980	
		Total:	99.980 PERCENT	

INPUTS

	Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8635.000	42.311	
PHYHRS	6469.000	57.574	
		Total: 100.000 PERCENT	

Date: 04/21/89

BACH Productivity Analysis

Efficiency Report for Fac: FAC
Hospital 1 : BACH
Clinic 6 : GENERAL SURGERY
Date: 01/01/89

Efficiency: 100 PERCENT

Multiplier for Adjusting Input Levels = 1.0000

OUTPUTS

	Output Levels	Percent Contribution To Efficiency	Shortage
AMB	593.000	99.980	
	Total:	99.980 PERCENT	

INPUTS

	Input Levels	Adjusted Input Levels	Relative Productivity of Inputs	Excess
ANCHRS	8635.000	8635.000	42.311	
PHYHRS	6469.000	6469.000	57.574	
		Total:	100.000 PERCENT	

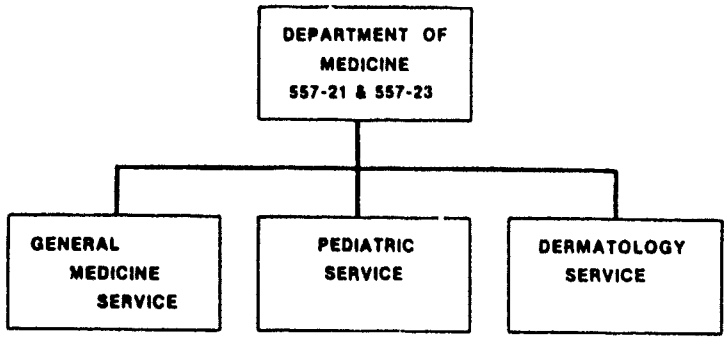
Appendix O

Staffing Guidelines for Internal Medicine

DA Pam 570-557

Section II. DEPARTMENT OF MEDICINE (Code Series 557–20)

Provides diagnostic service, care, and treatment, as required, to all patients assigned or referred to the Department of Medicine. Conducts clinical investigation, professional training and research appropriate to the Department of Medicine.



Note 1. Staffing Table 557–22 and Staffing Tables in the 557–52.10 series, provide for the physicians who are distributed throughout the Medical Services.

Note 2. Need for additional services, such as Allergy, Cardiology, Endocrinology, Gastronenterology, Hematology, Infectious Disease, Nephrology, Rheumatology and Pulmonary Disease will be determined locally based upon patient load and professional capabilities.

★*Table 557–21: Office of the Chief, Dept. of Medicine*

Work Performed. Directs, supervises and coordinates functions and personnel of the Department of Medicine.

Yardstick	Medical Officer*	4	12	20	28
	Manpower requirement	2	3	4	5
	Interval rate		*.13*	*.13*	*.13*

Military Positions				Position Delineation	Number of Positions				Civilian Positions	
Line	Duty Position Title	BR	Code MOS	Grade						Job title	Code
1	CHIEF DEPT MED	MC	61F	COL	M				1		
2	CHIEF DEPT MED	MC	61F	LTC/MAJ	M	1	1	1			
3	DEPT ADMINISTRATOR *a*	MS	67A	CPT	C			1	1	HEALTH SYSTEMS SP	GS–0341
4	PATIENT ADM SP *a*		71G20	E5	C		1	1	1	MEDICAL CLERK	GS–0679
5	CLERK TYPIST		71G10	E3	C	1	1	1	1	CLERK TYPIST	GS–0322
6	CLERK TYPIST *a*		71L10	E3	C				1	CLERK TYPIST	GS–0322

*Number of physicians recommended under Staffing Table 557–22 and 557–52.10 series.

a. These positions will not be required when a Clinical Support Division exists.

Note. Manpower requirements shown do not provide staffing of Steonographers for preparation and maintenance of clinical records and boards. The manpower requirements necessary to support this workload should be determined by local appraisal.

★*Table 557–51: Office of the Chief, Department of Primary Care and Community Medicine*

Work Performed. Directs, supervises, and coordinates patient care and related activities performed by the Clinics Service, Medical Examination Service, Aviation Medicine Service, and the Administrative Support Branch. As a representative of the MEDDAC Director, performs duties related to Installation Surgeon activities.

Yardstick	Clinic visits (thousands)*	10	20	40	60
	Manpower requirement	2	2	2	2
	Interval rate	*0.0*	*0.0*	*0.0*	

Military Positions					Position Delineation	Number of Positions				Civilian Positions	
Line	Duty Position Title	BR	Code MOS	Grade						Job title	Code
1	CHIEF	MC	61F	COL	M				1		
2	CHIEF	MC	61F	LTC	M			1			
3	CHIEF	MC	61F	MAJ	M	1	1				
4	STENOGRAPHER		71C10	E3	C	1	1	1	1	SECRETARY (STENOGRAPHY)	GS-0318

*Total clinic visits during calendar month as reported on the Medical Summary Report, MED 302.

Note. The survey team will separately identify the number of assigned residents participating in approved residency training programs from manpower requirements based on yardstick above.

★*Table 557–52.11: Medical*

Work Performed. Performs diagnostic service, care and treatment of all patients assigned or referred to the medical clinic. Appraises the adult patients' health care status, response to illness, and medical therapy. Plans and provides a comprehensive plan of care for patients including monitoring and maintenance; counselling and guidance; health education and prevention. Assures continuity of health care through interdisciplinary planning, consultation, and referrals.

Yardstick	Clinic visits (thousands)*	1	2	4	5
	Manpower requirement**	5	6	8	9
	Interval rate	*1.0*	*1.0*	*1.0*	

Military Positions					Position Delineation	Number of Positions				Civilian Positions	
Line	Duty Position Title	BR	Code MOS	Grade						Job title	Code
1	INTERNIST	MC	61F	*a*	C					MED OFF (INTERNAL MED)	GS-0602
2	PULMONOLOGIST	MC	60F	*a*	C					MED OFF (PUL DIS)	GS-0602
3	GASTROENTEROLOGIST	MC	60G	*a*	C					MED OFF (GASTRO)	GS-0602
4	CARDIOLOGIST	MC	60H	*a*	C					MED OFF (CARDIOVAS DIS)	GS-0602
5	ALLERGIST/CLIN IMMUN	MC	60M	*a*	C					MED OFF (ALLERGY)	GS-0602
6	MED-SURG NURSE	AN	66H	MAJ/CPT	C	1	1	1	1	SUPV CLIN NURSE	GS-0610
7	NURSE PRACTITIONER	AN	66H	*b*	C		1	1	2	CLINICAL NURSE	GS-0610
8	DISPENSARY SP		91B20	E5	C			1	1	NURSING ASSISTANT	GS-0621
9	DISPENSARY SP		91B10	E4	C	1	1	2	2	NURSING ASSISTANT	GS-0621
10	DISPENSARY SP		91B10	E3	C	2	2	2	2	NURSING ASSISTANT	GS-0621
11	CLERK TYPIST		71L10	E3	C	1	1	1	1	CLERK TYPIST	GS-0322

*Medical clinic visits during calendar month as reported on the Medical Summary Report, MED 302.

**Does not include physician requirements. They will be determined as follows:

★*Table 557-22: Medical (Physicians)*

Work Performed. Performs diagnostic service, care and treatment of all patients assigned or referred to the inpatient medical services.

Yardstick	Beds occupied*	30	120	210
	Manpower requirement**	1	4	7
	Interval rate	.033	.033	

Military Positions					Position Delineation	Number of Positions	Civilian Positions	
Line	Duty Position Title	BR	Code MOS	Grade			Job title	Code
1	INTERNIST	MC	61F	*b*	C		MED OFF (INTERNAL MED)	GS-0602
2	PULMONARY DIS OFF	MC	60F	*b*	C		MED OFF (PUL DIS)	GS-0602
3	GASTROENTEROLOGIST	MC	60G	*b*	C		MED OFF (GASTRO)	GS-0602
4	CARDIOLOGIST	MC	60H	*b*	C		MED OFF (CARDIOVAS DIS)	GS-0602
5	ALLERGIST	MC	60M	*b*	C		MED OFF (ALLERGY)	GS-0602
6	PEDIATRICIAN	MC	60P	*b*	C		MED OFF (PEDIATRIC)	GS-0602
7	HEMATOLOGIST	MC	60Z	*b*	C		MED OFF (HEMATOLOGY)	GS-0602
8	NEPHROLOGIST	MC	61A	*b*	C		MED OFF (NEPHROLOGY)	GS-0602
9	ENDOCRINOLOGIST	MC	61C	*b*	C		MED OFF (ENDOCRINOLOGY)	GS-0602
10	RHEUMATOLOGIST	MC	61D	*b*	C		MED OFF (REUMATOLOGY)	GS-0602
11	INFEC DIS OFF	MC	61G	*b*	C		MED OFF (INFEC DIS)	GS-0602

*Average daily medical beds occupied, computed in accordance with AR 40-400.

**This yardstick does not provide physician personnel for operation of medical clinics. They are identified in Staffing Table series 557-52.10.

b Grades will range from Captain through Colonel.

Note. The positions shown in this table indicate the type of personnel that may be required. Distribution of the total manpower requirement to the various specialties will be determined locally.

★*Table 557-23: Electrocardiograph*

Work Performed. Administers and records tests to obtain diagnostic data from Electrocardiograms, Echocardiograms, Phonocardiograms and Vectocardiograms and from Holter Monitor/Scan procedures, treadmill, and pacemaker tests.

Yardstick	Procedures*	250	500	1250	2000
	Manpower requirement**	1	2	4	6
	Interval rate	.004	.0027	.0027	

Military Positions					Position Delineation	Number of Positions			Civilian Positions	
Line	Duty Position Title	BR	Code MOS	Grade					Job title	Code
1	CARDIAC SP		91N30	E6	C				1 ELECTROCARD TECH	GS-0649
2	CARDIAC SP		91N20	E5	C	1	1	1	2 ELECTROCARD TECH	GS-0649
3	CARDIAC SP		91N10	E4	C		1	1	1 ELECTROCARD TECH	GS-0649
4	CARDIAC SP		91N10	E3	C			2	2 ELECTROCARD TECH	GS-0649

*Number of procedures performed during calendar month.

**Where the function operates more than 40 hrs per week, additional personnel will be determined by local appraisal.

Note: Excessive number of procedures requiring extended testing should be documented on Schedule X; additional staffing (if required) will be determined by local appraisal.

(1) Endocrinology, Hematology, Internal Medicine, Cardiology, and Gastroenterology clinic requirement is one physician per 300 clinic visits a month; Allergy and Nephrology clinic requirement is one physician per 225 clinic visits per month; Pulmonary Function and Oncology clinic requirement is one physician per 175 clinic visits a month.

(2) Manpower requirements provide for an 8-hour, 5-day week.

a Grades will range from Captain through Colonel.

b Grades may range from Lieutenant to Lieutenant Colonel in accordance with criteria set forth in paragraph 1–2c, chapter 1. Position was previously designated nurse clinician.

Note 1. This yardstick will be applied to each separate medical subspecialty clinic.

Note 2. Monthly clinic visits by medical specialty should be recorded on Schedule X.

★*Table 557–52.12: Dermatology*

Work Performed. Performs diagnostic care and provides treatment, as required, for all dermatology patients, assigned or referred. Performs minor surgical procedures, physical examinations, and treatments. Collects and labels specimens. Requisitions supplies and stocks for examination and treatment areas.

Yardstick					
	Clinic visits*	500	1200	1800	2400
	Manpower requirement**	2	5	7	9
	Interval rate		*.0043*	*.0033*	*.0033*

Military Positions					Position Delineation	Number of Positions				Civilian Positions	
Line	Duty Position Title	BR	Code MOS	Grade						Job title	Code
1	DERMATOLOGIST	MC	60L	*a*	C	1	2	3	4	MEDICAL OFFICER (DERM)	GS–0602
2	DERMATOLOGY SP	..	91B2D2	SP5	C	1	1	1	1	NURSING ASSISTANT	GS–0621
3	DERMATOLOGY SP	..	91B10	SP4	C	..	1	1	2	NURSING ASSISTANT	GS–0621
4	CLERK TYPIST	..	71L10	E3	C	..	1	1	1	CLERK TYPIST	GS–0322
5	*b*	..	....	...	C	..	..	1	1	SECRETARY (STENO)	GS–0318

*Dermatology clinic visits during calendar month as reported on the Medical Summary Report, MED 302.

**Manpower requirements provide for 8-hour, 5-day week.

a Grades will range from Captain through Colonel.

b The position of Secretary-Steno should be civilian.

Note 1. Professional nursing supervision will be provided by Ambulatory Nursing Service.

Note 2. Below 1200 clinic visits the requirement for clerk-typist will be determined by local appraisal.

Appendix P

Staffing Guidelines for OB/GYN

DA Pam 570-557

★*Table 557–52.23: Obstetric-Gynecology*

Work Performed. Performs diagnostic service, care and treatment, as required, for all patients assigned or referred. Provides health care and assesses medically delegated responsibility for the management of selected obstetric and gynecology patients under the supervision of an Obstetrician. Plans and conducts individual and group conferences for patients and families, providing counseling and education for the promotion and maintenance of health. Identifies health care services, agencies and resources available to the family and makes appropriate referrals.

Yardstick					
	Clinic visits*	450	1000	3000	4000
	Manpower requirement**	4	5	8	9
	Interval rate	*.0018*	*.0015*	*.001*	

Military Positions					Position Delineation	Number of Positions				Civilian Positions	
Line	Duty Position Title	BR	Code MOS	Grade						Job title	Code
1	OBSTETRICIAN AND GYNECOLOGIST	MC	60J	*a*	C	..	..	..	..	MED OFF (OB GYN)	GS–0602
2	OBSTETRIC & GYN NURSE	AN	66G	MAJ/CPT	C	..	1	1	1	SUPV CLINICAL NURSE	GS–0610
3	NURSE PRACTITIONER	AN	66G	CPT/LT*b*	C	..	..	..	..	NURSE PRACTIONER	GS–0610
4	DISPENSARY NCO	NC	91B30	E6	C	1	1	1	1	NURSING ASSISTANT	GS–0621
5	DISPENSARY SP	..	91B20	E5	C	..	..	1	1	NURSING ASSISTANT	GS–0621
6	DISPENSARY SP	..	91B10	E4	C	1	1	2	3	NURSING ASSISTANT	GS–0621
7	DISPENSARY SP	..	91B10	E3	C	1	1	2	2	NURSING ASSISTANT	GS–0621
8	CLERK TYPIST	..	71L10	E3	C	1	1	1	1	CLERK TYPIST	GS–0322

*Total Obstetric-Gynecology Clinic visits during calendar month as reported on the Medical Summary Report, MED 302.

**Does not include physician and nurse practitioner requirements, or requirements for special procedures. They will be determined as follows:

(1) Obstetric Clinic requirement is one physician per 525 clinic visits a month; Gynecology Clinic requirement is one physician per 400 clinic visits a month.

(2) Nurse practitioner requirements will be determined by local appraisal in accordance with paragraph 1–2c, chapter 1. This position was previously designated nurse clinician.

(3) Additional manpower requirements for such procedures as diagnostic suction curettages, culdoscopies, cyrosurgery, tubal cautery, insertion of intrauterine devices (IUD's), and other surgical procedures performed in the clinic will be determined by local appraisal.

a Grades will range from Captain through Colonel.

b Deviation from grades indicated may be required in accordance with criteria set forth in paragraph 1–2c, chapter 1.

Note 1. This yardstick will be applied to each separate OB GYN specialty clinic.

Note 2. Where clinic operates other than 40 hours a week or is combined with another clinic, manpower requirements will be determined by local appraisal.

Note 3. Monthly Gynecology Clinic and Obstetric Clinic visits will be recorded separately on the Schedule X.

Appendix Q

Staffing Guidelines for Internal Medicine

Joint Healthcare Manpower Standards (JHMS)

JOINT HEALTHCARE MANPOWER TABLE

WORK CENTER TITLE/CODE: Internal Medicine/6014 Table A	MTF Without Internal Medicine GME Training Program									
MTF LOCATION	**CLINIC VISIT BREAKPOINT RANGES**									
CONUS Hospitals 1-100 Beds										
Minimum Count ->	1	270	539	808	1078	1347	1616	1885	2155	2424
Maximum Count ->	269	538	807	1077	1346	1615	1884	2154	2423	2692
CONUS Hospitals Over 100 Beds										
Minimum Count ->	1	259	517	776	1034	1293	1551	1810	2068	2327
Maximum Count ->	258	516	775	1033	1292	1550	1809	2067	2326	2584
Overseas Hospitals										
Minimum Count ->	1	237	474	711	948	1185	1422	1659	1896	2133
Maximum Count ->	236	473	710	947	1184	1421	1658	1895	2132	2369
SPECIALTY TITLE	**MANPOWER REQUIREMENTS**									
Internist*	1	2	3	4	5	6	7	8	9	10
Registered Nurse			1	1	1	2	2	2	2	2
Technician	2	2	3	3	4	5	6	7	9	10
Administrative		1	1	2	2	2	2	2	3	3
*Subspecialties may be substituted.										
TOTAL	3	5	8	10	12	15	17	19	23	25

Appendix R

Staffing Guidelines for OB/GYN

Joint Healthcare Manpower Standards (JHMS)

STANDARD MANPOWER TABLE

ORK CENTER TITLE/ CODE: Obstetrics/ Gynecology/Nurse-Midwife/6102 Table A	MTFs without GME Training Program								
MTF LOCATION	DELIVERY/CLINIC VISIT BREAKPOINT RANGES								
Deliveries									
Minimum Count ->	22.5	32.4	48.6	59.3	75.5	86.3	102.4	113.2	129.3
Maximum Count ->	32.3	48.5	59.2	75.4	86.2	102.3	113.1	129.2	140.0
Equivalent Clinic Visits									
Minimum Count ->	390	623	841	1169	1449	1778	2058	2386	2666
Maximum Count ->	560	840	1168	1448	1777	2057	2385	2665	2994
Overseas Hospitals									
Minimum Count ->	383	550	824	1148	1422	1745	2020	2343	2618
Maximum Count ->	549	823	1147	1421	1744	2019	2342	2617	2940
	MANPOWER REQUIREMENTS								
Obstetrician/ Gynecologist	2	3	3	4	4	5	5	6	6
Nurse-Midwife			1	1	2	2	3	3	4
Clinical Nurse	1	1	1	1	2	2	2	2	2
Technician	2	3	4	5	6	6	7	8	9
Administrative		1	1	1	1	2	2	2	2
TOTAL	5	8	10	12	15	17	19	21	23

STANDARD MANPOWER TABLE

WORK CENTER TITLE/CODE: Obstetrics/Gynecology/ Nurse Practitioner/ 6102 Table B	Nurse Practitioner Supplement								
MTF LOCATION	CLINIC VISIT BREAKPOINT RANGES								
CONUS Hospitals Additive--for Table A									
Minimum Count ->	1	485	970	1454	1939	2424	2908	3393	3878	4
Maximum Count ->	484	969	1453	1938	2423	2907	3392	3877	4361	4
Overseas Hospitals Additive--for Table A									
Minimum Count ->	1	480	959	1438	1918	2397	2876	3355	3835	4
Maximum Count ->	479	958	1437	1917	2396	2875	3354	3834	4313	4
	MANPOWER REQUIREMENTS								
OB-GYN Nurse Practitioner	1	2	3	4	5	6	7	8	9
Technician	1	2	3	4	5	6	7	8	9
TOTAL	2	4	6	8	10	12	14	16	18

Appendix S

Staffing Guidelines for Internal Medicine

Table of Distributions and Allowances

PARA	LINE	DESCRIPTION	ITAADS CD	GR	MOS	ASI/LIC	BR	ID	AMSC	STRENGTH REQ	STRENGTH AUTH	NET CHANGE REQ	NET CHANGE AUTH	RMKS
102N	00	EEOR												
102N	01	EEOR		05	67F00		MS	K	84779241BLB	0	0			XA
		PARAGRAPH TOTAL								0	0			
110	00	HOSP CDR												
110	01	HOSP CDR		06	60A00		MC	K	84779241BBA	1	1			XA ZG
110	02	DEP CDR CLIN		06	60A00		MC	K	84779241BBA	1	1			XA ZG
110	03	DEP CDR ADM		06	67A00		MS	K	84779241BBA	1	1			XA SA
110	04	HLTH CARE ADM		03	67A00		MS	K	84779241BBA	1	1			TB
110	05	COMD SGT MAJ		E9	00Z50		NC	I	84779241BBA	1	1			SA
110	06	SECY STENO		08	00318		GS	C	84779241BBA	1	1			
110	07	SECY STENO		07	00318		GS	C	84779241BBA	2	2			
		PARAGRAPH TOTAL								8	8			
110E	00	ADMIN SPT												
110E	01	ADJ		04	67F00		MS	K	84779241ARA	1	1			XA 99
110E	02	FILE CLK TYP		04	00305		GS	C	84779241ARA	1	1			
		PARAGRAPH TOTAL								2	2			
200	00	DEPT OF MED												
		PARAGRAPH TOTAL								0	0			
201	00	C,DEPT MED												
201	01	C DEPT MED		06	61F00		MC	K	84779222HTA	1	1			ZG SA
201	02	SECY STENO		05	00318		GS	C	84779222HTA	1	1			
		PARAGRAPH TOTAL								2	2			
202	00	ALL&IMM SVC												
202	01	C ALL&IMM SVC		04	60M00		MC	K	84779222HGS	1	1			
202	02	IMMUNOLOGY SP		E5	91A20	Y8	NC	I	84779222HGS	1	1			
202	03	IMMUNOLOGY SP		E4	91A10	Y8		I	84779222HGS	1	1			
202	04	MED SP		E4	91A10			I	84771424HVH	1	1			
202	05	PRAC NUR		05	00620		GS	C	84771424HVH	1	1			
202	06	MED CLK TYP		03	00679		GS	C	84771424HVH	1	0			
		PARAGRAPH TOTAL								6	5			
203	00	CARDIOL SVC												

PARA	LINE	DESCRIPTION	ITAADS CD	GR	MOS	ASI/LIC	BR	ID	AMSC	STRENGTH REQ	STRENGTH AUTH	NET CHANGE REQ	NET CHANGE AUTH	RMKS
203	01	CARDIOL		04	60H00		MC	K	84779222HGC	1	1			
		PARAGRAPH TOTAL								1	1			
203B	00	EKG SEC												
203B	01	CARDIAC SGT		E5	91N20		NC	I	84779234HSA	1	1			
203B	02	EKG TECH		06	00649		GS	C	84779234HSA	2	2			
		PARAGRAPH TOTAL								3	3			
204	00	DERM SVC												
204	01	C DERM SVC		05	60L00		MC	K	84779222HGQ	1	1			
204	02	DERM SP		E5	91A20	D2	NC	I	84779222HGQ	1	1			
204	03	PRAC NUR		05	00620		GS	C	84779222HGQ	1	1			
204	04	MED CLK TYP		04	00679		GS	C	84779222HGQ	1	1			
		PARAGRAPH TOTAL								4	4			
209	00	GEN MED SVC												
209	01	C GEN MED SVC		05	61F00		MC	K	84779222HTA	1	1			
		PARAGRAPH TOTAL								1	1			
209A	00	INTMED SEC												
209A	01	INTERNIST		04	61F00		MC	K	84779222HGA	1	1			
209A	02	INTERNIST		03	61F00		MC	K	84779222HGA	2	2			
209A	03	NUR PRAC		03	66H00	8E	AN	K	84779222HGA	1	1			XS
209A	05	MED SP		E4	91A10			I	84779222HGA	1	1			
209A	06	PRAC NUR		05	00620		GS	C	84779222HGA	1	1			XL
209A	07	NUR ASST		04	00621		GS	C	84779222HGA	1	1			ZV
209A	08	MED CLK TYP		03	00679		GS	C	84779222HGA	1	1			
		PARAGRAPH TOTAL								8	8			
211A	00	RESP SEC												
211A	01	RESPIR NCO		E6	91V30		NC	I	84779222HSN	1	1			ZF
211A	02	RESPIR SGT		E5	91V20		NC	I	84779222HSN	1	1			ZF
211A	03	RESPIR SP		E4	91V10			I	84779222HSN	2	2			ZF
		PARAGRAPH TOTAL								4	4			
211B	00	PULM FUNC SEC												
211B	01	DIAG TECH		06	00699		GS	C	84779222HSD	1	1			
		PARAGRAPH TOTAL								1	1			

Appendix T

Staffing Guidelines for OB/GYN

Table of Distributions and Allowances

PARA	LINE	DESCRIPTION	ITAADS CD	GR	MOS	ASI/LIC	BR	ID	AMSC	STRENGTH REQ	STRENGTH AUTH	NET CHANGE REQ	NET CHANGE AUTH	RMKS
511	00	C OB/GYN SVC PARAGRAPH TOTAL								0	0			
516	00	OB/GYN SVC		06	60J00		MC	K	84779222HJD	1	1			ZM
518	01	C OB/GYN SVC		04	60J00		MC	K	84779222HJD	1	1			ZM
518	02	OB/GYN		03	60J00		MC	K	84779222HJD	1	1			ZM
516	03	OB/GYN		03	60J00		MC	K	84779222HJD	1	0			ZM
518	03A	OB/GYN		14	00602		GS	C	84779222HJD	0	1			ZM XZ
518	03B	MED OFF GYN		04	66G00		AN	K	84779222HJD	1	1			ZM
516	04	CLIN HEAD NUR		03	66G00	8E	AN	K	84779222HJD.	1	1			ZM XS
518	05	NUR PRAC OB.		E6	91B30		NC	I	84779222HJD	1	1			ZM
518	06	CLIN NCO		E5	91A20		NC	A	84779222HJD	1	1			ZM 80
518	07	MED SP		E4	91A10			A	84779222HJD	2	2			ZM 80
518	08	MED SP		E3	91A10			A	84779222HJD.	1	1			ZM 80
518	09	MED SP		10	00610		GS	C	84779222HJD	1	1			ZM
518	10	NUR PRAC		05	00620		GS	C	84779222HJD	2	2			ZM
518	11	PRAC NUR		04	00621		GS	C	84779222HJD	3	3			ZM
518	12	NUR ASST		04	00679		GS	C	84779222HJD	2	2			ZM
518	13	MED CLK TYP		03	00679		GS	C	84779222HJD	1	0			ZM
518	14	MED CLK PARAGRAPH TOTAL								20	19			
520	00	DEPT P&N PARAGRAPH TOTAL								0	0			
521	00	C DEPT P&N		06	60W00		MC	K	84779222HTA	1	1			SA
521	01	C DEPT P&N		05	00318		GS	C	84779222HTA	1	1			
521	02	SECY STENO		03	00322		GS	C	84779222HTA	1	1			
521	03	CLK TYP PARAGRAPH TOTAL								3	3			
524	00	CLN PSY SVC		03	68S00		MS	K	84779222HMB	1	1			
524	01	C CLN PSY SVC		13	00180		GS	C	84779222HMB	1	0			
524	02	CLN PSYCHOL		09	00180		GS	C	84779222HMB	1	1			
524	03	PSYCHOL		09	00180		GS	C	84779222HMB	1	1			UR UT
524	04	PSYCHOL		07	00181		GS	C	84779222HMB	1	1			
524	05	PSYCHO TECH		07	00181		GS	C	84779222HMB	1	0			
524	06	PSYCHO TECH PARAGRAPH TOTAL								6	4			

Appendix U

Clinic Chief Questionnaire Results

Phys cian Questionnaire on Staffing Models

Please review the two staffing models for your clinic and answer the below questions based on the current clinic operation: (Mark under Model A or B only)

	A	B
1. Which staffing model best accomodates your practice patterns?	___	✓
2. Which one is best suited for your clinic?	___	✓
3. Which one provides the best ancillary staff mix for your clinic?	___	✓
4. Which one provides the greatest opportunity for increased workload?	___	✓
5. Which one provides the greatest opportunity for improvement in quality care rendered?	___	✓
6. Which one best resembles the current staffing in your clinic?	✓	___
7. Which one allows greater flexibility for providing medical care?	___	✓
8. Which one provides greater or better access for your patients?	___	✓
9. Which one provides your health care providers more time to treat patients?	___	✓
10. Which one do you prefer to use in your clinic?	___	✓

Charles Longer
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Physician Questionnaire on Staffing Models

lease review the two staffing models for your clinic and answer the below uestions based on the current clinic operation: (Mark under Model A or B nly)

	A	B
. Which staffing model best accomodates your practice patterns?	A	---
. Which one is best suited for your clinic?	---	✓
. Which one provides the best ancillary staff mix for your clinic?	---	✓
. Which one provides the greatest opportunity for increased workload? equally poor	---	---
. Which one provides the greatest opportunity for improvement in quality care rendered? neither	---	---
. Which one best resembles the current staffing in your clinic?	✓	---
. Which one allows greater flexibility for providing medical care?	---	✓
. Which one provides greater or better access for your patients?	✓	---
. Which one provides your health care providers more time to treat patients?	✓	---
0. Which one do you prefer to use in your clinic? neither	---	---

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