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IN HEALTH CARE ADMINISTRATION

DETERMINING A STAFFING MODEL FOR MONCRIEF ARMY COMMUNITY HOSPITAL'S PRIMARY CARE CLINICS

A GRADUATE MANAGEMENT PROJECT

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This project sought to determine the most cost efficient and clinically acceptable primary care staffing model for Moncrief Army Community Hospital. Manpower costs were compared using the following models: 1) Moncrief's FY93 average and current primary care staffing; 2) American Hospital Association's (AMA) projected staffing mix using a community demand analysis; 3) The Health Care Management Support Engineering Activity's Full Time Requirement Utilization Model (FTRUM); 4) Gateway To Care (GTC) Manpower Staffing Assessment Model; and 5) Linear Goal Programming's QSB+ Saffing Model with a managed care family practic emphasis.

Each model was compared by the number, mix, and costs associated with staffing Moncrief's Family Practic Plus (FPP) Clinic and the other primary care specialty clinics (Internal Medicine, Gynecology, and Pediatric). A qualitative observational study was also performed to see how closely actual performance of the nurse practitioner (NP) and family practic physicians in FPP met assumptions used in the staffing models.

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ABSTRACT

This Graduate Management Project (GMP) sought to determine the most cost efficient and clinically acceptable primary care staffing model for Moncrief Army Community Hospital. Considering the above statement, this GMP compared manpower costs utilizing the following models:

1. Moncrief's FY93 average and current primary care staffing.

2. American Hospital Association's (AMA) projected staffing mix using a community demand analysis.

3. The Health Care Management Support Engineering Activity's Full Time Requirement Utilization Model (FTRUM).

4. Gateway To Care (GTC) Manpower Staffing Assessment Model.

5. Linear Goal Programming's QSB+ Staffing Model (QSB+) with a managed care family practice emphasis.

Each model was compared by the number, mix, and costs associated with staffing Moncrief's Family Practice Plus (FPP) Clinic and the other primary care specialty clinics (Internal Medicine, Gynecology, and Pediatric). In addition, a qualitative observational study was performed to see how closely actual performance of the nurse practitioner (NP) and family practice physicians in FPP met assumptions used in the staffing models.

The AMA, FTRUM, and GTC models preserved many of the inefficiencies and high costs associated with the old fee

for service mentality. All of these models continue to over specialize primary care and measure a provider's efficiency without considering their salary costs.

QSB+'s Linear Goal Programming staffing model provided the most cost effective and clinically acceptable staffing requirements for FPP and the other primary care specialty clinics. The QSB+ staffing model promoted a new paradigm in staffing arrangements by focusing on the value of care provided by all staff members at each level of primary care.

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CHAPTER 1

INTRODUCTION

Conditions Which Prompted the Study

The percentage of the United States' Gross National Product (GNP) spent on medical care continues to grow at an alarming rate. In 1992, United States health care spending surpassed $800 billion, which is close to 13 percent of the GNP for health care. Economists project that by the year 2000 health care spending will be over $1.5 trillion and close to 17 percent of the GNP. President Clinton, big business, politicians, media, and American voters may differ on how to contain health care costs; however, most agree that the current health care system needs to change (Ernst & Young 1992).

For the past two decades, the government instituted several cost cutting initiatives, predominately impacting inpatient services. Designed to contain costs, the Health Maintenance Organization (HMO) Act of 1973 encouraged and authorized enrollment of Medicare beneficiaries into HMOs. Health care costs tended to be lower in HMOs than other traditional arrangements, but costs still increased. Ambulatory care use and costs were higher for HMOs, but this

varied due to the wide range of HMO plans (Consumers Union 1992).

The introduction of the prospective payment system (PPS) with the Tax Equity and Fiscal Responsibility Act of 1983 reduced payments for inpatient services. As a result, hospitals expanded their ambulatory care programs to compensate for lost inpatient revenue. Hospital outpatient visits increased over 30 percent between 1984 and 1989, with hospital outpatient growth expected to reach 50 percent of a community hospital's revenue by 1995 (Zuckerman 1992).

Ambulatory care has grown so rapidly since PPS that regulating and accreditation bodies have had little control over ambulatory expenditures and utilization. Changing reimbursement will soon place risk upon ambulatory providers for inefficiencies and reward patient volume to organizations that can demonstrate value. President Clinton's plan increases the role of and access to primary care providers. With this increased focus on ambulatory care and controlling health care expenditures, consumers and competition will necessitate restructuring ambulatory care in the near future (Howard 1990).

The marketplace is already preparing for reform and providers are responding to the marketplace. Movement tends to favor managed care contracts that utilize a capitation payment scheme that places providers at some type of financial risk for the care they provide (Solovy 1994).

Many hospitals are redesigning structures as well as services to capture or maintain outpatient services. If a hospital does not make itself more accessible and efficient, its services will be lost to other groups who will come and capture those services (Lutz 1987). Ambulatory care requires an exceptionally smooth patient care process to satisfy both providers and patients. Even well designed and well-conceptualized projects may fail as a result of management's inability to implement the ambulatory care programs successfully (Burns 1991).

In planning for ambulatory care programs, including the type and number of staff required for these programs, hospitals need to ensure that staffing allows for efficient and effective care throughout the process. Poorly designed and poorly functioning laboratories, radiology services, medical records services, and appointment scheduling inhibit the functioning of ambulatory care programs (Burns 1991). Professions need to work together in designing a primary care system that achieves healthy outcomes at efficient costs instead of worrying about professional dominion and profits (Conn 1991).

Military Conditions Prompting the Study

Military health care institutions are not immune to cost cutting initiatives. Similar to non-military health care services, the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) experienced a $1.4 to $3.6

billion (160 percent) increase in expenditures from 1985 to 1991. CHAMPUS represents approximately 20 percent of the US Army Health Services Command's (HSC) resources, yet provides only 10 percent of the care in catchment areas. The military defines a catchment area as a 40 mile radius from a medical treatment facility (MTF)(OASD(HA) 1993).

In June 1990, the Department of Defense (DOD) proposed the Coordinated Care Program to control cost increases, improve access, and provide high quality care. This program developed several demonstration projects to determine the most effective way to resolve cost, access, and quality issues such as: the CHAMPUS Reform Initiative (CRI), Catchment Area Management (CAM), and TRICARE projects (O'Connor 1993).

CRI covered 18 military treatment facilities and approximately 865,000 CHAMPUS eligible beneficiaries. CRI was centered on the principles of managed care and military-civilian health care partnership. A selected contractor was responsible for the delivery of comprehensive CHAMPUS health care services and support services for all CHAMPUS beneficiaries residing in the designated region (DOD 6010.8-R 1988). CRI gave beneficiaries four options: CHAMPUS Prime; an HMO option known as CHAMPUS Extra; a Preferred Provider Organization (PPO) option; and standard CHAMPUS. DOD and the awarded contractor share the financial risk of CHAMPUS costs. CRI used utilization and quality management,

and network design management to link MTF staff with program coordinators who help manage patient care (OASD(HA) 1993).

Catchment Area Management (CAM) is a concept that makes the Commander of a MTF responsible for all funding for direct and CHAMPUS medical care of covered beneficiaries in the MTF's catchment area (CHAMPUS 1993). Similar to CAM, TRICARE establishes a tri-service catchment area with the authority and responsibility for all health care delivery within overlapping catchment areas. Commanders of overlapping catchment areas will make up the TRICARE Commanders Board, which will serve as the governing body. The TRICARE area will have one of the main military facilities designated as the lead agent in coordinating the care of their joint effort (OASD(HA) 1993)(see appendix A).

In December 1990, the RAND corporation evaluated the CHAMPUS Reform Initiative (CRI) and found that CRI was successful in terms of increasing access and improving patient satisfaction. However, CRI was 9 percent more expensive than regular CHAMPUS (O'Connor 1993). Other sources reported the RAND findings as only a 4.6 percent increase in costs as compared to an expected 22 percent without CRI (OASD(HA) 1993).

In response to coordinated care initiatives, HSC initiated the Gateway To Care (GTC) program. The objectives of GTC initiatives are: to insure access to medical care for all eligible beneficiaries, maintain quality of health care

from all providers in and outside of military health care facilities, and contain health care costs (U.S. Army HSC 1991).

Comparing fiscal year 1990 (FY90) with FY92, HSC GTC sites demonstrated a 0.8 percent decline in beneficiary population and a 5.3 percent increase in CHAMPUS costs. For this same period, CRI CHAMPUS costs increased 15.7 percent despite a 5.4 percent population decline. Non-GTC sites' CHAMPUS costs increased 9.3 percent with a 3.8 percent fall in population (U.S. Army HSC 1993).

At the same time as the unveiling of President Clinton's health care plan, Congress directed the DOD to implement TRICARE as the universal program for delivering health care to DOD beneficiaries. This managed care program is currently evolving by taking positive aspects from all of the CRI projects and implementing them into the DOD TRICARE program (Cahill 1994). This managed care program will use the lead agent concept, capitation-based resource allocation, and managed care support (MCS) contracts. Colonel Cahill, Deputy Chief of Staff, Resource Management, HSC, emphasized that primary care is at the top of the food chain with utilization management, capitation financing, and enrollment of beneficiaries as the essential building blocks to a cost effective program (Cahill 1994).

The capitation-based resource allocation methodology will shift the traditional manpower staffing requirements

based upon workload to the minimum staff required to provide quality care based upon an organization's beneficiary population. This is done via capitated budgets that allocate money on a per-capita basis for each beneficiary within the MTF's catchment area (U.S. Army HSC 1993).

Commanders have had the authority and flexibility in the past to determine the most cost efficient and effective way to provide health care to their population. HSC allowed Commanders to shift CHAMPUS money to direct care budgets if doing so would result in cost savings. Under the new managed care program, each MTF Commander will have input with their lead agent to formulate a Regional Health Service Plan, but the authority and control of CHAMPUS funds will belong to the lead agent (U.S. Army HSC 1993).

There is no legal requirement for CHAMPUS beneficiaries to use the direct care system for outpatient care. By law, they can pick any CHAMPUS provider for most outpatient services. Currently, non-availability statements (NAS) serve as the mechanism to control beneficiaries' access to mostly civilian inpatient services. For outpatient services, only obstetrics and same day surgery require a statement of non-availability prior to CHAMPUS covering the civilian provider's bill.

Critical success factors to control costs and increase access to the military health care system are: to recapture beneficiaries who presently use CHAMPUS, provide incentives

to entice beneficiaries to make military MTFs their first choice for primary care, and to provide direct primary care at a lower cost than CHAMPUS (U.S. Army HSC 1993).

Moncrief Army Community Hospital envisions the Family Practice Plus (FPP) Clinic as the beneficiaries' first contact for primary care services. This program entails coordinated, comprehensive, preventive, and patient focused managed care with referral of patients to other specialties or other levels of care as appropriate (Conn 1991).

Table 1.--Current Primary Staff Mix and Number at Moncrief as of 31 January 1994

	Physicians	NPs	PAs	Nurse RN/LPN	Other support staff
FPP	5	1	0	1/6	4
Access	1	0	1	0/4	1
Pediatric	5	1	0	1/6	2
Internal medicine	8	2	0	2/10	4
Gynecology	2	3	0	0/6	1
TOTAL	**21**	**7**	**1**	**4/32**	**12**

Registered nurse (RN,). licensed practical nurse (LPN). nurse practitioner (NP). physician assistant (PA)

Currently, the Access, FPP, Gynecology, Internal Medicine, and Pediatric Clinics provide Moncrief's primary care services. While the FPP clinic's workload is increasing, the other primary care specialty clinics see the majority of outpatients. This is a result of these clinics having the majority of providers. Moncrief has 79 percent of their providers in specialty primary care clinics, which contributes to higher staffing costs. Along with the physicians being over specialized, non-physician providers

(NPPs: physician assistants (PAs), nurse practitioners (NPs), nurse midwives) are also utilized in the specialty clinics at Moncrief (see table 1, page 8).

In addition to over specialization, Moncrief's CHAMPUS visits and costs continue to increase. To recapture CHAMPUS outpatient visits and shift in-house workload to FPP, the appropriate numbers, skill, and mix of staff must be determined. To be cost efficient over the long term, this mix of staff must include the proper mix of physicians, NPPs, and support staff that facilitate cost containment, while promoting delivery of continuously improving quality care.

Statement of the Problem

Determine the most cost efficient and clinically acceptable primary care staffing model for Moncrief Army Community Hospital.

Literature Review

Efficiency and Effectiveness

There are many external variables that enhance or constrain the provider's basic efficiency. Efficiency requires making the best use of limited resources. Providing patient care at the optimal levels of expertise and at a cost necessary to provide an effective outcome is a critical aspect regarding keeping costs under control.

Dr. Jacobs, the Physician In Charge (PIC) at Kaiser Permanente in Atlanta, explains the differences in measuring productivity between systems based on fee-for-service (FFS) and capitation. Under FFS productivity is proportional to the dollars generated per hour. The more patients a provider can see in an hour the more efficient. Under capitation productivity is proportional to the dollars spent per total membership. Individual provider productivity is measured by the number of dollars needed to care for that provider's defined membership (Jacobs 1986).

The more dollars per member that an organization spends with the same outcome, the less productive the organization would be. The cost to the organization of a provider caring for a given population is more relevant under capitation than simply how many slots are open or overloaded on a schedule. If a provider is slow, tends to have a high visit utilization rate ("churning"), and thus will care for a smaller patient panel, organizations should consider paying this provider less (Jacobs 1986).

The goal of managed care organizations is to keep the member healthy, happy, and out of the facility (decrease utilization). At the same time, a provider is efficient if he can see several patients quickly (increase utilization). The dilemma found in the above statements redirects how a capitated system focuses on efficiency. Managed care focuses on parameters such as provider compensation,

resource utilization, member satisfaction, intense outpatient quality of care audits, and not solely on the basis of how full a schedule is (Jacobs 1986).

To deliver more cost-effective care and needed primary care services, many physician organizations are turning to expanded use of physician extenders (or NPPs). Managed care organizations and communities at large are accepting the primary care provided by NPPs (Stallmeyer 1993). In the South Carolina Hospital Association's (SCHA) Strategies for State Health Care Reform publication, the use of mid-level practitioners (NPs, PAs, and certified nurse midwives) is encouraged to enhance access to care and improve the cost-efficiency of that care. This also allows physicians more time to provide care that mid-level practitioners cannot provide (SCHA 1993).

The productivity of NPs and PAs depends on many factors including practice type, practice setting, case mix, how long the NPs or PAs have been practicing, practice regulations, and how much autonomy the NPs or PAs have. There is a paucity of studies that demonstrate or document the productivity and effectiveness of NPs and PAs as autonomous practitioners (OTA 1986).

To properly evaluate the productivity of PAs and NPs, many of the above and other variables should be accounted for while looking at the unique effect of the variable being measured. Studies have attempted to capture provider

productivity, but have had difficulty evaluating productivity with precision. Other variables that are hard to account for regarding efficiency and effectiveness of care are the medical sea of uncertainty, difference in patient morbidity, wide demographic range of patients seen, and site specific circumstance (number of treatment rooms, size of treatment rooms, support staff, automation, etc.) surrounding the delivery of medical care (Hooker 1993). Operational problems, medical record availability, organizational complexity, and financial issues undoubtedly plague many outpatient facilities. Thus, some caution exists as to estimates of productivity that are used in staffing models (Hooker 1993).

Quality is even harder to measure than efficiency. Measuring quality of care is an inexact science since quality encompasses both tangible and intangible components. Tangible measures, such as the process of care employed and the clinical outcome of the treatment provided, allow a basic evaluation of quality. Patient satisfaction and other tangible aspects of quality are also important in assessing the overall quality of care provided (Bristow 1993).

The Office of Technology Assessment's (OTA) Health Technology Case Study 37 mentions common methodological problems that affect most studies concerning quality of care provided by physicians, NPs, and PAs. Some of these problems include using small samples, focusing on short term

outcomes, using non-randomized study populations, applying single evaluation criteria, using incomplete and nonstandard medical records data, and choosing non-representative samples or sites (OTA 1986).

The quality of care provided by NPs and PAs for ambulatory care settings has been documented in a variety of settings with favorable results. The weight of evidence shows that the health care provided by these practitioners is equivalent in quality to comparable services provided by physicians (OTA 1986).

Corporate America is flexing its muscle and demanding health care cost containment to include knowing the relative value of what they are buying. This gets at the issue of placing incentives upon the health care providers to demonstrate and quantify the value of their services. Value is providing quality outcomes at the lowest cost (Nash 1991).

Various parties are looking to cut military expenses as they aggressively pursue a peace dividend. Shedding bureaucracy, waste, and looking at cost effective ways to provide care are critical to access, quality, and cost of military medicine (U.S. Army HSC 1993).

Family Practice Physicians

Policy makers are now putting emphasis on enticing more doctors to practice primary care medicine. The theory is that primary practitioners are the gatekeepers who guide and

influence patients to the appropriate level of services. Primary care providers can diagnose and treat most conditions sooner and keep costs down, because of less hospitalization and specialization (Kent 1993).

One major problem is that the United States does not have an adequate supply of primary care providers to meet current demand. This will most likely be intensified in the near future as the demand for managed care grows. Current financial incentives have led too many young doctors to choose specialty practices versus primary care. The result is a shortage of primary care physicians in almost every community and an inequitable distribution of all physicians.

Estimates indicate that it will take America until the year 2040 to have enough primary care physicians to accommodate the needs of our nation's population. There are just over 55,000 primary care physicians practicing in the United States with a projection of 250,000 needed to adequately provide universal care to all Americans (see table 2, page 15). At best the medical profession will provide 2,400 primary care physicians a year. This makes obtaining a family practice physician very difficult and will result in a rapid increase in their salary negating some of the cost efficiency currently associated with their care (Danaho 1993).

Shortages are even more critical in rural areas where salaries are lower for physicians as a result of a high

proportion of Medicaid, Medicare, and indigent population in these areas. In South Carolina, the federal government has designated 41 of 46 counties as Health Professional Shortage Areas for primary care (SCHA 1993).

Research indicates a positive relationship between the availability of primary care providers and good health. Hawaii has the highest proportion of primary care physicians to population and guarantees its citizens access to basic health services. As would be expected, Hawaii traditionally ranks among the healthiest in the nation, while South Carolina ranks among the highest for poor health indicators (SCHA 1993).

This inequitable distribution of physicians is not just a South Carolina issue. Beverly Hills, California has one general internist for every 566 residents. Five miles away, South Los Angeles has one primary care doctor for every 19,422 residents (Kent 1993).

Table 2.--Physician Characteristics and Distribution in the United States

YEAR	FP	Int med	OB/Gyn	Ped	Total phys
1970	0	40,153	18,876	18,332	334,028
1975	12,183	52,615	21,731	22,192	393,742
1980	27,530	70,013	26,305	28,803	467,679
1985	40,021	88,862	30,867	36,026	552,716
1988	44,944	94,674	32,278	38,609	585,597
1990	47,639	98,349	33,697	40,893	615,421
1992	50,969	109,017	35,173	44,881	653,062

The literature suggests that in an extensive system that attempts to manage health care resources, primary care providers will be in higher demand than was estimated by the national Graduate Medical Education National Advisory Committee (GMENAC) projections (Mulhausen and McGee 1989). In the latest survey by the Group Health Association of America (GHAA), 73 percent of HMOs mentioned having difficulty recruiting primary care physicians. If 80 percent of medical students continue to choose specialties, recruiting primary care providers will hinder national efforts to expand care, improve health care, and control costs (Kent 1993).

Family Practice Physician Practice Patterns

Family practice offers a broad range of medical services to patients of all ages in diverse locations. Family practice physicians are trained to manage the majority of outpatient problems. This type of medical care delivery usually involves the initial contact of the patient with the health care system. It is comprehensive, individualized, accessible, high in quality, and patient oriented. Family practice integrates knowledge of the medical, biological, physical, social, psychological, and behavioral sciences (Conn 1991).

Major William F. Miser, a family practice physician, kept copious records for over three years on his experience in providing primary care at Fort Sill, Oklahoma, for 7,895

outpatient visits, representing 3,665 patients from 2,292 families. A meaningful part of the study would have been how many of these visits required a referral to a specialist of some kind, but it was not part of his study. Results included an average patient visit of 2.2 per year, with a range of 1 to 41 visits per patient. The average number of outpatients seen each week by this one physician was 111. The mean age of the patient population was 29.7 years, with a range of 3 days to 91 years. An average of 1.7 problems per patient encounter occurred with 117 diagnosis clusters, which had a recorded frequency of greater than 0.1 percent (Miser 1992).

This study validated past research that indicated that family physicians care for all age groups and treat a broad range of diseases. It also found that the patient population mix, the disease incidence in the community, and the relative supply of specialists influence the diagnostic content of family practice (Miser 1992). Other primary care providers limit the scope of practice by specializing in age or sex. A family practice physician is trained to see a wide range of patients versus an internist, pediatrician, or gynecologist.

It is estimated that 80 percent of contacts that patients have with physicians could be effectively managed by primary care physicians and at least 70 percent by physician assistants (Oliver 1993). Dr. Jacobs, from

Atlanta's Kaiser Permanente, stated that their family practice physicians, nurse practitioners, and physician assistants almost never refer patients to a pediatrician, internist, or obstetrician/gynecologist unless certain procedures or hospital policy requires it (Jacobs 1993). Primary care providers received 6.2 percent of their patient visits from referrals from other providers (NCHS 1993). One could infer from this number that 93.8 percent of ambulatory care visits could be seen by a family practice physician without having to refer the patient to an internist, pediatrician, or gynecologist. Literature regarding what percentage of visits occurring to other specialties in ambulatory care could be seen by a family practice physician, nurse practitioner, or physician assistant indicates a range from 80 to 90 percent (OTA 1986)(Osterweis and Garfinkel 1993)(Oliver 1993)(Council on Graduate Medical Education 1992)(Poirer 1984)(McGrath 1990)(NCHS 1993).

Nurse Practitioners and Physician Assistants

Approximately 20,250 NPs currently work in primary care in the United States. NPs mainly practice in internal medicine, pediatrics, women's health, student health, and geriatrics (Cawley 1993). Nearly 87 percent of PAs practice in some type of primary care, but practice trends are following physicians in moving away from primary care and choosing specialty and acute care roles instead. In 1992, 28,000 PAs were practicing with 6 percent serving in the

military, 7.2 percent in HMOs, and 30.9 percent serving in a hospital setting. Only 32 percent of PAs are in family practice (Cawley 1993).

A study of physicians and non-physicians in 16 ambulatory care practices analyzed performance quality based on gender and professional role of the provider. An unexpected result of superior performance by non-physicians over physicians occurred in this study. For well-care tasks, this study found no significant difference between care given among physicians, residents, or non-physician providers; except for cancer screening where non-physicians performed worse than staff physicians. For ill-care tasks, no significant difference existed except in two cases where non-physician's performance was better than both the staff and resident physicians. (Hall et al. 1990).

Hall's et al. study found that in 36 percent of the patient cases the non-physician obtained consultation from a physician. This percentage is consistent with other research (Hall et al. 1990)(Weiner et al. 1987). This study measured the difference in care given between a non-physician who sought consultation for more of their cases against those that consulted less frequently. For no task was there any significant difference in care provided (Hall et al. 1990).

Nurse Practitioners and Physician Assistant Utilization

In determining the cost-effectiveness of NPs, it was estimated that 50 to 90 percent of the primary care provided by physicians could be provided by NPs. The Poirier study derived a substitution ratio of 0.63, which determined that one NP could do 63 percent of the work of one physician (Poirer 1984). The studies examined by the OTA for Health Technology Case Study 37 ranged from 50 to 90 percent regarding tasks normally performed by primary care physicians that could be provided by NPs and PAs.

Delphi studies using physicians indicated that physicians felt that they could only delegate 28.5 to 46 percent of tasks to NPs and PAs, which physicians felt they could handle safely. When asked why, the most common responses were that complex cases would be too demanding, and that they felt patients preferred to receive care from physicians (OTA 1986).

Substitute Resolution 110 (A-92) called for the American Medical Association (AMA) to study and report on quality and other issues related to the delivery of care by NPPs. The conclusion of this study was that it is not possible or credible to argue that NPPs in independent practice would be able to provide either a similar range of medical care as a physician or higher quality of care than NPPs supervised by physicians. However, the AMA's believes that it is irrational to jeopardize patient safety or quality of medical care by allowing unsupervised NPP

practice. The AMA stresses throughout their response that quality medical care requires a physician be responsible for the overall care of each and every patient. This is due to the wide disparity in the education's of the different care givers (Bristow 1993).

In talking to Dr. Jacobs from Kaiser and Rick Givens from Medical Group Administration, both indicated that there is little to no difference in how they utilize a PA and NP for family practice. Research suggests those health care organizations employing a proper mix of physician and non-physician providers may be more effective in delivering primary care, while at the same time achieving greater cost savings than those employing older forms of practice arrangements (Weiner, Steinwachs, and Williamson 1986).

PAs practice in a fashion similar to that of primary care physicians in terms of their clinical behaviors (Oliver 1993). Indicators of patient satisfaction, communication skills, and patient education relate more with NPs than PAs or physicians (Hall et al. 1990). The most significant difference between PAs and NPs is not the skills they learn but the general orientation or socialization toward health care and the intensity of the desire for independent practice. When working in the same patient settings, PAs and NPs generally have the same job descriptions and perform similar roles. Evaluations of the care provided by NPs and PAs are uniformly positive, which suggests that quality and

outcomes are equivalent to those of physicians (Osterweis and Garfinkel 1993).

The conclusion of the OTA study indicates that the abilities and cost-effectiveness of NPs and PAs raise a question as to why their ranks have not grown and diffused to a greater extent. Unless barriers are altered, the potential savings from a greater use of NPs and PAs will most likely remain unexplored (OTA 1986).

Support Staff

Because primary care is highly labor intensive, determining support staff is critically important to quality, access, and costs. Savings can occur from increasing the volume of patients seen by a provider as a result of additional support staff or from decreasing staff that do not contribute to any additional quality outcome or increase in provider efficiency (Katz 1983).

Studies that look at the impact of non-provider staffing upon efficiency and effectiveness concerning primary care clinics are currently very scarce. Many numbers associated with support staff ratios abound in the literature, but most often without any explanation of the skills and positions reflected by these numbers.

Current literature did not provide one best ratio for determining support staff, especially for direct support staff in the clinic. However, a direct correlation to quality and productivity associated with the care provided

in a clinic does relate to the amount and performance of support staff available to assist providers (Jacobs 1993) (Borfitz 1993) (Way et al. 1992) (James and Williams 1990) (Lashlee et al. 1990).

Staffing Models for Ambulatory Care

Physician Requirement Methodologies

Methodologies for determining staffing number and mix for outpatient services are as complex as they are controversial. With various efforts to estimate the health manpower required to provide high quality health care, no one model or methodology has risen as the industry standard (Weiner et al. 1987). This is especially true when determining the physician specialty mix and the number, role, and needs of NPPs (Hooker 1993).

Controversy has existed since 1920 over how to determine physician supply needs. This occurred when the Committee on the Costs of Medical Care (CCMC) wrestled with the issue of whether or not technical standards for the need for medical care could determine physician supply needs independent of an economic analysis of the demand for that care (Weiner et al. 1987).

The CCMC eventually adopted an approach that projected physician needs on the basis of professional judgments. This approach, known as the Lee-Jones Model, would use physician estimates on the amount and type of medical staff required to meet a given population's disease prevalence.

This approach and updated versions developed a disparity of physician requirement estimates to actual patient needs that many considered reflected physicians' perceptions rather than patients' needs or desires (Weiner et al. 1987).

Medical staffing models require several assumptions to determine what data to use. Some of the important areas requiring such assumptions are: population estimates, unique population characteristics, available man hours, weeks worked in a year, projected patient visits, and capability and practice behaviors of providers.

Numerous models have arisen since the Lee-Jones Model. Two of the most prevalent in the literature are a need's model developed by GMENAC (OTA 1980) and a demand model developed by Simone Tseng, a staff specialist of the American Hospital Association (Tseng 1983).

Johns Hopkins University used the GMENAC Model in 1982 to assess Pediatric requirements for three HMOs. Their study formed a Delphi panel from among these three HMOs. After gathering the data, they measured the difference between empirical practice data, normative Delphi panel data, and GMENAC data from each of the three HMOs. One of the biggest implications of this study resulted from a question asked the Delphi panel. The question dealt with what proportion of visits they expected to delegate to an NPP per episode of care (Weiner et al. 1987).

Findings from other studies on need-based models, which require heavy reliance on expert judgment, suggested that physicians believe tasks can be performed by NPs and PAs at a range from 28.5 percent to 46 percent, where actual data suggests a range of tasks actually performed by NPs and PAs range from 70 to 90 percent (OTA 1986). In contrast, the Weiner et al. study suggested delegation rates to NPPs at substantially higher than either their actual practice patterns or those suggested by the national GMENAC panel (Weiner et al. 1987).

One of the key implications of the Weiner et al. study was that by varying the national usage rate of NPPs, observed in one of the HMOs in 1982, the country's requirement for pediatricians would change dramatically. If utilization rates from that HMO (64 percent) were the norm, pediatrician requirements could drop as much as 40 percent. This suggests that future changes in usage of NPPs could have a consequential impact on future needs for primary care physicians. In addition, use of NPPs could help compensate for relative shortages or excesses of physicians without adversely effecting access and utilization of care (Weiner et al. 1987).

The same group from Johns Hopkins University presented another study, which looked at the implications of using NPPs upon future US health manpower needs. This study found in 1982 that, in managed care organizations, the concern and

role of NPPs were clearly no longer issues. Instead, the limits on NPP involvement appear to relate to considerations of costs, availability, and the increasing numbers of physicians competing for similar opportunities (Weiner et al. 1986).

According to GMENAC, family practice would require 1 family practitioner per 4000 population served. Consequently, the provider requirement for Moncrief's Family Practice Plus Clinic would be 10.8 providers (43,109 ÷ 4,000 = 10.8)(Medical Staff Development 1993).

American Hospital Association (AMA) Demand Analysis Model

The AMA uses a demand based approach to determine physician requirements. The key factors in using this model are the service area population, physician supply, physician use rates, and annual physician productivity rates. To determine the current-year demand, acquiring the best possible estimates for these four factors is crucial in achieving a satisfactory result (Tseng 1983).

The current year physician demand uses a five step process to determine physician requirements. The first step is to estimate the service area population. In using this model, one should use the smallest geographic unit for which reliable population estimates are available. Current year age and sex-specific population projections work best in this model, since usage will fluctuate for both the quantity and mix of services demanded (Tseng 1983).

Determination of physician use rates for visits per person per year is the second step of this model. Because of the expense of designing a valid local survey to determine the actual service area use rates, local and national survey measures of the utilization of physician services must often serve as proxy estimates. Selection of use rates for a particular population requires a subjective decision from the available survey statistics based on complicit as well as implicit assumptions about that particular service population. Psycho-social characteristics, attitudes toward seeking medical care and toward self-care, and the lifestyles of the actual population profoundly effect the utilization of ambulatory care services (Tseng 1983).

Step three is an estimation of population-based demand for visits by age, sex and physician specialty. To obtain this number, physician use rates are applied to appropriate age-specific and sex-specific population estimates (Step 1 X Step 2 = Step 3)(Tseng 1983).

Determination of annual physician productivity rates by physician specialty is step four. The average number of visits per year provided by individual physicians, by specialty, is estimated by multiplying estimates of the average visits per physician per week by the average weeks worked per year for that particular specialty. Data should be obtained from sources that best reflect the hospital

based ambulatory setting. The organization's ambulatory care setting must be studied to ensure that selected or surveyed physician productivity rates reflect the local conditions (Tseng 1983).

The last step estimates the population demand for physicians by physician specialty. To obtain this number, total physician visits required to meet service area demand by specialty is divided by annual productivity rate by specialty (Step 3 ÷ Step 4 = Step 5)(Tseng 1983).

To determine support staff requirements, the AMA Model uses a table from Heistand, D.L. Health Manpower Issues in Primary Care to derive support staff relative to required physicians. The approach from Heistand reduces physician requirements by one-half for every PA and NP added after using the total physician requirement. For example, 20 physician requirements would equate to 1 PA and 4 NPs. The addition of 5 non-physician providers would reduce physicians by 2.5 to 17.5 physician requirements (Katz 1983).

Military Health Care Manpower Models Not Used

The military attempted numerous medical staffing models, especially during the past four years, to determine optimal physician (Medical Corps) distribution. With the movement towards managed care, traditional manpower measurement of needs has lost some command emphasis, as capitated budgets now drive manpower needs, instead of the

workload based models of the past. Local commanders are now faced with decisions regarding how best to staff their facilities, given the financial consequences associated with those staffing decisions.

As a result, the Medical Corps Optimization Study (MCO)(James and Williams 1990) and the Joint Healthcare Manpower Standards (JHMS)(DOD 6025.12-STD) have lost the command attention necessary, not only to reach fruition, but to eventually implement their findings. Since both of these studies are incomplete, they were not used in this Graduate Management Project (GMP). In order to use either of these models, too many assumptions would have been necessary to determine full staffing requirements for Moncrief's primary care. Some of the pertinent information gleaned from these studies are noted below.

Joint Healthcare Manpower Standards

The Office of the Assistant Secretary of Defense for Health Affairs (OASD(HA)) developed Joint Healthcare Manpower Standards to ensure that peacetime staffing of the Military Health Services System (MHSS) provides quality medical care in a productive environment. This manual did not provide any guidelines pertinent to family practice physicians. For ambulatory care, nurse practitioner requirements were mentioned once in the internal medicine physician calculation. Pending validation of performance level, a nurse practitioner could be substituted for an

internist according to projected patient visits (see table 3)(DOD 6025.12-STD 1989).

Table 3.--Substitution of Nurse Practitioners for Internal Medicine

	Patient visits			
	325 - 450	451 - 725	726 - 1000	1000+
Nurse practitioner	1	2	3	4

Source from OASD(HA)

The Medical Corps Optimization Study

The Medical Corps Optimization Study (MCO) made assumptions based on several sources. Data obtained from a 1989 Government Accounting Office (GAO) survey of 1,500 military physicians within DOD found that Army physicians average 54 hours per week of patient care. To project visit rate data per category of beneficiary, MCO obtained its information from the 1984 RAND Study, Health Care in the Military: Feasibility and Desirability of a Health Enrollment System. The RAND study found the active duty outpatient visit rate to be 9.6 visits per person per year; 7.8 for active duty dependents; and 4.5 for retirees, survivors, and dependents. The MCO study also used recorded data that included actual outpatient visits and CHAMPUS data totaling 7.8 visits per beneficiary.

When determining usage of CHAMPUS, MCO referred to the report of the Congressional Budget Office Reforming the Military Health Care System, January 1988. In this

Congressional study, it found 10 percent of Active-duty families inside catchment areas would use CHAMPUS, compared to 30 to 36 percent for all others. Outside catchment areas, 55 percent of Active-duty families used civilian health care providers, compared to 53 to 85 percent for all others.

In MCO's phase I, the total projected outpatient visit rate, to include CHAMPUS, was 7.8 visits per beneficiary. The MCO study determined physician need based upon the total number of visits projected per specialty. Estimates from the study determined that family practice physicians could see 140 patients per week and work 46 weeks per year (James and Williams 1990).

The MCO study had numerous charts and projections that came from different sources with no instructions specifying which figures to use in deriving staffing requirements. This leaves the reader confused and required to make numerous assumptions. Unfortunately, Phase II of the MCO study was not finished. Because of the confusion surrounding this study, this GMP did not attempt to use the MCO study to project Moncrief's primary care staffing requirements.

A major weakness in both the MCO Model and the AMA Model is the need for an accurate estimation of the population. For Kaiser and other managed care organizations that know their member population and demographics, demand-

based models are adequate. Determining the military's catchment area beneficiary population is currently very complex and controversial.

Table 4.--Moncrief's Catchment Area Population Estimates

	FGL	IPP	RAPS	DMIS
Active duty (AD)	13,299	13,471	10,399	12,699
AD family member	15,379	11,284	11,291	12,262
Retired (Ret.)	9,584	21,397	12,298	9,062
Ret. family member	12,101	47,076	11,154	12,000
Survivors	2,216	*	2,218	2,252
Total	**52,579**	**93,228**	**47,360**	**48,275**

* Data not reported.

Data obtained from HSC's Funding Guidance Letter (FGL), Installation Population Profile (IPP), Resource Analysis and Planning System (RAPS), and Defense Medical Information System (DMIS)

The current population used to determine capitated funding requirements is found in the FGL. The installation Population Profile (IPP) for FY93 reflects the installation's estimate for personnel supported by the installation. This estimate generally tends to be high. RAPS projects the size and composition of Military Health Service System (MHSS) beneficiary populations, by various geographic distinctions, for FY91 through FY99. These projections are based on counts of medically eligible beneficiaries enrolled in the Defense Enrollment Eligibility Reporting System (DEERS) as of 30 September 1990. Base year (FY90) population estimates in RAPS are identical to those in DMIS and Retrospective Case Mix Analysis System for an Open System Environment (RCMAS-OSE). RAPS population projections are calculated using the total service

Preparation for Overseas Movement (POM) active duty end strength projections and projected estimates of retirees by age group, obtained from the Office of the Assistant Secretary of Defense (Health Affairs), and rates of paid retirees, as reported by the Office of the DOD Actuary, adjusted for regional migration patterns computed from historical DEERS data (Manpower Team Presentation 1993).

Full Time Requirement Utilization Model (FTRUM)

The Health Care Management Support Engineering Activity (HCMEA) developed the Full Time Requirement Utilization Model (FTRUM) as an alternative to estimate staffing requirements and initiatives in a capitated budget and managed care environment. This model operates when known inputs regarding patient visits, occupied bed day numbers, available man-hours, and site unique factors are placed into a Lotus 123 spreadsheet model. The model determines physician staffing relative to the number of monthly visits placed in the model. FTRUM determines support staff per physician specialty as a ratio to the number of providers earned (Manpower Team presentation 1993).

The Manpower Management Support Team analyzed reported 1992 Medical Expense and Performance Reporting System (MEPRS) data from all Health Services Command Medical Treatment Facilities and eliminated data that was obviously insufficient or questionable. It uses a linear regression of man hours to total visits, to establish the average

number of man-hours expended by each specialty on each category of work. The designers (HCMEA) of this model discarded equation data that fell outside two standard deviations and recalculated the linear regression equation to arrive at a new line of best fit. As a result, the model's benchmark of efficiency is defined as one standard deviation below the line of best fit after discarded outliers (Manpower Team presentation 1993).

Gateway To Care Manpower Staffing Assessment Model (GTC)

Actual clinic visits from FY90 MEPRS data from 11 GTC sites had an average ratio of 3.7 visits per year per CHAMPUS eligible member and 4.7 visits per year per active duty member. To determine total visits, this model multiplies the member population of each age group by the AMA's national average patient clinic visit per year 1989.

The staffing ratio equates to 4.4 full time requirements (FTRs) per 1,566 CHAMPUS eligibles and per 1,253 active duty members. Of the 4.4 FTRs, 22.72 percent are providers, 25 percent advice nurses, 18.18 percent receptionists, and 34.09 percent other. The model determines the number of providers by dividing the total patient visits per month by the provider's efficiency index of 522 patients per month (Manpower Team presentation 1993).

QSB+ Linear Goal Programming Staffing Model (QSB+)

Quantitative Systems for Business Plus (QSB+) is a software package that contains problem-solving algorithms for management sciences. The linear goal program module can solve multiple objectives. An objective can be either maximized or minimized. It uses a multiphase simplex method to lexicographically solve problems with prioritized objectives. The program allows for several variables, constraints, and bounds that are limited by the computer's memory capacity. After QSB+ reaches a solution, it will print out the final solution and the sensitivity analysis (Chang and Sullivan 1991).

Kaiser Permanente's Primary Care Planning Figures

Kaiser has a computer program that helps determine the size and mixture of their Clinical Modules. Though Dr. Jacobs and other Kaiser professionals were very helpful and sent an enormous amount of information, this GMP did not use Kaiser's staffing model as a comparison as a result of not having complete information or access to their computer program. Though this GMP did not use Kaiser as a staffing model, the QSB+ Model used the physician usage, productivity, and support staffing ratios obtained from different Kaiser organizations (see table 9, page 52)(Jacobs 1993)(Hooker 1993)(Givens 1993).

Variables Impacting upon the Study

The AMA Model's 2.7 visits per person per year for ambulatory care, based on the U.S. Bureau of the Census estimates as of July 1,1991 (National Center for Health Statistics 1993) was far lower than DOD ambulatory rates obtained from the 1982 RAND study (RAND 1982). This GMP used the overall outpatient usage rate obtained from the RAND study with the national average use rate of each primary care specialty from the National Center for Health Statistics (NCHS 1993)(see table 12, page 60).

Table 5.--Population, Visits, and Weeks in a Year Used by Each Model

	Population	Visits/WK	Visits/Month	#Wks/Year
CURRENT	52,579	2,062	8,008	46.6
AMA	43,109	3,330	13,125	47.3*
FTRUM	**	**	8,008	*****
GTC	**	**	8,008	*****
QSB+	***	2,062****	***	46.6

* Data reflects weeks per year for family practice physicians. Internist (47.4), Pediatrician (47.2), and Gynecologist (46.9).

** Model derives Full Time Requirement (FTR) on amount of monthly visits (Visits/12 months = 8,008).

*** Model derives FTR on amount of weekly visits (Visits/46.6 weeks).

**** Weekly visits take into account adjustments to assigned man-hours.

***** Calculates adjusted available provider hours per month from 167.3 (family practice 137.0, Internal Medicine 107.5, Pediatrics 136.2, and Gynecology 127.3).

This GMP previously discussed reliability of population data used by the AMA Model. FTRUM and GTC Models derived their regression equations from FY92 MEPRS data. Both of these models used a monthly average of Moncrief's FY93 patient visits to derive FTRs and not the estimated

population. Likewise, the QSB+ Model used Moncrief's FY93 visit data.

Similarly, all of the models arrived at weeks worked in a year close to that of the MCO study. For planning purposes, Kaiser Permanente uses 46.6 weeks worked in a year, which takes into account situations or circumstances that take providers away from direct patient care such as: six week vacation time, sick leave, administrative time, sabbaticals, research, and other leaves or absences. The MCO study used the same rationale to arrive at 46 weeks worked in a year for military providers (James and Williams 1990).

Kaiser calculates the number of available visits per week by adding up 15 minute time slots from 9:00 - 12:30 and from 1:30 - 6:00 = 32 slots multiplied by 5 days, which equals 160 slots. Due to patient visits that exceed the 15 minute planning figure and other reasons that take a provider away from direct patient care, Kaiser uses 120 provider office visits a week as a planning figure. This number is very close to their historical patient visit per provider per week ranging from 104.9 to 112.5 (see table 9 page 52)(Jacobs 1993)(Hooker 1993)(Givens 1993).

Table 6.--Percent Distribution of Office Visits

	1991 US*	Moncrief's FY93	Moncrief's FY93 CHAMPUS	QSB+***
Family practice	41.3	30.0	20.8	86.9
Internal medicine	25.8	28.2	50.5	5.6
Pediatrics	18.7	25.6	8.7	4.4
Gynecology	14.2	16.2	20.0	3.1

* Obtained from 1993 National Center for Health Statistics Advance Data taking only the percentage of visits to these four primary care categories.

** Incorporated numbers from AMA's Center for Health Policy Research and utilization rates by military compiled by MCO study.

*** FPP is projected to see 86.9 percent of Moncrief's FY93 visits that occurred to the other primary care clinics.

The distribution of office visits according to these specialties demonstrates that the majority of office visits, in and out of the military, occur in the general and family practice area. The MCO study took utilization factors from the 1982 RAND study on Feasibility and Desirability of a Health Enrollment System and statistics from the AMA Center for Health Policy Research data for 1988, to develop a projected utilization rate and percentage of visits by ambulatory specialty (James and Williams 1990).

Actual visits reflect Moncrief's FY93 data for each primary care clinic. Actual visit differences regarding internal medicine and family practice, from the national average, may be due to a higher proportion of retirees, higher proportion of internal medicine doctors than family practice at Moncrief and/or due to family practice experiencing implementation difficulties. CHAMPUS visits could reflect some of the same reasons for such a high percentage of visits occurring with internal medicine

physicians. It is difficult to ascertain from current CHAMPUS data sources whether the percentage of internal medicine visits required that level of expertise or if the internal medicine physicians were providing mostly primary care similar to Moncrief's internists.

For this GMP, the FPP Clinic's projected visits were derived by taking Moncrief's FY93 and CHAMPUS visits and multiplying Internal Medicine, Pediatric, and Gynecology Clinics' visits by 86.9 percent and adding these visits to the FPP Clinic. The assumption regarding 86.9 percent came from literature articles (OTA 1986)(Osterweis and Garfinkel 1993)(Oliver 1993)(Council on Graduate Medical Education 1992)(Poirer 1984)(McGrath 1990)(NCHS 1993) that refer to the percentage of contacts patients have with physicians that could be effectively managed by family practice physicians ranging from 80.0 to 93.8 percent. Therefore, this GMP took the median 86.9 percent to project visits from the other primary specialty care providers that could effectively be managed by family practice physicians.

Table 7.--Personnel Costs of Providers

	AMA	Kaiser	GS-Pay**	Contract***	MILITARY****
PA	*	$60,800	$52,468	$53,376	$52,198
NP	*	$60,800	$52,468	$53,376	$52,198
Family practice	$102,700	$115,400	$138,925	$132,044	$109,071
Internist	$152,500	$123,400	$138,925	$185,246	$107,071
Pediatrician	$106,500	$122,800	$138,925	$172.550	$104,071
Gynecologist	$207,300	*	$138,925	$190,400	$130,071

* Data not available

** Includes salary plus benefits before taxes.

*** Highest actual contract costs at Moncrief's as of May 1994. Includes salary plus benefits before taxes.

**** Military physician compensation determined by using a major with 8 years of service to include special pay, bonuses, and direct and indirect compensation. Military NPP determined as a captain with 8 years of service to include direct and indirect compensation.

The AMA net income data is from 1991, which could explain why the numbers are lower in some categories. In addition, the AMA numbers do not stipulate whether or not net income includes any type of benefits, bonuses, and continuing education programs. Kaiser Permanente data is from 1992 average compensation to include benefits and budgeted incentive compensation payments. The military Government Service-Pay and Benefits data came from current GS Pay scales, plus an average of 19 percent for the benefit package. Contract costs used by the Civilian Personnel Office at Fort Jackson reflect the most current contract offers for health care providers. This data suggests that the ideal family practice staff would include physicians from the military and NPs and PAs from the civil service (GS).

Purpose and Study Variables

Under capitation, the way in which health care providers use limited medical resources is critical. Achieving competitive costs while at the same time increasing access and quality will require innovative and intelligent strategic decisions.

It is imperative for future viability that hospitals provide cost and operating efficiencies to ambulatory care services whenever possible. This will not only be a requirement for accreditation by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) in the future, but for continued viability as a result of increased competition in the health care industry.

As incentives that reward value increase, health care organizations will need to deliver quality outcomes at competitive prices in order to survive. Strategic planners need to determine provider mixes that provide needed services at low cost, improved performance, and superior quality. A major question for planners is what decision alternative will bring the greatest value to the buyer (Coile 1990).

The ideal concept for Moncrief is to have all FPP providers function as gatekeepers to manage the care of all beneficiaries except basic trainees and temporary duty personnel. Basic trainees and temporary duty personnel will continue to use the traditional Troop Medical Clinic (TMC). The use of all other medical specialties, to include other

primary care specialties (internal medicine, pediatrics, and gynecology), will be on a referral basis from FPP providers.

This GMP will focus on how to determine the most appropriate staffing model for Moncrief's primary care program that will provide the number, mix, and support staff to optimize quality care at an efficient cost. Information from this GMP will assist senior executives regarding their decisions' impact on staffing the FPP Clinic and other primary care specialty clinics and how this will affect cost, access, and quality. This GMP is especially timely, since Moncrief is currently studying how best to provide primary care to its beneficiary population, within an increasingly competitive environment.

The purpose of this GMP is: to look at Moncrief's current staffing mix, number, and costs associated with providing primary care; to compare this with outcomes from other current staffing models to determine optimum personnel requirements; and to recommend the model that provides the most cost efficient staffing that is clinically acceptable.

Physicians, NPs, PAs, and non-provider support staff are the main variables in the staffing models. In constructing a primary care network, carefully choosing the mix and numbers of providers and non-providers is critical for desired efficiency, quality, costs, access, and patient satisfaction.

Crucial data needed to determine the most efficient primary care staff for this GMP include:

1. Moncrief's projected patient visits per week for primary care.

2. Moncrief's patient visits that physicians, NPs, and PAs can see in a week.

3. Percentage of patient visits that could be delegated to an NP or PA.

4. Percentage of visits occurring presently in Moncrief's Pediatric, Internal Medicine, and Gynecology Clinics that could be seen by a family practice physician, NP, and/or PA.

CHAPTER 2

METHOD AND PROCEDURES

The methodology for this GMP compared the manpower costs associated with meeting Moncrief's FY93 and CHAMPUS primary care patient visits using the following:

1. Moncrief's FY93 average and current primary care staffing.

2. American Hospital Association's (AMA) projected staffing mix using a community demand analysis for hospital ambulatory care services.

3. HCMEA's Full Time Requirement Utilization Model (FTRUM)

4. Gateway To Care (GTC) Manpower Staffing Assessment Model.

5. Linear Goal Programming's QSB+ Staffing Model (QSB+), which calculates a primary care staffing mix with a managed care family practice emphasis.

Phase I

Each model was compared by the number, mix, and costs associated with staffing FPP and the other primary care specialties (Internal Medicine, Gynecology, and Pediatric Clinics). This evaluation used equivalent data where

appropriate to allow for a fair comparison of each model's results.

When data was found to be reliable (i.e. that different studies, research organizations, and statistical publications reported the same rate or variable characteristics), it was used for the appropriate model. For data used by each model, an average was taken when several studies reported different results. Averages from different sources are explained throughout this GMP based on the methodology used for deriving the data for that particular model.

To determine content validity of data used in this GMP, expert opinion was sought from physicians (subject matter experts) from each primary care specialty (family practice, gynecology, internal medicine, and pediatrics). Expert opinion was also sought from nurse practitioners, physician assistants, and health care administrators. These subject matter experts responded to the appropriateness and clinical soundness of methodologies and assumptions used in this GMP.

Common Data

Estimated catchment population used for this GMP came from HSC's FY93 Funding Guidance Letter. Review of the literature revealed several population estimates for Moncrief's catchment area. HSC based Moncrief's FY93 capitated budget on 52,579. The AMA Model is the only model that used the population estimate to determine the projected

patient visit for each particular primary care clinic. Basic trainees are not seen in any of the four primary care clinics; as a result, this GMP only used the 3,829 active duty soldiers assigned to Fort Jackson to arrive at the 43,109 total population used in the AMA Model. The AMA Model also utilized Moncrief's FY93 patient visit data used in all of the other models resulting in two AMA Model staffing requirements for comparison purposes.

To analyze professional costs of physicians, NPs, and PAs, each model used the top pay range plus benefits from actual civilian personnel job announcements (see appendix B). If an announcement was not made, HSC's FY93 Operation Maintenance Army (OMA) Funding Guidance Letter was used. For an average cost of support staff, each model used $32,380 from the Military Personnel (MILPERS) expenses used in President Clinton's FY94 budget (HQ USAF/SGH 1993).

Current Staffing at MACH

Moncrief's Resource Management Division's Workcenter Overview for FY93 reported the average physicians, NPPs, and support staff for each primary care clinic. Moncrief's actual total visits per clinic were divided by 46.6 weeks to obtain Moncrief's FY93 weekly average patient visits per clinic. Moncrief's weekly average patient visits per clinic were then divided by FY93's average number of providers per clinic to obtain Moncrief's FY93 average weekly visits per

provider. Current staffing of each clinic reflected Moncrief's actual staff on hand as of January 1994.

AMA -- Demand Analysis Model

Current-Year Demand Analysis used by the AMA Model for hospital ambulatory care services is a five step process:

Step 1: Obtain population estimates for service area.

Step 2: Determine physician use rates.

Step 3: Estimate population-based demand for visits by physician specialty (Step 1 X Step 2 = Step 3).

Step 4: Determine the annual physician productivity rates by physician specialty.

Step 5. Estimate population-based demand for physicians by specialty (Step 3 ÷ Step 4 = Step 5).

In following the AMA Model's 5 Step process, the applicable data used at each step were as follows:

(Step 1) Catchment population of 43,109 from FY93 Funding Guidance Letter was used as the population estimate for Moncrief's catchment area.

(Step 2) Number of visits per person per year (2.7) for ambulatory care from the National Center for Health Statistics was too low for military visits (National Center for Health Statistics 1993). As a result, the AMA Model used a weighted average of 6.1 primary care visits from the 1982 RAND study (see table 8, page 48).

Table 8.--Patient Visits Used in AMA-Demand Analysis Model

Status	Population	Percent of population	RAND physician usage rate	Weighted average usage rate
Active duty	3,829	8.8	9.6	0.9
Family member-AD	15,379	35.7	7.8	2.8
Ret./FM-Ret./Surv.	23,901	55.5	4.5	2.5
Total	43,109			6.1

This number was then multiplied by the annual rate of office visits by specialty for primary care: family practice 24.6 percent, internal medicine 15.4 percent, pediatrics 11.1 percent, and gynecology 8.5 percent (NCHS 1993). This resulted in the usage rate used in Step 2 (see table 12, page 60).

(Step 3) Total physician visits required to meet service area demand was obtained by multiplying Step 1 by Step 2.

(Step 4) Annual physician productivity rate per specialty was obtained by multiplying the average total office visits per week times the average weeks worked in a year (AMA 1991)(see table 5, page 36).

(Step 5) Total physicians required to meet service area demand by specialty was obtained by dividing Step 3 by Step 4.

To obtain the support staff requirement, this model multiplied Step 5 by the average non-provider ratio per provider (1.8). This ratio resulted from averaging the applicable support staff requirements obtained from the AMA manual's table for projected non-physician staffing (Katz

1983). The support staff ratio included registered nurses (RNs), licensed practical nurses (LPNs), medical aides (MAs), and receptionists.

The AMA Model is the only model that estimated patient usage rates to determine the projected patient visits per year. For a better comparison against other models used in this GMP, the AMA Model used Moncrief's FY93 patient visits in Step 3. This resulted in two AMA projected staffing requirements for FPP and the specialty clinics.

Full Time Requirement Utilization Model (FTRUM)

This model used known patient visits from Moncrief's FY93 patient visits to determine its staffing requirements. FTRUM used a linear regression of man-hours to total visits from data obtained from MEPRS from all HSC hospitals. HCMEA took out of the equation data that fell outside two standard deviations and recalculated the linear regression equation to derive a line of best fit. As a result, efficiency is defined as one standard deviation below the line of best fit derived almost entirely upon total visits and bed days occupied to physician man-hours from several military sites. Important data and utilization criteria for use of this model are as follows:

1. This model only allows changes to work load entries for visits per month, available man-hours, and site unique factors.

2. The only change made to this model for this GMP was the inclusion of Moncrief's FY93 actual average weekly patient visits. Output obtained gave full time requirements (FTR) for providers (physician and physician assistants), nurses (nurse practitioner, clinical, registered nurse), receptionists (administrative, clerical), and other (technicians, volunteers, etc.) (U.S. Army HCMEA 1991).

Gateway To Care Manpower Staffing Assessment Model (GTC)

Similar to the methodology of the previous model, this model focused on primary care functions. The GTC Model derives manpower requirements by multiplying the effective CHAMPUS user population times the CHAMPUS equation coefficient factor. MEPRS data from eleven Gateway To Care sites established the ratios and baseline information necessary to set up the model. The following represents the critical numbers to develop this model:

1. Net available patient visits per provider equals 521.51 per month.

2. Similar to the FTRUM, this model only allows changes to work load entries for visits per month, available man-hours, and site unique factors.

3. GTC Model's manual stated that this model uses a staffing ratio of 4.4 full time equivalent's (FTE) per 1,566 CHAMPUS eligible and 1,253 active duty members. Staffing ratios are 22.73 percent providers, 25 percent advice nurses, 18.18 percent receptionists, and 34.09 other

support. However, the GTC Model's results reflect a support staff ratio of 1.9 when using an NP as an advice nurse and 1.5 when using the NP as a provider.

4. The only change made to this model for this GMP was inputting Moncrief's FY93 actual average weekly patient visits. Output obtained gave FTR for physicians and PAs, NPs and RNs, receptionists (administrative, clerical), and other (technicians, volunteers, etc.)

Linear Goal Programming Model (QSB+)

This program used a multiphase simplex method to solve the problem lexicographically based upon priorities. The first priority was to minimize the objective function of annual provider costs and the second priority was to maximize the objective function of average weekly visits. The number of variables excluding slacks were physicians, NPs, and PAs. The approximate percentage of non-zeros for this model was 5 percent. The constraints placed on the problem were that:

1. The staffing solution needs to have the capability to meet the projected weekly patient visits.

2. The physician solution must be equal to or greater than the highest percentage or number of physicians required by regulation, law, accreditation, professional organizations, or subject matter experts.

3. The PA and NP solution can not exceed the percentage (63 percent) of their patient visits that would

typically require a physician based upon past studies (Poirer 1984)(McGrath 1990).

4. As a result of the unique contribution of both NPPs, the solution will result in a near equal distribution for both when their salaries are the same.

5. Prior to entering Moncrief's FY93 visits into the model, 86.9 percent of the visits that occurred in specialty clinics will be added to FPP.

Personnel cost data used for model comparison (see table 7, page 40) was used for the first prioritized objective function (minimize annual provider cost).

Table 9.--Kaiser Permanente's Family Practice Outpatient Productivity

	FTE	Pt/Hr	Pt/Day	Pt/Week	Pt/Year
MD	59.2	3.10	22.5	112.5	115,342
PA	18.4	2.97	21.5	107.5	39,220
NP	1.6	2.90*¤	20.9*¤	104.9*¤	*

Full-time equivalent (FTE)

* Data not available for family practice.

¤ Data obtained from Medical Group Administration (Rick Givens) and Kaiser Permanente Northwest Region for end of year 31 DEC 92..

The second prioritized objective function (maximize actual weekly visits) was obtained from Kaiser Permanente, Northwest Region, Department of Medical Economics Outpatient Productivity for end of year, 31 December 1992, and Rick Givens, Data Analyst for Medical Group Administration. Data from these agencies was used to arrive at the average number of patients seen per week by a physician, PA, and NP.

Patient visits per week took into consideration time that providers were taken away from direct patient care, such as: six week vacation time, sick leave, administrative time, sabbaticals, research, and other leaves or absences. The difference in time taken away from direct patient care closely resembled guidelines in AR 570-5 (Manpower Staffing Standards System) and AR 351-3 (Professional Education and Training Programs of the Army Medical Department). Therefore, the QSB+ Model used 46.6 weeks, similar to other studies and models used (see table 5, page 36). Along with the AMA Model, the QSB+ Model used visits per week data for primary care specialists that reflect the premise that these physicians will see more acute and chronic patients (see table 31, page 77).

The Health Technology Case Study 37, Nurse Practitioners, Physician Assistants, and Certified Nurse-Midwives: A Policy Analysis, by the Office of Technology Assessment and other studies, found differing results as to the percentage of cases physicians believed they could safely delegate to NPs and PAs. Other studies found that the number of patients, with similar presenting morbidity, seen per hour and per day by NPs, PAs, and physicians in HMO departments of internal medicine and family practice were almost the same (Hooker 1993). The most common ratio at which physicians could delegate primary care patients to NPs or PAs was 80 to 90 percent (McGrath 1990). Similarly, the

literature referred to the substitution ratio of 63 percent, which means that one NP could do 63 percent of the work performed by a physician. Therefore, this model used 63 percent as the substitutable constraint placed on NPs and PAs (Poirer 1984)(McGrath 1990)(Weiner et al. 1987).

South Carolina law stipulates that advanced-practice nurses be officially recognized by the State Board of Nursing and have MD preceptors to practice in an extended role. For "medically delegated acts," NPs must have protocols co-developed, dated, and signed by the MD and NP. The Board of Nursing conducts a random survey of these protocols. They currently have no prescriptive authority, but dialogue is underway between the Board of Nursing and the Board of Medical Examiners to look into this issue (Pearson 1991). Military standards concerning NPs and PAs mention the need to meet validation and performance levels prior to practicing within a clinic (DOD 6025.12-STD 1989). Consequently, there is a requirement to have a physician available for supervision and consultation; the QSB+ Model used a minimum of three physicians for FPP. This number reflects expert opinion regarding the minimum number of physicians required to ensure that one is present in the clinic at all times.

If the cost of employing NPPs were the same, the QSB+ Model would choose PAs over NPs, since PAs, on average, see 2.6 more patients a week than NPs. However, the difference

of approximately 2 patients per week is not significant enough to recommend one over the other. FPP would be better served by the mixture of skills that both of these NPPs bring to the clinical setting. If personnel costs are the same, then the QSB+ Model will split weekly patient visits in half to take advantage of the separate skills and educational backgrounds of the two NPPs (Clawson and Osterweis 1993).

This model used an average of 1.8 support staff for each provider derived from several primary care modules at Kaiser Permanente's Cumberland office for 1993. This number represents only the support staff in the primary care clinic. Support staff numbers used in this model do not reflect other support activities such as lab, radiology, house cleaning, etc. The support staff ratio includes RNs, LPNs, MAs, and receptionists.

Phase II

An observational study was performed to determine how closely actual performance of the NP and family practice physicians in FPP met assumptions used in the staffing models. Data was collected during two weeks in November, one week in December, and one week in January. Data was collected each workday during this period from current FPP providers using a daily data sheet (see appendix B).

These completed data sheets allowed a qualitative comparison on the following:

1. Projected weekly visits handled by physicians and NPs against actual visits per provider per week in FPP.

2. Estimated 63 percent of patient visits that a PA or NP could see independent of a physician against actual visits during sample that required a referral or consultation.

3. Estimated 86.9 percent of visits that a family practice physician could effectively manage without referring to an internist, pediatrician, or gynecologist against actual referrals made to these providers.

During the time of this GMP, the size of FPP restricted the amount of meaningful and significant results available for a scientific analysis of data used for each model. There were only two family practice physicians, one NP, no PAs, and four internal medicine physicians in FPP at the time of this GMP. Measuring each provider's efficiency and effectiveness did provide meaningful qualitative results, but not scientific based validation of data used by each model. The lack of acceptable criterion measures made validating this data difficult.

CHAPTER 3

RESULTS OF STUDY

Phase I Results

Moncrief's FY93 Average & Current Staffing Costs

Moncrief's FY93 total personnel costs were higher than any of the models except the AMA Model. The AMA Model arrived at higher total personnel costs only when it used military utilization rates to determine projected patient visits. When replacing projected visits in the AMA Model with Moncrief's actual FY93 patient visits, the AMA Model's result was far less costly than both Moncrief's FY93 average and current total personnel costs (see tables 10, 11, page 58).

The CHAMPUS costs associated with the professional fees for family practice, internal medicine, pediatrics, and gynecology, added an additional $291,950.85 to Moncrief's FY93 total personnel costs. This increased total personnel costs to $5,197,105.86. This cost places the actual average staffing of primary care at Moncrief during FY93 substantially higher than the other models' staffing costs required to meet Moncrief's FY93 actual and CHAMPUS work load.

Table 10.--Moncrief's FY93 Average Staff

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access	4*	2	1	14	$1,248,776.61
Internal Medicine	7	2	0	14	$1,855,395.72
Pediatrics	4	1	0	10	$1,066,375.67
Gynecology	2	3	0	6	$734,607.01
Totals	**17**	**8**	**1**	**44**	**$4,905,155.01**

Does not include CHAMPUS.

* FPP averaged two family practice physicians. Other physicians in FPP came from the Internal Medicine Department.

Moncrief's Resource Management Division compiled and reported these numbers in their FY93 Workcenter Overview.

Table 11.--Moncrief's Current Staff as of January 1994

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access	6*	1	1	11	$1,416,925.74
Internal Medicine	8	2	0	16	$2,105,202.06
Pediatrics	5	1	0	9	$1,206,645.67
Gynecology	2	3	0	7	$766,887.01
Totals	**15**	**7**	**1**	**43**	**$5,495,660.48**

Does not include CHAMPUS.

* Three of the five physicians in FPP are internists. The Access Clinic utilizes a family practice physician and one PA. FPP multiplied the annual cost per provider times their applicable primary care specialty.

For an equitable comparison against other models, this GMP applied the same cost data used by other staffing models to determine Moncrief's FY93 and current total personnel cost per clinic (see table 7, page 40). Moncrief's FY93 FPP average staffing cost was $104,255.76 greater due to utilizing a higher ratio of internists than family practice physicians. This increased cost is only a prediction, but depicts one reason why Moncrief's FY93 average staffing was more expensive than other staffing arrangements. Moncrief's FY93 average and current staffing results show that 80

percent of the physicians are primary care specialists. Not only are these physicians' salaries more expensive, but they average seeing fewer patients per week than a family practice physician. Provider efficiency is one of the major reasons why the current staffing structure at Moncrief is so costly. This is important since each model determines the requirement for providers on a basis of how many office visits a particular provider can see during a specified period (see table 31, page 77).

AMA-Demand Analysis Model

The AMA-Demand Analysis Model depicts the largest requirement for physician providers. Along with this, the AMA Model's total personnel costs were substantially greater than all of the other models. Although the AMA Model required the most providers, it greatly underutilized NPP, which contributed to the high total personnel costs. Only Moncrief's FY93 average and current staffing costs came close, especially when you consider the cost of CHAMPUS visits.

The primary reason for the excessive cost differential between the AMA Model and the others is that the AMA Model used projected patient visits to determine provider requirements (see table 8, page 48). All other models used Moncrief's actual FY93 patient visits to determine staffing requirements. Moncrief's FY93 actual and CHAMPUS patient visits to primary care clinics were 96,098. The AMA-Demand

Analysis Model's projected visits (see table 12) for these four areas of primary care were 61,406 visits greater.

Table 12.--The 5-Step Process Using the AMA-Demand Analysis Model

	Step 1 Population	Step 2 Usage *	Step 3 Visits	Step 4 Productivity	Step 5 Drs. required	Support staff**
FPP + Access	43,109	1.5	65,010	6,830	9.5	16.9
Internal Medicine	43,109	0.9	40,697	3,394	12.0	21.2
Pediatrics	43,109	0.7	29,334	4,928	6.0	10.5
Gynecology	43,109	0.5	22,463	4,062	5.5	9.8
Totals		**3.6**	**157,504**		**33.0**	**58.4**

* The usage rate was arrived at by using the RAND and NCHS numbers (see table 8, page 48).

** The AMA Model determined support staff using a ratio of 1.8 per physician required.

Table 13.--The AMA-Demand Analysis Model Results

	MD*	NP	PA	Support staff**	Total personnel costs
FPP + Access	8.0	2	1	16.9	$1,980,303.49
Internal Medicine	10.5	2	1	21.2	$2,788,795.46
Pediatrics	5.5	1	1	10.5	$1,334,390.66
Gynecology	5.0	1	1	9.8	$1,327,203.40
Totals	**29.0**	**6**	**4**	**58.4**	**$7,430,693.01**

* The AMA Model reduced the physicians by half the number of NPP determined by the model. For FPP's 9.5 required physicians, the AMA Model suggested 2 NP and 1 PA, which reduced 9.5 physicians to 8.0 (3 * 0.5 = 1.5; 9.5 - 1.5 = 8.0).

** The AMA Model determined support staff using a ratio of 1.8 per physician required.

Table 14.--The 5-Step Process Using the AMA-Demand Analysis Model Substituting Moncrief's FY93 Actual Visits in Step 3

	Step 3 Visits*	Step 4 Productivity	Step 5 Drs. required	Support staff**
FPP + Access	25,881	6,830	3.8	6.7
Internal Medicine	24,289	3,394	7.2	12.7
Pediatrics	22,051	4,928	4.5	7.9
Gynecology	13,974	4,062	3.4	6.1
Totals	**86,195**		**18.9**	**33.4**

* Moncrief's FY93 patient visits used in Step 3. Does not include CHAMPUS visits.

** The AMA Model determined support staff using a ratio of 1.8 per physician required.

Table 15.--The AMA-Demand Analysis Model Results Using Moncrief's FY93 Visits

	MD*	NP	PA	Support staff**	Total personnel costs
FPP + Access	3.3	1	0	6.7	$793,466.43
Internal Medicine	6.2	1	1	12.7	$1,656,181.63
Pediatrics	4.0	1	0	7.9	$994,926.58
Gynecology	2.9	1	0	6.1	$809,838.46
Totals	**16.4**	**4**	**1**	**33.4**	**$4,254,413.10**

Moncrief's FY93 patient visits replaced projected visits in step 3 to arrive at the above figures.

* The AMA Model reduced the physicians by half the number of NPP determined by the model. For FPP's 3.8 required physicians, the AMA Model suggested 1 NP and 0 PA, which reduced 3.8 physicians to 3.3 (1 * 0.5 = 0.5; 3.8 - 0.5 = 3.3).

** The AMA Model determined support staff using a ratio of 1.8 per physician required.

Table 16.--The 5-Step Process Using the AMA-Demand Analysis Model with Moncrief's FY93 and CHAMPUS Actual Visits

	Step 3 Visits*	Step 4 Productivity	Step 5 Drs. required	Support staff**
FPP + Access	27,942	6,830	4.1	7.2
Internal Medicine	29,291	3,394	8.6	15.3
Pediatrics	22,908	4,928	4.7	8.2
Gynecology	15,957	4,062	3.9	7.0
Totals	**96,098**		**21.3**	**37.7**

* Moncrief's FY93 + CHAMPUS patient visits used in Step 3.

** The AMA Model determined support staff using a ratio of 1.8 per physician required.

Table 17.--The AMA-Demand Analysis Model Results Using Moncrief's FY93 + CHAMPUS Visits

	MD*	NP	PA	Support staff**	Total personnel costs
FPP + Access	3.6	1	0	7.2	$858,740.75
Internal Medicine	7.6	1	1	15.3	$2,013,415.46
Pediatrics	4.2	1	0	8.2	$1,034,872.47
Gynecology	3.4	1	0	7.0	$930,694.85
Totals	**18.8**	**4**	**1**	**37.7**	**$4,837,723.53**

Moncrief's FY93 and CHAMPUS patient visits replaced projected visits in step 3 to arrive at the above figures.

* The AMA Model reduced the physicians by half the number of NPP determined by the model. For FPP's 4.1 required physicians, the AMA Model suggested 1 NP and 0 PA, which reduced 4.1 physicians to 3.6 (1 * 0.5 = 0.5; 4.1 - 0.5 = 3.6).

** The AMA Model determined support staff using a ratio of 1.8 per physician required.

Replacing the AMA Model's projected visits in Step 3 with Moncrief's FY93 actual patient visits, significantly reduced the AMA Model's staffing requirement (see tables 14-17, pages 60-61). The reason is that the AMA Model used the national average of visits per provider per week, which is substantially greater than Moncrief's (see table 31, page 77). Making this change also resulted in the AMA Model acquiring the same ratio of specialists to family practice providers that currently exists at Moncrief. This method assumed that Moncrief's visits in FY93 reflected appropriate, efficient, and effective usage of the different primary care specialties.

Even after using actual instead of predicted visits in Step 3, the AMA Model arrived at the highest total personnel costs compared to the other models (see table 15, page 61). However, the AMA Model's total personnel costs were $650,741.91 under that of Moncrief's FY93 average staffing costs (see table 10, page 58).

Full Time Requirement Utilization Model (FTRUM)

FTRUM projected the lowest total number of providers and support staff, yet the second lowest total personnel costs. Only the top 15.9 percent (one standard deviation below line of best fit) of HSC facilities were able to see the same number of patients with equal or fewer providers than the FTRUM's results (see appendix D).

Table 18.--The Full Time Requirement Utilization Model Results

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access	4.5	0	0	8.4	$991,306.48
Internal Medicine	4.2	0	0	8.0	$1,031,543.72
Pediatrics	3.9	0	0	7.0	$904,633.77
Gynecology	2.4	0	0	4.6	$612,809.04
Totals	**15.0**	**0**	**0**	**28.0**	**$3,540,293.01**

Staff and corresponding costs to meet Moncrief's FY93 primary care visits.

Table 19.--The Full Time Requirement Utilization Model Results Adding CHAMPUS Visits

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access	4.9	0	0	9.1	$1,070,112.84
Internal Medicine	5.0	0	0	9.6	$1,243,915.46
Pediatrics	4.1	0	0	7.2	$939,954.35
Gynecology	2.8	0	0	5.3	$699,734.00
Totals	**16.8**	**0**	**0**	**31.2**	**$3,953,716.65**

Staff and corresponding costs to meet Moncrief's FY93 and CHAMPUS primary care visits.

Although the FTRUM had the lowest number of providers, its over specialization and lack of use of NPP increased the total personnel costs. After professional subject matter experts suggested changes to the QSB+ Model's staffing requirements, the FTRUM's total personnel costs became the lowest.

Gateway To Care Manpower Staffing Assessment Model (GTC)

The GTC Model required more staffing than any of the other models. It also has the highest ratio of primary care specialists to family practice providers. The ratio is 76 percent primary care specialists to 24 percent family practice, demonstrating overuse of primary care specialists.

Compared to other models' total personnel costs, the GTC Model falls in the middle. Only Moncrief and the AMA Model arrive at costs higher than the GTC Model.

Table 20.--The Gateway To Care Model Results

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access	4.6	0.8	0.5	9.4	$1,100,735.96
Internal Medicine	4.3	2.2	1.6	11.3	$1,367,513.70
Pediatrics	4.4	1.4	0.8	9.1	$1,157,557.59
Gynecology	2.1	0.5	0.9	5.7	$656,119.04
Totals	**15.4**	**4.9**	**3.8**	**35.5**	**$4,281,926.29**

Staff and corresponding costs to meet Moncrief's FY93 primary care visits.

Table 21.--The Gateway To Care Model Results Adding CHAMPUS Visits

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access	4.9	0.9	0.5	10.1	$1,188,289.20
Internal Medicine	5.2	2.6	2.0	13.6	$1,649,116.32
Pediatrics	4.5	1.4	0.8	9.4	$1,202,220.80
Gynecology	2.3	0.5	1.0	6.3	$729,759.17
Totals	**16.9**	**5.4**	**4.3**	**39.4**	**$4,769,385.49**

Staff and corresponding costs to meet Moncrief's FY93 and CHAMPUS primary care visits.

The literature for the GTC Model does not explain why there is a difference in the support staff ratios used in the actual computer calculation versus the GTC Model's manual. In addition, the program reports the results in a different format than what HCMEA does in the literature. For example, the support staff ratio in the literature is 3.4 per provider. None of the clinics had a final support staff ratio that equated to this 3.4 ratio. Ironically, the ratio used in the computer computation is congruent with

other models' support staff ratios (see table 39, page 87). However, when using an NP as a provider and not as an advice nurse, the support staff ratio falls to 1.5 instead of the 1.9. This is far below any of the other models and consequently results in unreasonable support staff costs (see appendix E).

QSB+ Linear Goal Program Staffing Model (QSB+)

The QSB+ Model had the lowest staffing cost of all staffing models in this GMP. It also had the highest number of family practice providers compared to the other models or Moncrief's FY93 average. This is one of the reasons that this model produced the lowest total personnel costs. It reduced the number of primary care specialists by having FPP providers provide the majority of primary care and act as gatekeepers. As gatekeepers, FPP providers refer patients to specialists on a case by case basis and only those patients who require that level of expertise to receive quality care.

Another reason that this model achieves such a low total personnel cost is that it utilized each level of staff member to their fullest potential. This results in a higher number of NPP and support personnel to augment physicians to allow for a more cost-effective staffing mix.

Table 22.--The QSB+ Model Results

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access	5.5	5.0	5.0	28.4	$2,316,779.04
Internal Medicine	0.9	0	0	1.5	$207,294.03
Pediatrics	0.8	0	0	1.5	$188,104.60
Gynecology	0.4	0	0	0.8	$109,223.39
Totals	**7.6**	**5**	**5**	**32.2**	**$2,821,401.06**

Staff and corresponding costs to meet Moncrief's FY93 primary care visits.

Table 23.--The QSB+ Model Results Adding CHAMPUS Visits

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access	6.2	5.6	5.5	31.2	$2,579,595.23
Internal Medicine	1.0	0	0	1.9	$249,983.51
Pediatrics	0.9	0	0	1.5	$195,415.18
Gynecology	0.5	0	0	0.9	$124,722.89
Totals	**8.6**	**5.6**	**5.5**	**35.5**	**$3,149,716.81**

Staff and corresponding costs to meet Moncrief's FY93 primary care visits.

The literature reported that family practice providers could see up to 86.9 percent of all primary care visits. However, when subject matter experts from each of the primary care specialties and FPP reviewed the QSB+ Model's provider staffing results, all noted the need for more specialty providers. In their opinion, this need is due to issues such as pulling on-call duty, supporting Continuing Medical Education (CME), conducting professional and peer collaboration, and making possible internal peer review.

The subject matter experts agreed upon the minimum physicians' requirement for each of the three specialties (see table 24-25, page 67). This minimum requirement still maintains the premise that Moncrief will utilize these

primary care specialists for consultation and referrals from FPP providers (see appendix F).

Table 24.--The QSB+ Model Results after Subject Matter Experts' Consultation

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access*	5.0	4.5	4.5	25.3	$2,089,329.53
Internal Medicine	3	0	0	5.4	$731,019.42
Pediatrics	2	0	0	3.6	$461,953.60
Gynecology	2	0	0	3.6	$497,653.60
Totals	**12**	**4.5**	**4.5**	**37.9**	**$3,779,956.15**

Staff and corresponding costs to meet Moncrief's FY93 primary care visits.

* The three primary care specialties have the potential to see close to 579 visits a week. QSB+ Model projects only 76 patient visits per week leaving 503 visits. After consultation with SME, FPP visits were reduced by 33 percent of the extra capacity of 503 visits or 165 visits.

Table 25.--The QSB+ Model Results after Subject Matter Experts' Consultation Adding CHAMPUS Visits

	MD	NP	PA	Support staff	Total personnel costs
FPP + Access*	5.6	5.1	5.0	28.5	$2,351,794.23
Internal Medicine	3.0	0	0	5.4	$731,019.42
Pediatrics	2.0	0	0	3.6	$461,953.60
Gynecology	2.0	0	0	3.6	$497,653.60
Totals	**12.6**	**5.1**	**5**	**41.1**	**$4,042,420.85**

Staff and corresponding costs to meet Moncrief's FY93 and CHAMPUS primary care visits.

* The three primary care specialties have the potential to see close to 579 visits a week. QSB+ Model projects only 76 patient visits per week leaving 503 visits. After consultation with SME, FPP visits were reduced by 33 percent of the extra capacity of 503 visits or 165 visits.

As a result of subject matter expert advice, the QSB+ Model's patient visits per week were reduced by 165.2 visits. The expert consensus was that about 33 percent of the extra capacity in specialty care would directly reduce the amount of visits or time required for patient visits in the FPP Clinic. Therefore, this would slightly reduce the number of providers required in the FPP Clinic.

Phase II Results

This study used the provider survey sheet (see appendix B) to provide information allowing a qualitative comparison of the actual performance of FPP's NP and family practice physicians to data used in the staffing models. This also allowed a qualitative measure of the assumptions used in staffing models. The number of providers in the FPP Clinic restricted the amount of meaningful and significant results available for a scientific analysis of data used for each model. There were two family practice physicians, one NP, and no PA in the FPP Clinic. The lack of acceptable criterion measures prohibited validation. An instrument to test construct validity was not possible due to the small sample size of three providers in the FPP Clinic.

For three weeks, the NP kept track of 183 patient visits compared to 64 patient visits seen by the physicians during the same period. The difference is that the physicians kept track for only two days each, while the nurse practitioner kept track for the full three weeks.

Table 26.--Hours that Providers in FPP Spent in the Clinic (per day)

	FPP* (Survey results)	AMA	FTRUM	GTC	QSB+**
Family practice physician	8.0	10.9	8.0	8.0	7.3
Nurse practitioner	7.5	***	8.0	8.0	7.2

* Data unsubstantiated used as a qualitative measure.

** Data obtained from Kaiser Permanente's Northeast Region and used in the QSB+ Model.

*** Data not available for that category.

Table 27.--Family Practice Visits per Provider per Week

	FPP* (Survey results)	AMA	FTRUM	GTC	QSB+**
Family practice physician	80.5	144.4	124.6	118.4	112.5
Nurse practitioner	72.9	***	***	***	104.9

* Data unsubstantiated used as a qualitative measure.

** Data obtained from Kaiser Permanente's Northeast Region and Medical Group Administration. Data used by QSB+ Model.

*** Data not available for that category.

Moncrief's current FPP provider productivity is far below the other models projections. FPP providers spend comparable hours in the clinic, but see far fewer patients. This appears to be an organizational dilemma, since all providers are seeing fewer patients than expected. All models (except the AMA Model) account for non-available time, CME, rest periods, leave, and readiness training. Further research is needed to determine why FPP providers are seeing fewer patients per provider than what is common in the literature.

Table 28.--Percentage of Total Visits NPs Treat Effectively

	Visits seen by physician*	Visits seen by NP**	OTA study***	QSB+****
Family practice physician's opinion	85.9	N/A	28.5 - 46	N/A
FPP's NP actual experience	N/A	99.8	50 - 90	63

Results obtained from survey sheet (see appendix B).

* Actual visits seen by a family practice physician that this physician believed could be treated effectively by an NP.

** Percentage of visits seen by an NP that did not result in consults with a family practice physician.

*** OTA Study #37's findings on the percentage of tasks performed by a physician that an NP could effectively perform.

**** QSB+ projected percentage of tasks performed by a physician that an NP could effectively perform.

The FPP physicians' opinions on the ability of the NP to treat patients effectively were substantially higher than what was found in the literature. This was also true for the visits seen by the NP in the FPP Clinic. The NP currently in FPP has an excellent reputation and is very experienced, which could account for both of these high percentages.

As mentioned in the methodology, this survey tool did not validate data used in the staffing models as a result of the small sample size. The results from this survey indicate that the estimated 63 percent of patient visits that a PA or NP could see independent of a physician may be conservative. However, no inferences can be made using this survey observation of FPP without obtaining a larger sample

size and using sound theoretical and applied research methods.

Table 29.--Percentage of Visits Requiring Consults or Referrals to Other Primary Care Providers

	Consult or referral with family practice physician	Consult or referral with other primary care specialist*	NCHS' referral to primary care physician**	QSB+ Model's referral rate from FPP***
Family practice physician	6	2	6.2	13.1
Nurse practitioner	0.5	0.7	****	13.1

* Primary care specialist (Internist, Gynecologist, or Pediatrician).

** National Center for Health Statistics referral rate to primary care physicians.

*** See Chapter 2 and 3 on assumptions of 86.9 percent of visits that a family practice physician can treat effectively without referring patient to primary care specialist.

**** Data not available for that category.

As noted above, the survey results of three FPP providers provided only qualitative information. Again the data used in the QSB+ Model appears to be conservative. The QSB+ Model's estimated referral rate of FPP providers to other primary care specialists is greater than Moncrief's FPP providers actual referral rates. Current referrals to Moncrief's Gynecology, Internal Medicine, and Pediatric Clinics from FPP may appear low. However, FPP providers are not currently acting as gatekeepers to these other clinics that currently allow self referral. FPP's referral rate to these clinics would most likely increase as FPP becomes the gatekeeper agency responsible for managing the care of Moncrief's population.

CHAPTER 4

DISCUSSION

Primary Care Provider Efficiency

There is a dilemma in defining provider efficiency in managed care under capitation. Managed care has a monetary incentive to be cost efficient, effective, and ultimately to keep the beneficiary population healthy and out of the facility. However, most organizations still measure a provider's efficiency only according to how many patient visits occurred during the week for that provider.

The definition of efficiency according to the dictionary is:

> producing the desired result with a minimum of effort, expense, or waste (Merriam-Webster 1989).

A provider's efficiency is commensurate to the dollars spent per beneficiary. An efficient primary care organization should achieve quality outcomes at the lowest expense. This means that the more dollars per beneficiary spent to achieve the same outcome, the less productive or efficient the delivery system.

Staffing Mix Impact Upon Efficiency

The problem with most models used by HSC and the AMA is that they maintain a fee-for-service mentality that only

measured a providers' efficiency by their number of patient visits per week. HCMEA's models determined efficiency as the number of providers needed to see patients at a rate of one standard deviation below the Army's average. This placed unrealistic expectations upon providers and did not take into consideration the peculiarities of each facility, quality of care provided, or the reporting errors associated with MEPRS data. These models also did not consider the most effective and efficient means of providing care, but based their provider requirements on past averages and old ways of doing business. This only perpetuated an already inefficient and overspecialized system.

Staffing models should consider the impact of their staffing requirements on access, cost, and quality. For example, having a gynecologist, whose salary is close to 257 percent greater than a NPP, perform a service, such as a pap smear, that a NPP could perform with the same quality outcome is not efficient. Also, an internist seeing a patient with a minor illness versus a family practice provider will cost more and decrease access to the internist for more complicated illnesses.

Managed cares' premise is to use family practice providers as gatekeepers to ensure patients receive care at the most appropriate level and cost. Studies show that family practice physicians can provide 80 to 92.5 percent of the primary care services performed by other primary care

specialists at a lower cost (OTA 1986)(Osterweis and Garfinkel 1993)(Oliver 1993)(Poirer 1984)(McGrath 1990)(NCHS 1993). These findings were consistent with the qualitative findings arrived at in phase II of this project. Less than 3 percent of the visits occurring in FPP required consults or referrals to other primary care specialists (see table 29, page 71).

Current staffing at Moncrief is 80 percent primary care specialists to 20 percent family practice providers. All of the models, except QSB+, perpetuate this ratio of specialists to family practice providers. Although HCMEA's GTC Model advertised its use for managed care, it still required 76 percent of all providers to be specialists. The AMA Model, that used national utilization rates, arrived at 58 percent of its providers as specialists compared to its 76 percent when substituting Moncrief's FY93 data in Step 3.

Currently, Moncrief's FPP is overspecialized. As of January 1994, four of the six physicians were internists to include the Chief of the FPP Clinic. This is one of the reasons explaining the excessively high costs currently associated with providing primary care to Moncrief's beneficiary population.

Only the QSB+ Model placed an emphasis on family practice providers as gatekeepers. These gatekeepers refer patients to other specialists after determining that it would require the expertise of a specialist to achieve a

quality outcome. The QSB+ Model is also the only model that took into consideration the cost of providers and their appropriate use in arriving at a provider requirement.

Not only is the proper use of primary care specialists important, but determining the most effective utilization of NPPs adds considerably to an organization's efficiency. Awareness of tasks that an NPP can perform with equivalent quality outcomes (to that of a physician) is essential in determining staffing requirements. Literature and conversations with medical doctors from prominent HMOs demonstrate that substantial tasks performed by NPs and PAs overlap with physicians. The potential for developing the proper mix and taking advantage of the cost differential between these providers could significantly reduce the costs associated with providing quality care. There was no reason indicated in the literature to restrict NPPs from providing primary care in FPP.

The AMA Model underutilized NPPs and the FTRUM did not consider them a cost-effective and clinically acceptable alternative to provide effective quality care. The AMA and GTC Models established a requirement for NPPs, but based this requirement on the number of physicians. Because of this the AMA and GTC Models continued to perpetuate overspecialization of primary care.

Table 30.--Total Non Physician Providers

	FPP	Internal medicine	Pediatrics	Gynecology	Total NPPs
Current FY93	2	2	1	3	**8**
Average FY93	3	2	1	3	**9**
AMA	1	2	1	1	**5**
FTRUM	0	0	0	0	**0**
GTC	1	5	2	2	**10**
QSB+	12	0	0	0	**12**

The GTC Model came the closest to the QSB+ Model's total NPP requirement, but only placed 14 percent compared to QSB+ Model's 100 percent in FPP.

One of the problems with the GTC Model is how it determined NP requirements. The GTC Model considered NPs a support staff requirement. As a result of not considering an NP a provider, the GTC Model did not consider the visits seen per week by NPs in its calculation of providers. This overstated the number of providers, resulting in an increased cost and a larger capacity of total patient visits than any of the other models (see table 31, page 77). If the GTC Model used NPs only as advice nurses, it would greatly underutilize NP skills (see tables 20-21, page 64).

Provider Productivity

As mentioned above, patient visits per week per provider should not be the only basis to determine future provider requirements. However, this information is an essential element in all staffing models. Moncrief's FY93 average weekly patient visits per provider were well under

those used by the other models with few exceptions (see tables 31, page 77). The only clinic to exceed all of the models' productivity measures was the Access Clinic with an average of one family practice physician and one PA. Moncrief's Pediatric Clinic's weekly average workload exceeded the QSB+ Model's weekly visits per provider expectations. All other weekly patient visits per provider used by each model exceeded Moncrief's FY93 actual visit rate per provider.

Table 31.--Weekly Patient Visits per Provider by Primary Care Specialty

	FPP + Access	Internist	Pediatrician	Gynecologist
Moncrief's FY93's average	92.6*	57.9	94.6	60.0
AMA **	144.4	72.0	104.4	86.6
AMA's national average	144.4	117.4	133.5	112.2
FTRUM***	122.9	124.6	120.1	122.9
GTC***	118.4	94.2	115.0	110.0
QSB+ **	112.5	81.3	77.1	90.7

* FPP's weekly average patient visits per provider were 64.6; while Access, with a family practice physician and PA, had weekly patient visits per provider of 148.6. FPP data included internists required to work in FPP.

** Data reflects primary care specialists seeing more acute and chronic patients. Data obtained from Kaiser Permanente's Northeast Region and Medical Group Administration. Data used by QSB+ model.

*** Visits per month were multiplied by 12 then divided by 46.6 to arrive at comparable productivity measures.

As mentioned earlier, many factors can influence productivity such as, practice type, practice setting ,case mix, and experience of providers (OTA 1976). Further studies into the productivity of providers at Moncrief are needed to better understand why patient visits per week per provider are low. If providers do not increase the volume

of patients seen each week, all of these models will underestimate staffing requirements for primary care.

Both the AMA and QSB+ Models used historical productivity measures that utilized primary care specialists for more acute and chronic patients. This would require more time spent on each visit by each primary care specialist. However, these productivity measures for each primary care category are still higher than Moncrief's actual weekly average except for the Pediatric Clinic (see tables 31, page 77).

Many of the patients seen in the three specialty clinics did not have acute or chronic illnesses or injuries that called for the expense or expertise of these primary care specialists. FPP could see most of the patients seen in these other clinics, given competent and sufficient numbers of family practice providers.

Literature suggests that an institution will require more specialists when they are used for both specialty and general primary care (Schappert 1993). Table 33 supports this, since it would take more than one specialist to see the same number of patients a week seen by a family practice physician. The AMA and QSB+ Models conceptually need more specialists to see an equivalent workload compared to the other models since their weekly patient visits per specialty providers are lower than those used by the other models. The AMA Model did require more specialists than any other

model. However, the QSB+ Model required far fewer specialists, because FPP providers would potentially treat the majority of patient visits utilizing specialist only for consultation and more critical patients. Interestingly, all of the models estimated approximately 22 providers, except for FTRUM.

Table 32.--Total Providers per Clinic

	FPP	Internal medicine	Pediatrics	Gynecology	Total providers
Current FY93	8	10	6	5	**29**
Average FY93	7	9	5	5	**26**
AMA	4	8	5	4	**21**
FTRUM	5	4	4	2	**15**
GTC	6	8	6	3	**23**
QSB+	15	3	2	2	**22**

Data does not include CHAMPUS visits.

In addition to overspecializing, the FTRUM used unrealistic productivity projections. By dividing 86,195 patient visits by 46.6 weeks (1,850) and then by FTRUM's calculated 15 providers, the result required each physician to see 123.3 patients per week. This rate of visits per provider is substantially higher than any of the other models. The FTRUM's visits per provider expectations for primary care specialists are extremely impracticable, especially under the premise that these physicians will see more acute and chronic patients.

One of the problems in assessing these models is the diversity of weekly patient visits per provider by primary

care specialty used in each model. If each model's required providers are multiplied by their corresponding weekly patient visits per provider, the result of total visits will not equal the projected visits or Moncrief's actual FY93 patient visits (86,195) input into each model (see tables 33, page 80). The FTRUM's visit output will be the only output

Table 33.--Each Model's Projected Total Visit Capacity

	FPP + Access	Internal medicine	Pediatrics	Gynecology	Total visits
FY93	25,881	24,289	22,051	13,974	**86,195**
AMA	27,428	30,963	24,538	16,863	**99,792**
FTRUM	25,875	24,288	22,046	13,968	**86,177**
GTC	31,656	37,801	33,848	17,680	**120,985**
QSB+	70,695	11,366	7,186	8,453	**97,700**

Data does not include CHAMPUS visits.

All models used Kaiser Permanente's NPP data used in QSB+ model.

Each model used applicable weeks worked to arrive at annual figure (see table 5, page 36). HCMEA's models used 46.6 weeks for this calculation.

Data arrived at by multiplying the providers required by each model by their corresponding weekly visits per provider used by that model.

that will come close to the total visits input used in each model. This is because the FTRUM did not calculate NPP requirements or redistribute historical visits regarding primary care specialists. However, both of these reasons reduced the usefulness of FTRUM (see tables 18-19, page 63). The AMA, GTC, and QSB+ Models resulted in more visits due to how each model arrived at the NPP and/or physician specialist requirements.

The AMA Model reduced its physician requirement by a ratio of one physician for every two NPPs. This resulted in the AMA Model's requirement to have providers see more patients a week than the visits input into the model. This is possible based on historical data that demonstrates that two NPPs will see more patients per week than one physician.

The problem with the GTC Model, as noted earlier in this GMP, is that it did not consider an NP a provider. In the model's instructions, HCMEA defined a "nurse" as a nurse practitioner/advice nurse. An NP's role is considerably different than an advice nurse. An NP will generate patient visits and should be part of the calculation in determining the final requirement for providers. In table 36, 4.9 NPs generated 23,855 more annual visits, which the GTC Model did not consider in its calculation of provider requirements.

The QSB+ Model's requirement for providers changed after consulting with subject matter experts. The result of this physician consultation was the need to estimate a minimum number of physicians required for each primary care specialty. As a result, the QSB+ Model increased the amount of specialists above its first requirement (see tables 22-25, pages 66-67). As a result of having extra providers in each specialty clinic, the QSB+ Model reduced Moncrief's FY93 patient visits for FPP. This reduction equated to 33 percent (physician consensus) of the extra capacity resulting from additional specialty providers. This 66

percent capacity of extra specialty providers explained the difference in the data input into the QSB+ Model and the result in table 36.

Costs

Moncrief's FY93 total personnel costs were higher than any of the staffing models' total personnel costs. This was due to overspecialized primary care providers and issues related to productivity.

Table 34.--Total Cost per Clinic per Model for Moncrief's FY93 Visits

	FPP + Access	Internal medicine	Pediatrics	Gynecology	Total personnel costs
FY93	$1,248,777	$1,855,396	$1,066,376	$734,607	**$4,905,156**
AMA	$793,466	$1,656,182	$994,927	$809,838	**$4,254,413**
FTRUM	$991,306	$1,031,544	$904,634	$612,809	**$3,540,293**
GTC	$1,100,736	$1,367,514	$1,157,558	$656,119	**$4,281,927**
QSB+	$2,089,330	$731,019	$461,954	$497,654	**$3,779,957**

Data does not include CHAMPUS visits.

The AMA Model perpetuated the overspecialization currently found at Moncrief, but used the highest productivity rate for family practice physicians and conservative rates for primary care specialists. Even with these productive measures, the AMA Model could not overcome the expense of overspecialized providers. As a result, the AMA Model had the most expensive staffing model result.

The FTRUM provided the least expensive total personnel staffing requirement. However, as pointed out in this

chapter, FTRUM arrived at unrealistic results and still maintained an overspecialized provider base.

Although the GTC Model required more providers than all other models, the GTC Model resulted in total personnel costs under that of the AMA Model as a result of its increased utilization of NPPs. However, due to not considering an NP a provider, the GTC Model provided a staffing requirement that overspecialized, increased providers, and reduced support staff. This resulted in the GTC Model using a staff support ratio far lower than any other model.

After consulting with physicians, the QSB+ Model demonstrated a higher cost associated with additional physician specialists. Prior to this change, the QSB+ Model came up with the lowest total personnel costs. However, this change shifted the QSB+ Model's total personnel costs from the lowest to just slightly above that of the FTRUM.

As a result of the visit output inconsistencies inherent in each model (see table 33, page 80), an analysis into the cost per visit was used to provide another method to evaluate costs associated with staffing Moncrief's primary care clinics. Personnel cost implications associated with recapturing CHAMPUS or increasing patient visits were also explored.

Table 35.--Total Provider Costs per Clinic per Visit

	FPP + Access	Internal medicine	Pediatrics	Gynecology	Total cost per visit
FY93	$30.79	$57.78	$33.72	$38.71	**$40.43**
AMA	$21.04	$40.28	$30.13	$36.37	**$38.70**
FTRUM	$27.79	$31.90	$30.83	$33.25	**$30.61**
GTC	$25.20	$26.54	$25.55	$26.79	**$25.95**
QSB+	$18.01	$48.90	$48.03	$45.05	**$26.15**

Data does not include CHAMPUS visits.

Data obtained by dividing the total provider costs per clinic by the projected or actual total visits seen by each provider for that clinic (see tables 7; page 40, 31; page 77, & 33; page 80 and each model's total personnel costs).

Table 36.--Total Provider Costs per Clinic per Visit Adding CHAMPUS

	FPP + Access	Internal medicine	Pediatrics	Gynecology	Total cost per visit
FY93*	$30.09	$53.64	$33.20	$37.86	**$39.31**
AMA	$21.19	$42.27	$30.29	$37.47	**$30.68**
FTRUM	$27.79	$31.90	$30.83	$33.25	**$30.61**
GTC	$25.20	$26.54	$25.55	$26.79	**$25.95**
QSB+	$18.01	$48.90	$48.03	$45.05	**$25.47**

CHAMPUS provider costs and visits were added to the appropriate clinics. Total provider costs per clinic plus CHAMPUS were divided by the projected or actual total visits to include CHAMPUS visits for each primary care specialty (see tables 7; page 40, 31; page 77, & 33; page 80 and each model's total personnel costs). The QSB+ model had 86.9 percent of CHAMPUS visits occurring in FPP.

* Reflects addition of actual visits and costs of CHAMPUS providers.

Table 37.--Total Cost per Clinic per Visit

	FPP + Access	Internal medicine	Pediatrics	Gynecology	Total cost per visit
FY93	$48.25	$76.39	$48.36	$52.57	**$56.91**
AMA	$28.93	$53.49	$40.55	$48.02	**$42.63**
FTRUM	$38.31	$42.47	$41.04	$43.87	**$41.08**
GTC	$34.77	$36.18	$34.20	$37.11	**$35.39**
QSB+	$29.55	$64.32	$64.29	$58.87	**$38.69**

Data does not include CHAMPUS visits.

Data obtained by dividing the total provider cost per clinic by the projected or actual total visits seen by each provider for that clinic (see tables 7; page 40, 31; page 77, & 33; page 80 and each model's total personnel costs).

Table 38.--Total Cost per Clinic per Visit Adding CHAMPUS

	FPP + Access	Internal medicine	Pediatrics	Gynecology	Total cost per visit
FY93*	$46.26	$69.07	$47.29	$50.00	**$54.09**
AMA	$29.12	$55.98	$40.75	$49.38	**$44.10**
FTRUM	$38.31	$42.47	$41.03	$43.87	**$41.15**
GTC	$34.77	$36.17	$34.20	$37.16	**$35.45**
QSB+	$29.56	$64.32	$64.29	$58.87	**$37.93**

CHAMPUS provider costs and visits were added to the appropriate clinics. Total personnel costs per clinic plus CHAMPUS were divided by the projected or actual total visits to include CHAMPUS visits for each primary care specialty (see tables 7; page 40, 31; page 77, & 33; page 80 and each model's total personnel costs). QSB+ added 86.9 percent of CHAMPUS visits to primary care specialists to FPP visits, along with 100 percent of visits that occurred to a family practice physician.

* Reflects addition of actual visits and costs of CHAMPUS providers.

The QSB+ Model provided the lowest total provider cost per visit after adding CHAMPUS (see table 36, page 84) and the GTC Model provided the lowest total cost per visit (see tables 37-38, pages 84-85). Although the GTC Model resulted in the lowest total cost per visit, it used a lower support staff ratio, as mentioned earlier in this GMP, which negated some of the cost savings per visit. The AMA Model also determined support staff based upon the physician requirement, which did not include the NPP requirement. This then reduced the AMA Model's support staff ratio and corresponding support staff costs. However, the AMA Model did not reduce its ratio as much as the GTC Model, since the AMA Model reduced physicians by half for each NPP requirement and the GTC Model never considered NPs in its calculation of support staff.

As Fort Jackson's beneficiary population grows due to acquisition of the Adjutant General (AG), Finance, and Chaplain schools; the QSB+ Model will provide the most cost

efficient staffing result compared to the other models. This is due, in part, to the extra capacity in the specialty clinic, which requires only an increase of staff in the FPP Clinic to meet additional demand. Moncrief would have to double patient visits to include CHAMPUS (27,005 ÷ 0.131 = 206,145; see table 36) prior to QSB+ increasing the requirement for specialists.

The AMA and QSB+ Model's total cost per visit in FPP are far lower than any of the other clinics. That explains why the QSB+ Model achieves a substantially lower total cost per visit as visits increase. However, the AMA Model's per visit costs increased for each clinic after adding CHAMPUS visits (see tables 35-38, pages 84-85).

Support Staff

There was no one best ratio for determining support staff found in the literature review, especially for direct support staff in the clinic. Support ratios ranged from 3.2 to 4.4, which is extremely high if you use this figure to mean direct clinical support staff (Jacobs 1993)(Borfitz 1993)(Way et al. 1992)(James and Williams 1990)(Lashlee et al. 1990). Most support staff ratios in current literature reflect other support personnel not directly found in the primary care clinics. Other support staff work in such areas as laboratory, X-ray, administration, medical records, and house cleaning.

Table 39.--Support Staff Requirements and Ratios

	FPP + Access	Internal medicine	Pediatrics	Gynecology	Total Support Staff	Total Support Staff Ratio
FY93	14.0	14.0	10.0	6.0	44.0	**2.0**
AMA	7.2	15.3	8.2	7.0	37.7	**1.6***
FTRUM	8.4	8.0	7.0	4.6	28.0	**1.9**
GTC	9.4	11.3	9.1	5.7	35.5	**1.5****
QSB+	25.3	5.4	3.6	3.6	37.9	**1.8**

Data does not include CHAMPUS visits.

* AMA model used 1.8 support staff ratio prior to calculating NPPs. The reduction of one physician to two NPPs resulted in a lower overall support staff ratio.

** GTC model does not consider an NP a provider. In reporting the results, this GMP counted an NP as a provider not as a support staff requirement. This results in a lower support staff ratio to provider. Actual support staff ratio used was 1.9.

Table 40.--Support Staff Results per Skill Level

	RNs	LPNs	MAs	Receptionists	Total Support Staff
FY93	6.0	7.0	22.0	9.0	**44.0**
AMA*	11.2	5.9	11.2	9.4	**37.7**
FTRUM	***	***	***	***	**28.0**
GTC**	7.2	7.2	17.9	3.2	**35.5**
QSB+	6.0	10.0	13.0	8.9	**37.9**

Data does not include CHAMPUS visits.

* AMA model used 1.8 support staff ratio prior to calculating NPPs. The reduction of one physician to two NPPs resulted in a lower overall support staff ratio.

** GTC model does not consider an NP a provider. In reporting the results, this GMP counted an NP as a provider not as a support staff requirement. This results in a lower support staff ratio to provider. Actual support staff ratio used was 1.9.

*** Data not reported by this model.

This GMP only used support staff figures directly assigned to one of the primary care clinics. The AMA and GTC Models arrived at support staff requirements that were questionable, as mentioned earlier in this GMP. All other models appear close in their requirements to include Moncrief's actual total support staff.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Taking into account national concern over health care costs, DOD's managed care approach to health care, capitation financing, and the future growth of Moncrief's beneficiary population; QSB+'s Linear Goal Programming staffing model provided the most cost effective and clinically acceptable staffing requirements for FPP and the other primary care specialty clinics. The QSB+ staffing model promoted a new paradigm in staffing arrangements by focusing on the value of care provided by all staff members at each level of primary care. If Moncrief's senior leadership implements the QSB+ staffing model, their beneficiaries should receive increased access to appropriate levels of care, with high quality outcomes, at substantially reduced costs.

The AMA, FTRUM, and GTC models preserve many of the inefficiencies and high costs associated with the old fee for service mentality. All of these models continue to over specialize primary care and measure a provider's efficiency without adequate consideration of salary costs. These staffing models need revision to better evaluate the service

mix and resource allocation decisions essential to managed care and capitation financing.

Although HCMEA promotes its GTC model as a managed care tool, it still determined provider requirements from questionable MEPRS data and high patient usage of specialists. The only cost savings associated with this model is in reducing provider requirements due to unrealistic productivity measures and from using a low support staff ratio (see table 13 & 41).

Moncrief will not attain the full cost savings from implementing QSB+, or any other models' staffing methodologies, until Moncrief's productivity increases. Moncrief's provider productivity must at least reach the conservative visit per provider level used in the QSB+ model (see table 13), to be cost effective. Future studies are needed to ascertain the reasons for Moncrief's primary care clinics' low productivity and then adjust, where necessary to increase each clinic's productivity to an acceptable level. Moncrief's primary care efficiency must improve to attain costs that are lower than CHAMPUS primary care providers (see tables 37-40).

Providers need incentives that will change their present behavior. The Governance Committee, a consulting group of The Advisory Board Company, believes that 80 percent of future cost savings in health care will result through modified physician conduct and not from greater

hospital efficiency (The Advisory Board 1993). Moncrief needs provider incentives that reward quality, efficiency, productivity, and other provider behaviors; while meeting organizational goals regarding access, quality, and costs.

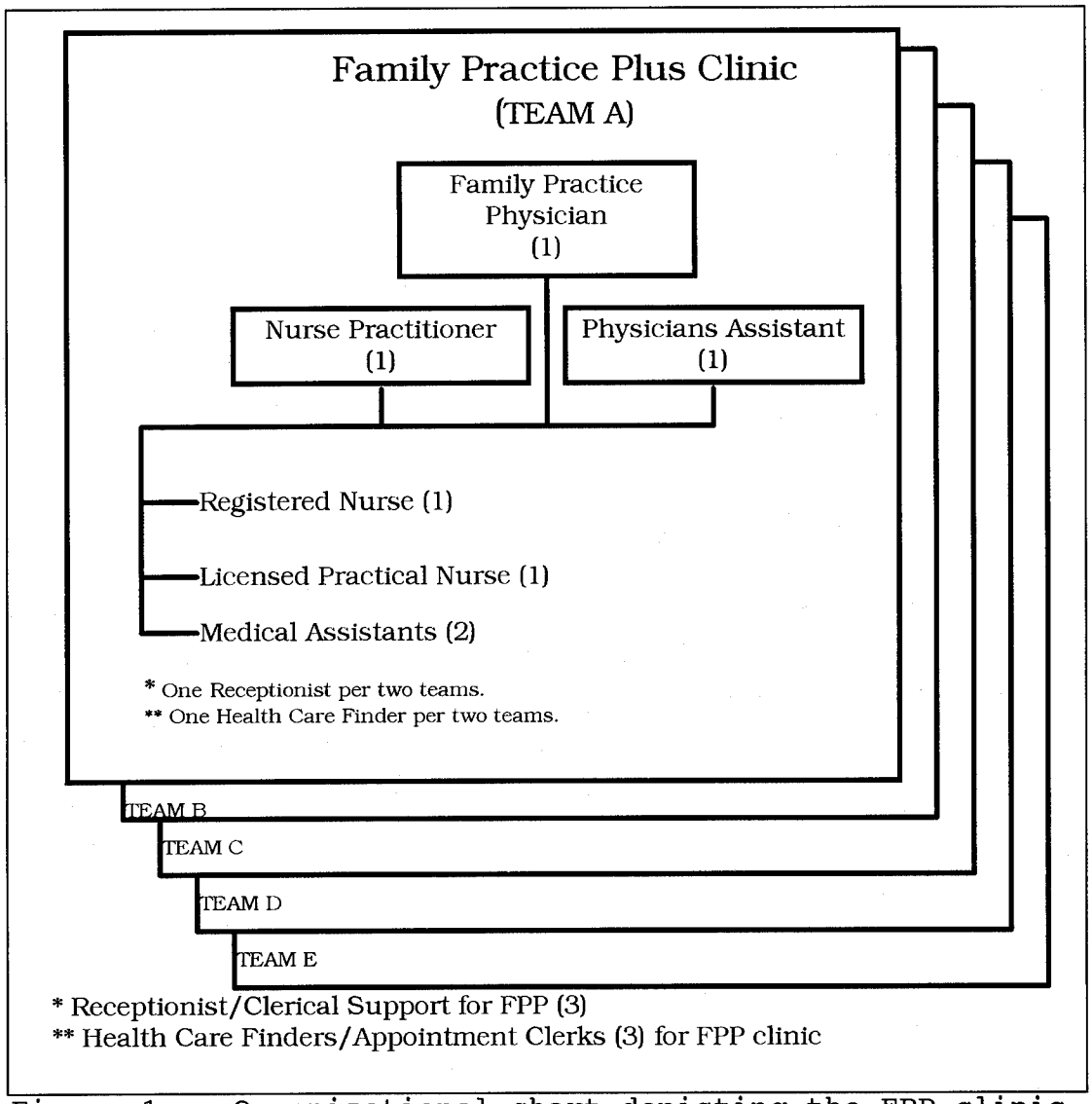

Figure 1.-- Organizational chart depicting the FPP clinic using QSB+ model's staffing requirements to meet Moncrief's FY93 workload.

Provided these incentives, QSB+ model's staffing of primary care will result in increased access, high quality outcomes,

and substantial personnel cost savings. It will also achieve considerable personnel cost savings as Moncrief's population increases.

Using the staffing requirements from the QSB+ model, the following recommendation is made regarding how Moncrief should utilize its primary care staff members. Figure (1) portrays staff placed in the FPP clinic and figure (2) depicts staff in a primary care specialty clinic. In the FPP clinic, the senior (or most experienced) family practice physician, along with the most senior (or experienced) RN, will be responsible for supervising the entire FPP Clinic, and for managing their own team. To meet current demand, five family practice teams are necessary.

During enrollment into TRICARE, Moncrief will assign beneficiaries to a FPP team that will be responsible for the care of each beneficiary. Each FPP provider will act as a gatekeeper and ensure that beneficiaries in their team receive high quality care at the appropriate level. FPP teams will locate in close proximity to share receptionists, clerical support staff, health care finders, and appointment clerks. This also channels patients to one common place, reducing current complexities in obtaining primary care at Moncrief.

The RN will perform duties as an advice nurse, while also managing the team under the direction of the physician. The LPN and MA will assist providers, escort and chaperone

patients, and perform other appropriate nursing tasks. The receptionist and health care finders are self explanatory.

Incentives (temporary duty (TDY), continuing medical education (CME), passes, or any other legal innovative enticements) are needed to ensure strong team identity and performance. These incentives must reward team cohesion, patient satisfaction, productivity, efficiency (cost effective outcomes), and continuous quality improvement.

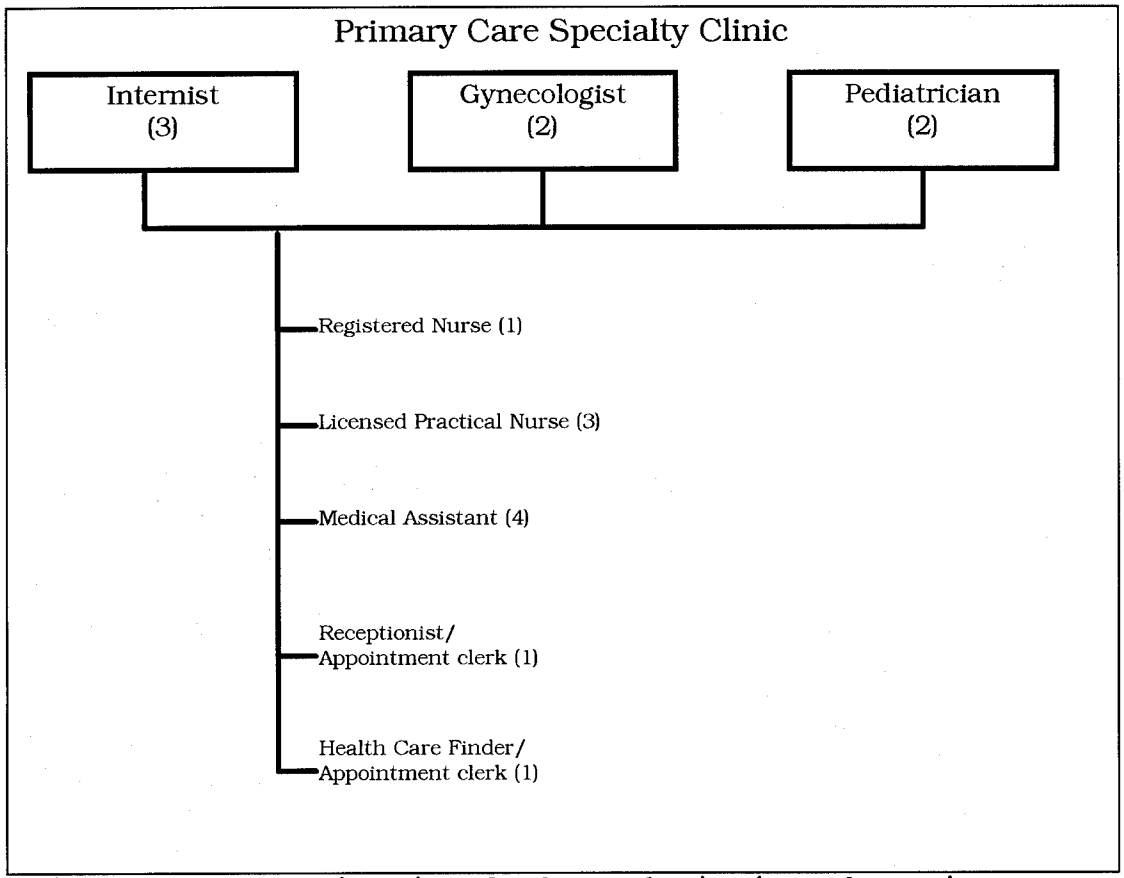

Figure 2.--Organizational chart depicting the primary care specialty clinic using QSB+ model's staffing requirements to meet Moncrief's FY93 workload.

The main focus of this GMP dealt with staffing the FPP Clinic; and, the Primary Care Specialty Clinic is an additional recommendation, resulting from application of the QSB+ Model. These primary care specialty physicians would see patients on a referral basis from FPP providers, normally the more severely injured or ill patients who really require the specialist's expertise. The leadership and support staff of this clinic would perform duties similar to that recommended for the FPP clinic.

Further research is needed to determine the best mix and ratio of specialists to family practice providers. This GMP's recommended staffing of primary care resulted in 32 percent specialist providers, compared to Moncrief's current 80 percent. Although numerous studies show that American medicine is overspecialized, few scientifically postulate what the best mix of primary care providers should be.

Biases among professional and other subjective concerned groups may impact the implementation of these recommendations. However, this GMP clearly delineates cost and professional issues effecting the most cost efficient and clinically acceptable staffing mix for Moncrief's primary care clinics. Implementation of the QSB+ Model will significantly improve current cost effectiveness and efficiency. Further study and refinements of these models could result in Moncrief's FPP Clinic becoming a visionary model for other MTFs.

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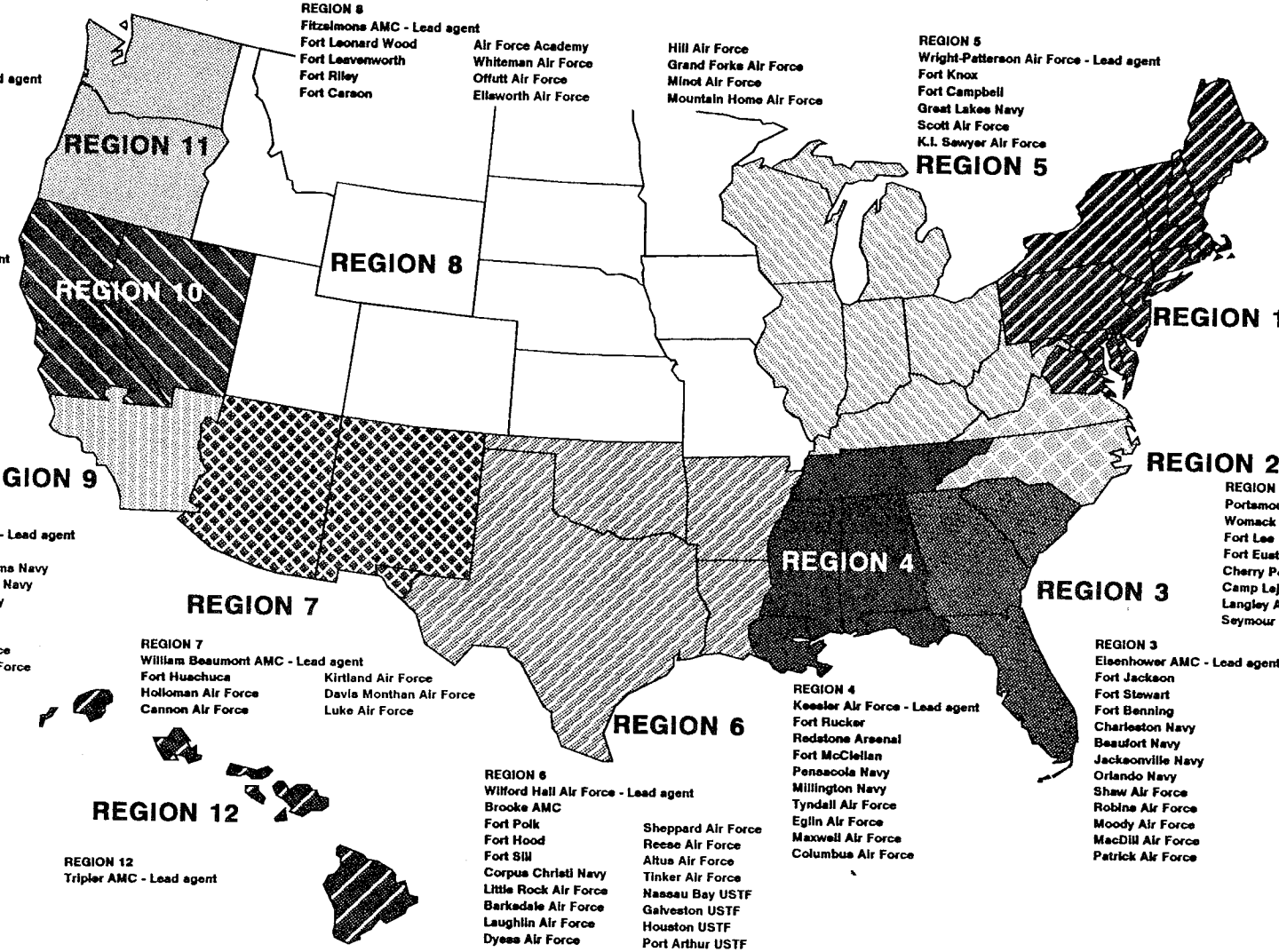
LEAD AGENT REGIONS

DOD

(Regional responsibilities for Alaska have not been decided.)



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Bremerton Navy
Oak Harbor Navy
Fairchild Air Force
Seattle USTF

REGION 8
Fitzsimons AMC - Lead agent
Fort Leonard Wood
Fort Leavenworth
Fort Riley
Fort Carson
Air Force Academy
Whiteman Air Force
Offutt Air Force
Ellsworth Air Force
Hill Air Force
Grand Forks Air Force
Minot Air Force
Mountain Home Air Force

REGION 5
Wright-Patterson Air Force - Lead agent
Fort Knox
Fort Campbell
Great Lakes Navy
Scott Air Force
K.I. Sawyer Air Force

REGION 1
TRISERVE - Lead agent
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West Point
Fort Monmouth
Fort Belvoir
Fort Drum
Bethesda Navy
Patuxent River Navy
Groton Navy
Newport Navy
Malcolm Grow Air Force
Loring Air Force
Plattsburgh Air Force
Griffiss Air Force
Dover Air Force
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Long Beach Navy
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Shaw Air Force
Robins Air Force
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MacDill Air Force
Patrick Air Force

REGION 4
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Redstone Arsenal
Fort McClellan
Pensacola Navy
Millington Navy
Tyndall Air Force
Eglin Air Force
Maxwell Air Force
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Holloman Air Force
Cannon Air Force
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Davis Monthan Air Force
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REGION 6
Wilford Hall Air Force - Lead agent
Brooke AMC
Fort Polk
Fort Hood
Fort Sill
Corpus Christi Navy
Little Rock Air Force
Barksdale Air Force
Laughlin Air Force
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Altus Air Force
Tinker Air Force
Nassau Bay USTF
Galveston USTF
Houston USTF
Port Arthur USTF

REGION 12
Tripler AMC - Lead agent

APPENDIX A

3/24

DEPARTMENT OF THE ARMY
FORT JACKSON, SOUTH CAROLINA 29207

Merit Promotion Opportunity

CIVILIAN PERSONNEL OFFICE

ANNOUNCEMENT NUMBER #32-94

OPENING DATE: 22 Mar 94
INITIAL CLOSING DATE: 4 April 94
FINAL CLOSING DATE: 31 Dec 94

POSITION TITLE: NURSE PRACTITIONER

GRADE AND PAY RANGE: GS-0610-11 $34,662 TO $45,063 Per Annum

LOCATION OF POSITION: MEDDAC, Moncrief Army Community Hospital, Department of Medicine, Family Practice Clinic

AREA OF CONSIDERATION: Application will be accepted from career, career-condition, eligible excepted service employees of Fort Jackson including activities serviced by Fort Jackson, voluntary applications from other Department of the Army (DA) employees, reinstatement eligibles, 30% or more disabled veterans, handicapped applicants certified by Vocational Rehabilitation Department or VA, NAF, transfer (eligibles from Federal agencies other than DA), and eligible excepted service applicants (e.g., overseas and VRA). Consideration may also be given to applicants within reach an Office of Personnel Management (OPM) register. Automatic-consideration will be given to repromotion eligibles under FPM 335 before consideration is given under competitive procedures.

SPECIAL NOTE: Relocation expenses are not authorized.

DESCRIPTION OF DUTIES: Educates patients regarding treatment modalities. Provides assessments, diagnosis and treatment of actual minor illnesses in accordance with established Family Nurse Practitioner protocols. Manages chronic health problems in accordance with collaborative protocols whose documentation reflects accepted intervention techniques and regimen. Collaborates with physicians to order tests and/or treatment beyond which incumbent is credentialed to provide. Interprets diagnostic and screening test results to make or rule out diagnoses. Manages patient with chronic stable and/or acute minor illnesses to include physical assessment, diagnosis of condition and plan of therapeutic interventions as indicated by the identified patient needs. This will be done in collaboration with family practice physicians or allied service/department when indicated. Works to develop patient education material and follow-up instruction sheets for established nursing protocols. Is sensitive to the changing health care environment and works to develop new nursing protocols as needed and identified for clients. Consults and coordinates with speciality clinics and/or services which may be post-wide for referrals, treatment and follow-up according to patients needs. Performs comprehensive care to patients requiring obstetric or gynecologic services. Assesses, plans, implements, and evaluates patients to provide family planning, prenatal and gynecologic care. Performs pediatric duties such as routine physical examination, diagnoses and manages acute minor illnesses in conjunction with that physician when appropriate and utilizes appropriate lab, x-ray and other diagnostic studies when indicated. Performs other duties as assigned.

BASIC REQUIREMENT FOR ALL POSITIONS: All nurse positions require graduation from a professional school of nursing. The school must have been approval by the official accrediation body for the State, the District of Columbia, The commonwealth of Puerto Rico or a U.S. territory for the year of your graduation. Acceptable nursing programs include bachelor of science or higher degree programs in nursing, diploma programs in nursing, and associate degree programs in nursing.

MERIT PROMOTION OPPORTUNITY #32-94

PROFESSIONAL REGISTRATION REQUIREMENT FOR ALL NURSE POSITIONS: All applicants must have an active current registration as a professional nurse and be certified as a Nurse Practitioner in a State. The District of Columbia, the Commonwealth of Puerto, or a territory of the United States.

ADDITIONAL REQUIREMENTS FOR GRADE GS-11 AND ABOVE: Applicants who have completed all of the requirements for a doctoral degree (PH.D or equivalent) or 3 full years of progressively higher level graduate education in a field or nursing or in a closely related non-nursing field directly applicable to the requirement of this position (Nurse-Practitioner's)

OR

Experience: One year specialized experience as a Nurse-Practitioner equivalent to at least the GS-9 level. The required experience must have demonstrated the ability of the applicant to perform the particular knowledge, skills, and abilities if this position.

TIME-IN-GRADE-RESTRICTION: Applicants must have served at least 52 weeks at the GS-9 level in order to meet the time-in-grade requirements.

EVALUATIONS METHODS: Qualified applicants will be rated on possession of the following skills, knowledge and abilities (SKA's) which need to be addressed on separate paper in detail description.

A. Ability to perform a complete physical examination of all body systems, indentifying normal from abnormal and including pediatric, adolescent, adult and geriatric patients.
B. Ability to perform clinical assessment, management and diagnosis of various disease entities, acute minor illness and/injuries, and emergency life-threatening situations.
C. Knowledge of specifically authorized medications including normal dosage, administration and adverse reactions in order to determine proper drug for treatment.

INSTRUCTIONS TO APPLICANTS: Interested and eligible employees of Fort Jackson must apply in writing by submitting FJ FL 271 and SKA's on separate sheets of paper directly to the One Stop Employment Center, CPO, Bldg 4385. EACH SKA SHOULD BE DESCRIBED SEPARATELY. BE SPECIFIC. DESCRIBE YOUR EXPERIENCE, TRAINING AND AWARDS WHICH SHOW EVIDENCE OF THE LEVEL OF EACH SKA THAT YOU POSSES. EMPLOYEES WHO MEET BASIC ELIGIBILITY REQUIREMENTS AND DO NOT SUBMIT SKA'S WILL NOT BE REFERRED. To insure initial consideration, both forms must be received in the CPO by the established initial cutoff date of the announcement. In most instances, forms received after this time will not receive initial consideration for the existing vacancy, but will be considered for future vacancies until the closing date of the announcement. Exception: In the event that the selecting official requests the area of consideration be extended to include more applicants prior to making a selection, applications received after the initial cut off date but before the subsequent rating process has begun will be considered.

Candidates from outside the installation and within the area of consideration must submit a completed Standard Form 171, SKA and a copy of their Standard Form 50 indicating career or career-conditional status. Form 181, Race and National Origin Identification, is requested on a voluntary basis. This information is not used in the hiring process. Employees applying under the Veterans Readjustment Program must submit a copy of their DD 214. DA EMPLOYEES, REINSTATEMENT AND TRANSFER ELIGIBLES APPLYING FOR THE SAME OR LOWER GRADE ARE NOT REQUIRED TO SUBMIT SKA'S IF THEY CURRENTLY OCCUPY OR IF THE LAST POSITION OCCUPIED IS THE SAME SERIES AND GRADE AS THIS POSITION.

APPLICATION RECEIVED AFTER THE CLOSING DATE WILL NOT BE CONSIDERED UNDER THIS ANNOUNCEMENT. NOTE: USE OF POSTAGE-PAID GOVERNMENT ENVELOPES AND FACSIMILE MACHINES TO FILE JOB APPLICATIONS IS A VIOLATION OF FEDERAL LAWS AND REGULATIONS. APPLICATIONS RECEIVED VIA THESE METHODS WILL NOT BE CONSIDERED.

EQUAL EMPLOYMENT OPPORTUNITY: Consideration for placement and evaluation of qualifications will be made on a fair and equitable basis without regard to race, creed, national origin, religion, color, sex, lawful political or other affiliation, marital status, physical handicap, age, or membership or non-membership in an employment organization.

ADDITIONAL INFORMATION: For further information concerning the subject position, contact the Civilian Personnel Office, Ext. 6350.

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PROMOTION OPPORTUNITY
ANNOUNCEMENT NUMBER #32-94

DEPARTMENT OF THE ARMY
FORT JACKSON, SOUTH CAROLINA 29207

Merit Promotion Opportunity

CIVILIAN PERSONNEL OFFICE

ANNOUNCEMENT NUMBER: 24-94

OPENING DATE: 03 Mar 94
INITIAL CLOSING DATE: 16 Mar 94
FINAL CLOSING DATE: 31 Jul 94

POSITION TITLE: PHYSICIAN'S ASSISTANT

GRADE AND PAY RANGE: GS-0603-11, $34,662 to $45,063 Per Annum

LOCATION OF POSITION: MEDDAC, Moncrief Army Community Hospital, Department of Medicine, Fort Jackson, SC

AREA OF CONSIDERATION: Applications will be accepted from career, career-conditional, eligible excepted service employees of Fort Jackson including activities serviced by Fort Jackson, voluntary applications from other Department of the Army (DA) employees, Non-Appropriated Fund (NAF) employees, reinstatement eligibles, 30% or more disabled veterans, severely handicapped applicants certified by Vocational Rehabilitation Department or VA, transfer (eligibles from Federal agencies other than DA), and eligible excepted service applicants (i.e., overseas, VRA, (if attended college, **TRANSCRIPTS ARE REQUIRED**). Consideration may also be given to applicants within reach on an Office of Personnel Management (OPM) register. Automatic consideration will be given to noncompetitive eligibles under FPM 335 before consideration is given under competitive procedures.

SPECIAL NOTES: (1) Relocation expenses are not authorized. (2) Positions are located in Access and Family Practice Clinic, but may be assigned for brief periods of time to other ambulatory care areas.

DESCRIPTION OF DUTIES: As a fully certified Physician Assistant (PA), performs a broad spectrum of direct health care services for all DOD beneficiaries. Interviews patients, obtains medical histories and documents medical record forms. Performs physical examination of cardiovascular, respiratory, gastrointestinal, neurological systems and the extremities. Orders diagnostic laboratory tests (pathology, EKG, and radiology) as needed. Interprets results in relation to physical examination findings and makes diagnoses. May prescribe medication for minor illness/disease (e.g., infection, flu or similar conditions). Refers cases to the supervising physician or other health care providers when patient conditions are complicated or exceed the limits of care which can be given. Performs nonroutine/nonemergency duties designated within authorized clinical privileges. Prior to performing duties, consults and obtains explicit approval from the physician supervisor and ensures the availability of a staff physician for immediate consultation. Duties include incision and drainage, wound care and debridement. In the event of emergencies (for patients in life-threatening situations where a physician is not immediately available), performs cardiopulmonary resuscitation (CPR).

SELECTIVE PLACEMENT FACTORS: (1) Must maintain annual certification in Basic Cardiac Life Support (BCLS). (2) Must be certified by the National Counsel Certification of Physician's Assistants (NCCPA) or licensed in one of the states. (3) May be required to work irregular tours of duty on a duty roster.

BASIC REQUIREMENTS: A broad background knowledge of the medical environment, practices, and procedures such as would be acquired by a bachelor's degree in a health care occupation such as nursing, medical technology, or physical

therapy, or by 3 years of responsible and progressive health care experience such as medical corpsman, nursing assistant, or medical technician; and successful completion of a certificate or diploma program of at least 12 months, including clinical training or preceptorship, specifically designed for professional-caliber physician's assistants that provided the knowledge and ability required to take a detailed medical history, to conduct a physical examination, to follow observation procedures, to order and perform diagnostic and therapeutic tasks, and to exercise a degree of judgment in integrating and interpreting findings on the basis of general medical knowledge; or equivalent education and training.

OR

Successful completion of a full 4-year program for physician assistants leading to a bachelor's degree.

The course of study or training must be approved by a nationally-recognized professional body such as the Committee on Allied Health Education and Accreditation or the Accrediting Bureau of Health Education Schools, or by a panel of physicians established by a Federal agency for this purpose.

Applicants who meet the basic requirements qualify for GS-7.

Additional Requirements for Grades GS-9 and Above:
EDUCATION:
-Applicants who have completed 3 full years of a curriculum in an accredited medical school leading to the Doctor of Medicine or Doctor or Osteopathy degree may be rated eligible for GS-9.
-Applicants who have completed the requirements for the degrees of Doctor of Medicine or Osteopathy, but who lack licensure to practice medicine in the United States, may be rated eligible for GS-11.

OR

EXPERIENCE:
-One year of specialized experience equivalent to at least the next lower grade level. The required experience must have demonstrated the ability to perform professional-caliber medical work as a physician's assistant with minimal supervision, including the exercise of a degree of judgment in integrating and interpreting diagnostic findings and in determining the need for referral to a physician.

EVALUATION METHODS: Applicants qualifying on the basis of specialized experience must have the following skills, knowledge and abilities (SKA's) **which need to be separately addressed on Plain Paper in detailed description.**

A. Ability to identify a medical problem and determine appropriate action to meet the problem, including referral to a physician.
B. Knowledge and understanding of the environment, principles, ethics, and special human relationships in the field of medicine.
C. Knowledge of the medical, biological, and physical sciences related to the applicable area or medicine.
D. Knowledge of and ability to perform specified diagnostic and therapeutic practices and procedures.
E. Ability to work responsibly with physicians and other members of the medical team, and to deal effectively with patients.
F. Ability to communicate effectively, both orally and in writing.

INSTRUCTIONS TO APPLICANTS: Interested and eligible employees of Fort Jackson must apply in writing by submitting FJ FL 271 and SKA's directly to the One Stop Employment Center, CPO, Bldg 4385. On a separate sheet of paper, describe in your own words, how your skills, knowledge, and/or abilities were gained, used, and applied for each SKA listed. Give examples of the most difficult jobs you have performed successfully for each SKA. EACH example must relate to the position for which application is made. Include paid and non-paid work experience. **BE SPECIFIC.** DESCRIBE YOUR EXPERIENCE, TRAINING AND AWARDS WHICH SHOW EVIDENCE OF THE LEVEL OF EACH SKA THAT YOU POSSESS. EMPLOYEES WHO MEET BASIC ELIGIBILITY REQUIREMENTS AND DO NOT SUBMIT SKA'S WILL NOT BE REFERRED. To ensure initial consideration, both forms must be received in the CPO by the established initial cutoff date of the announcement. In most instances, forms received after this time will not receive initial consideration for the existing vacancy, but will be considered for future vacancies until the closing date of the announcement. Exception: In the event that the selecting official requests the area of consideration be extended to include more applicants prior to making a

selection, application received after the initial cut off date but before the subsequent rating process has begun will be considered.
Candidates from outside the installation and within the area of consideration must submit a completed Standard Form 171, SKA's and a copy of their Standard Form 50 indicating career or career-conditional status. Standard Form 181, Race, and National Origin Identification, is requested on a voluntary basis. This information is not used in the hiring process. Employees applying under the Veterans Readjustment Program must submit a copy of their DD 214. Those veterans getting out of the service in 1982 or later must furnish a "member #4" copy of their DD214. DA EMPLOYEES, REINSTATEMENT AND TRANSFER ELIGIBLES APPLYING FOR THE SAME OR LOWER GRADE ARE NOT REQUIRED TO SUBMIT SKA'S IF YOU CURRENTLY OCCUPY OR IF THE LAST POSITION OCCUPIED IS THE SAME SERIES AND GRADE AS THIS POSITION.
APPLICATIONS RECEIVED AFTER THE CLOSING DATE WILL NOT BE CONSIDERED UNDER THIS ANNOUNCEMENT. USE OF POSTAGE-PAID GOVERNMENT ENVELOPES AND FACSIMILE MACHINES TO FILE JOB APPLICATIONS IS A VIOLATION OF FEDERAL LAWS AND REGULATIONS. APPLICATIONS RECEIVED VIA THESE METHODS WILL NOT BE CONSIDERED.
EQUAL EMPLOYMENT OPPORTUNITY: Consideration for placement and evaluation of qualifications will be made on a fair and equitable basis without regard to race, creed, national origin, religion, color, sex, lawful political or other affiliation, marital status, physical handicap, age, or membership or non-membership in an employment organization.
ADDITIONAL INFORMATION: For further information concerning the subject position, contact the Civilian Personnel Office, Ext 5627.

DISTRIBUTION:
SPECIAL

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PROMOTION OPPORTUNITY
ANNOUNCEMENT NUMBER 24-94

PHASE II RESULTS

FAMILY PRACTICE PLUS PHYSICIAN

MINUTES PER DAY AT FPP CLINIC	# OF ACTUAL VISITS	# OF VISITS PER WEEK 6 HOUR DAY	MIN PER VISIT	PATIENT VISITS THAT FAMILY PRACTICE PHYSICIANS BELIEVE NP COULD HANDLE	PERCENT OF VISITS THE FAMIL PRACTICE PHYSICIANS BELIEV NP COULD HANDLE	REFERRAL TO OTHER PRIMARY CARE PHYSICIANS	ERCENTAGE OF REFERRA WITH OTHER FAMILY PRACTICE PHYSICIANS	REFERRAL TO OTHER SPECIALTY PRIMARY CARE PHYSICIANS	PERCENTAGE OF REFERRALS WITH OTHER SPECIALTY PRIMARY CARE PHYSICIANS
480	20	100	24	20	100%	1	5%	0	0%
480	15	75	32	15	100%	2	10%	1	5%
480	17.5	87.5	28	17.5	100%	3	15%	1	5%

FAMILY PRACTICE PLUS PHYSICIAN

	MINUTES PER DAY AT FPP CLINIC	# OF ACTUAL VISITS	# OF VISITS PER WEEK 6 HOUR DAY	MIN PER VISIT	PATIENT VISITS THAT FAMILY PRACTICE PHYSICIANS BELIEVE NP COULD HANDLE	PERCENT OF VISITS THE FAMIL PRACTICE PHYSICIANS BELIEV NP COULD HANDLE	REFERRAL TO OTHER PRIMARY CARE PHYSICIANS	ERCENTAGE OF REFERRA WITH OTHER FAMILY PRACTICE PHYSICIANS	REFERRAL TO OTHER SPECIALTY PRIMARY CARE PHYSICIANS	PERCENTAGE OF REFERRALS WITH OTHER SPECIALTY PRIMARY CARE PHYSICIANS
	480	15	75	32	10	67%	0	0%	0	0%
	480	13	65	37	8	62%	0	0%	0	0%
	480	14	70	34	9	64%	0	0%	0	0%
PHYSICIANS' AVERAGE	480	16.1	80.5	30.6	14.1	86%	3	6%	1	2%

NURSE PRATITIONER

	MINUTES PER DAY AT FPP CLINIC	# OF ACTUAL VISITS	# OF VISITS PER WEEK 6 HOUR DAY	MIN PER VISIT	VISITS THAT REQUIRED FAMILY PRACTICE PHYSICIAN CONSULT	PERCENT OF PRIMARY CARE VISITS NP TREATED WITHOUT CONSULT TO FAMILY PRACTICE PHYSICIAN	VISITS THAT REQUIRED CONSULT WITH OTHER PRIMARY CARE SPECIALIST	PERCENT OF PRIMARY CARE VISITS NP TREATED ITHOUT CONSULT TO OTHE RIMARY CARE SPECIALIS	REFERRALS OF PATIENTS TO OTHER PRIMARY CARE SPECIALIST	PERCENT OF VISITS THAT NP REFERRED TO OTHER PRIMARY CARE SPECIALIST
1	510	16	75	32	0	100%	0	0%	1	3%
2	510	17	80	30	0	100%	1	3%	0	0%
3	270	9	65	30	0	100%	0	0%	0	0%
4	510	15	70	34	0	100%	0	0%	1	3%
5	510	18	84	28	0	100%	0	0%	1	4%
6	510	13	61	39	0	100%	0	0%	0	0%
7	510	11	52	46	1	98%	0	0%	0	0%
8	510	16	75	32	0	100%	0	0%	0	0%
9	360	14	88	26	0	100%	0	0%	0	0%
10	510	16	75	32	0	100%	0	0%	0	0%
11	240	10	75	24	0	100%	0	0%	0	0%
12	480	15	75	32	0	100%	1	3%	0	0%
13	420	13	73	32	0	100%	0	0%	0	0%
NP'S AVERAGES	450	14.08	72.86	32.12	1	99.8%	2	0.5%	3	0.7%

Family Practice Plus Patient Visit Survey (Nurse Practitioner)

JULIE CLARE, CPT
F.N.P., A.N.P., C.S., C.D.E.
390-56-7110

(2 of 4)

APPENDIX C

	Hours spent in Family Practice Plus clinic	Total number of visits	Visits that required consultation with family practice physicians	Visits that required consultation with other primary care physicians	Referrals of patients to other primary care physicians
8 November (Monday)	8 ½	15	Ø	Ø	1
9 November (Tuesday)	8 ½	17	Ø	1 GYN	Ø
10 November (Wednesday)	4 ½	9	Ø	Ø	Ø
Holiday (Thursday)					
12 November (Friday)	3 ½	15	Ø	Ø	1
15 November (Monday)	8 ½	18	Ø	Ø	1 GYN (colposcopy)
16 November (Tuesday)	8 ½	13	Ø	Ø	Ø
17 November (Wednesday) (2hrs. @ mtg.)	8 ½	11	1	Ø	Ø
18 November (Thursday)	8 ½	16	Ø	Ø	Ø
19 November (Friday)	LV				
1 ~~30~~ December (Monday)	6	14	Ø	Ø	Ø
1 ~~4~~ December (Tuesday)	8 ½	16	Ø	Ø	Ø
1 ~~5~~ 8 December (Wednesday) not up in afternoon	4	10	Ø	Ø	1 Dermatology
1 ~~6~~ 10 December ~~(Monday)~~ Thursday	8	15	Ø	1 GYN	Ø
1 ~~7~~ 11 December ~~(Monday)~~ Friday	7	13	Ø	Ø	Ø 1 ophthalmology

I precept a graduate NP student every Tues. and Fri. or Mon & Thurs. (all 6-11 Dec)
Did survey earlier for 3rd wk.

Thursday Mornings - Well Baby Clinic

OTHER: 1 Surgery Clinic Referral / Dermatology referral; psoriasis treatment / Podiatry referral → ingrown toenail (L) 4th

Primary Care Physicians defined for this survey as: Pediatrician, Gynecologist, and Internist

Family Practice Plus Patient Visit Survey (Family Practice Physician)

	Hours spent in Family Practice Plus clinic	Total number of visits	# of these Visits you feel could be seen by a nurse practitioner or physician assistant	Visits that required consultation with other primary care physicians	Referrals of patients to other primary care physicians
8 November (Monday)	8 hrs	20	yes	1	None
9 November (Tuesday)	8 hrs	15	yes.	2	1
10 November (Wednesday)					
Holiday (Thursday)					
12 November (Friday)		25			
15 November (Monday)		13			
16 November (Tuesday)		17			
17 November (Wednesday)					
18 November (Thursday)					
19 November (Friday)					
6 December (Monday)					
7 December (Tuesday)					
8 December (Wednesday)					
10 December (Monday)					
11 December (Monday)					

OTHER:

Primary Care Physicians defined for this survey as: Pediatrician, Gynecologist, and Internist

Family Practice Plus Patient Visit Survey (Family Practice Physician)

	Hours spent in Family Practice Plus clinic	Total number of visits	# of these Visits you feel could be seen by a nurse practitioner or physician assistant	Visits that required consultation with other primary care physicians	Referrals of patients to other primary care physicians
8 November (Monday)		𝍸 𝍸 𝍸	𝍸		
9 November (Tuesday)		1			
10 November (Wednesday)		𝍸 𝍸 III	𝍸 III		
Holiday (Thursday)					
12 November (Friday)	TDY 11-13				
15 November (Monday)					
16 November (Tuesday)					
17 November (Wednesday)					
18 November (Thursday)					
19 November (Friday)					
6 December (Monday)					
7 December (Tuesday)					
8 December (Wednesday)					
10 December (Monday)					
11 December (Monday)					

Other Primary Care Physicians defined for this survey as: Pediatrician, Gynecologist, and Internist

MASTER MODEL ARMY MEDICAL CENTER ACTUAL WORKLOAD FY92
17-Mar-94
PART IV - Outpatient FTR Summary

MEPRS	FUNCTION	RPT FTR'S	EARNED FTR'S H+I	MONTHLY VISITS (A)	AVAIL PROV HOURS (B)	BENCH MARK TIME (C)	VISITS PER PROV (D) B/C	PROV/ SUPT RATIO (E)	PROV SITE FACTOR (F)	SUPT SITE FACTOR (G)	ALL PROV FTR'S (H) (A/D)*F	ALL SUPPORT FTR'S (I) H*E*G
BAA	Internal Med	17.04	12.134	2024.08	142.27	0.294	483.91	1.901	1.000	1.000	4.183	7.951
BCB	Gynecology	11.45	7.037	1164.5	142.27	0.298	477.42	1.885	1.000	1.000	2.439	4.598
BDA	Pediatrics	20.47	10.908	1837.58	142.27	0.305	466.46	1.769	1.000	1.000	3.939	6.969
BGA	Family Practice	47.14	12.947	2156.75	142.27	0.298	477.42	1.866	1.000	1.000	4.518	8.430

APPENDIX D

MASTER MODEL ARMY MEDICAL CENTER ACTUAL WORKLOAD FY92
17-Mar-94
PART IV - Outpatient FTR Summary

MEPRS	FUNCTION	RPT FTR'S	EARNED FTR'S H+I	MONTHLY VISITS (A)	AVAIL PROV HOURS (B)	BENCH MARK TIME (C)	VISITS PER PROV (D) B/C	PROV/ SUPT RATIO (E)	PROV SITE FACTOR (F)	SUPT SITE FACTOR (G)	ALL PROV FTR'S (H) (A/D)*F	ALL SUPPORT FTR'S (I) H*E*G
BAA	Internal Med	17.04	14.633	2440.92	142.27	0.294	483.91	1.901	1.000	1.000	5.044	9.589
BCB	Gynecology	11.45	8.036	1329.75	142.27	0.298	477.42	1.885	1.000	1.000	2.785	5.250
BDA	Pediatrics	20.47	11.332	1909	142.27	0.305	466.46	1.769	1.000	1.000	4.093	7.240
BGA	Family Practice	47.14	13.978	2328.5	142.27	0.298	477.42	1.866	1.000	1.000	4.877	9.101

FORT JACKSON ARMY MEDICAL ACTIVITY FY 92 WORKLOAD
17-Mar-94
PART VI - Direct Care/Ancillary Svc Within Major Specialty FTR Summary (Con't)

G - FAMILY PRACTICE/PRIMARY CARE/FLT MEDICINE, Outpatient Services

MEPR	OUTPATIENT	EARNED FTR'S	PROV	DIRECT CARE PROF	NURSE	DIRECT CARE P/PROF	CLINIC/ ADMIN SUPPORT	MONTHLY VISITS	AVAIL PROV HOURS	BENCH MARK TIME	VISITS PER PROV	PROV/ SUPRT RATIO	SITE UNIQUE FACTOR	ALL PROV FTR'S	ALL SUPPORT FTR'S
BGA	Family Practice	43.627	13.839	1.384	2.544	16.110	9.751	6524	137.04	0.298	459.87	1.866	1.073	15.222	28.405
BAA	Internal Med	2.255	0.565	0.212	0.287	0.706	0.485	265	107.52	0.294	365.71	1.901	1.073	0.777	1.478
BDA	Pediatrics	1.862	0.571	0.102	0.178	0.692	0.320	241	136.19	0.305	446.52	1.769	1.246	0.672	1.190
BCB	Gynecology	1.107	0.269	0.115	0.062	0.444	0.217	153	127.34	0.298	427.32	1.885	1.072	0.384	0.724

FORT JACKSON ARMY MEDICAL ACTIVITY FY 92 WORKLOAD PLUS CHAMPUS
17-Mar-94
PART VI - Direct Care/Ancillary Svc Within Major Specialty FTR Summary (Con't)

G - FAMILY PRACTICE/PRIMARY CARE/FLT MEDICINE, Outpatient Services

MEPR	OUTPATIENT	EARNED FTR'S	PROV	DIRECT CARE PROF	NURSE	DIRECT CARE P/PROF	CLINIC/ ADMIN SUPPORT	MONTHLY VISITS	AVAIL PROV HOURS	BENCH MARK TIME	VISITS PER PROV	PROV/ SUPRT RATIO	SITE UNIQUE FACTOR	ALL PROV FTR'S	ALL SUPPORT FTR'S
BGA	Family Practice	48.576	15.408	1.541	2.832	17.938	10.857	7264	137.04	0.298	459.87	1.866	1.073	16.949	31.627
BAA	Internal Med	2.723	0.683	0.256	0.346	0.852	0.586	320	107.52	0.294	365.71	1.901	1.073	0.939	1.784
BDA	Pediatrics	1.932	0.592	0.106	0.184	0.718	0.332	250	136.19	0.305	446.52	1.769	1.246	0.698	1.234
BCB	Gynecology	1.259	0.306	0.131	0.071	0.505	0.247	174	127.34	0.298	427.32	1.885	1.072	0.437	0.823

FORT JACKSON ARMY MEDICAL ACTIVITY FY 92 WORKLOAD
17-Mar-94
PART VI - Direct Care/Ancillary Svc Within Major Specialty FTR Summary (Con't)

G - FAMILY PRACTICE/PRIMARY CARE/FLT MEDICINE, Outpatient Services

MEPR	OUTPATIENT	EARNED FTR'S	PROV	DIRECT CARE PROF	NURSE	DIRECT CARE P/PROF	CLINIC/ ADMIN SUPPORT	MONTHLY VISITS	AVAIL PROV HOURS	BENCH MARK TIME	VISITS PER PROV	PROV/ SUPRT RATIO	SITE UNIQUE FACTOR	ALL PROV FTR'S	ALL SUPPORT FTR'S
BGA	Family Practice	14.424	4.575	0.458	0.841	5.326	3.224	2157	137.04	0.298	459.87	1.866	1.073	5.033	9.391
BAA	Internal Med	17.222	4.318	1.619	2.190	5.390	3.706	2024	107.52	0.294	365.71	1.901	1.073	5.937	11.286
BDA	Pediatrics	14.202	4.352	0.777	1.354	5.281	2.437	1838	136.19	0.305	446.52	1.769	1.246	5.129	9.073
BCB	Gynecology	8.432	2.046	0.877	0.472	3.384	1.653	1165	127.34	0.298	427.32	1.885	1.072	2.923	5.509

FORT JACKSON ARMY MEDICAL ACTIVITY FY 92 WORKLOAD PLUS CHAMPUS
17-Mar-94
PART VI - Direct Care/Ancillary Svc Within Major Specialty FTR Summary (Con't)

G - FAMILY PRACTICE/PRIMARY CARE/FLT MEDICINE, Outpatient Services

MEPR	OUTPATIENT	EARNED FTR'S	PROV	DIRECT CARE PROF	NURSE	DIRECT CARE P/PROF	CLINIC/ ADMIN SUPPORT	MONTHLY VISITS	AVAIL PROV HOURS	BENCH MARK TIME	VISITS PER PROV	PROV/ SUPRT RATIO	SITE UNIQUE FACTOR	ALL PROV FTR'S	ALL SUPPORT FTR'S
BGA	Family Practice	15.571	4.939	0.494	0.908	5.750	3.480	2328.5	137.04	0.298	459.87	1.866	1.073	5.433	10.138
BAA	Internal Med	20.770	5.207	1.953	2.641	6.501	4.469	2440.92	107.52	0.294	365.71	1.901	1.073	7.160	13.610
BDA	Pediatrics	14.750	4.520	0.807	1.406	5.485	2.532	1909	136.19	0.305	446.52	1.769	1.246	5.327	9.423
BCB	Gynecology	9.624	2.335	1.001	0.539	3.863	1.886	1329.75	127.34	0.298	427.32	1.885	1.072	3.336	6.288

Input Data of The Problem FAMILY PRACTICE Page: 1

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MIN   +159182MD  +53375.7NP  +53375.7PA
MAX  +112.500MD  +104.900NP  +107.500PA
Subject to
(1)  +112.500MD  +104.900NP  +107.500PA  ≥ +1514.94
(2)  +1.00000MD  +0       NP  +0       PA  ≥ +3.00000
(3)  +0       MD  +104.900NP  +0       PA  ≤ +954.410
(4)  +0       MD  +0       NP  +107.500PA  ≤ +954.410
(5)  +0       MD  +104.900NP  +107.500PA  ≤ +954.410
(6)  +0       MD  +106.200NP  +0       PA  ≤ +477.210
(7)  +0       MD  +0       NP  +106.200PA  ≤ +477.210
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Summarized Solution for FAMILY PRACTICE Page : 1

Number	Variable	Solution	Opportunity Cost-Obj. 1	Opportunity Cost-Obj. 2	Opportunity Cost-Obj. 3	Opportunity Cost-Obj. 4
1	MD	+4.9824886	0	0		
2	NP	+4.4934072	0	0		
3	PA	+4.4935031	0	0		

Priority Level 1: Minimized Objective Function (Goal) = +1272805.1
Priority Level 2: Maximized Objective Function (Goal) = +1514.9399
Iteration = 7 Elapsed CPU second = .546875

Analysis of OBJ Coefficients for FAMILY PRACTICE Page : 2

Number	Variable	Priority Level	Opportunity Cost	Objective Coefficient	Minimum Obj. Coeff.	Maximum Obj. Coeff.
1	NP	1	0	+53375.699	+52084.750	+148428.38
2	PA	1	0	+53375.699	- Infinity	+54698.645
3	MD	2	0	+112.50000	- Infinity	+ Infinity
4	NP	2	0	+104.90000	- Infinity	+ Infinity
5	PA	2	0	+107.50000	- Infinity	+ Infinity

Analysis of Constraints for FAMILY PRACTICE Page : 3

Constr.	Status	RHS	Shadow Price	Slack or Surplus	Minimum RHS	Maximum RHS
1	Tight	>=+1514.9399	+5758648.0	0	+1291.9099	+ Infinity
2	Loose	>=+3.0000000	0	+1.9824886	- Infinity	+4.9824886
3	Loose	<=+954.40997	0	+483.05154	+471.35843	+ Infinity
4	Loose	<=+954.40997	0	+471.35843	+483.05154	+ Infinity
5	Tight	<=+954.40997	+5758648.0	0	+483.05157	+954.42004
6	Loose	<=+477.20999	0	+.01016852	+477.19983	+ Infinity
7	Tight	<=+477.20999	+5758648.0	0	+477.20007	+942.86823

Input Data of The Problem FAMILY PRACTICE Page: 1

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MIN   +159182MD  +53375.7NP  +53375.7PA
MAX  +112.500MD  +104.900NP  +107.500PA
Subject to
(1)  +112.500MD  +104.900NP  +107.500PA  ≥ +1680.13
(2)  +1.00000MD  +0       NP +0       PA  ≥ +3.00000
(3)  +0       MD +104.900NP +0       PA  ≤ +1058.48
(4)  +0       MD +0       NP +107.500PA  ≤ +1058.48
(5)  +0       MD +104.900NP +107.500PA  ≤ +1058.48
(6)  +0       MD +106.200NP +0       PA  ≤ +529.240
(7)  +0       MD +0       NP +106.200PA  ≤ +529.240
```

Summarized Solution for FAMILY PRACTICE Page : 1

Number	Variable	Solution	Opportunity Cost-Obj. 1	Opportunity Cost-Obj. 2	Opportunity Cost-Obj. 3	Opportunity Cost-Obj. 4
1	MD	+5.5257778	0	0		
2	NP	+4.9834270	0	0		
3	PA	+4.9834275	0	0		

Priority Level 1: Minimized Objective Function (Goal) = +1411592.1
Priority Level 2: Maximized Objective Function (Goal) = +1680.1300
Iteration = 7 Elapsed CPU second = .5976563

Analysis of OBJ Coefficients for FAMILY PRACTICE Page : 2

Number	Variable	Priority Level	Opportunity Cost	Objective Coefficient	Minimum Obj. Coeff.	Maximum Obj. Coeff.
1	NP	1	0	+53375.699	+52084.750	+148428.38
2	PA	1	0	+53375.699	- Infinity	+54698.645
3	MD	2	0	+112.50000	- Infinity	+ Infinity
4	NP	2	0	+104.90000	- Infinity	+ Infinity
5	PA	2	0	+107.50000	- Infinity	+ Infinity

Analysis of Constraints for FAMILY PRACTICE Page : 3

Constr.	Status	RHS	Shadow Price	Slack or Surplus	Minimum RHS	Maximum RHS
1	Tight	>=+1680.1300	+5758648.0	0	+1395.9800	+ Infinity
2	Loose	>=+3.0000000	0	+2.5257781	- Infinity	+5.5257778
3	Loose	<=+1058.4800	0	+535.71844	+522.76154	+ Infinity
4	Loose	<=+1058.4800	0	+522.76154	+535.71844	+ Infinity
5	Tight	<=+1058.4800	+5758648.0	0	+535.71844	+1058.4800
6	Loose	<=+529.23999	0	+.00003849	+529.23993	+ Infinity
7	Tight	<=+529.23999	+5758648.0	0	+529.23993	+1045.6797

Input Data of The Problem FAMILY PRACTICE Page: 1

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MIN   +159182MD  +53375.7NP  +53375.7PA
MAX  +112.500MD  +104.900NP  +107.500PA
Subject to
(1)  +112.500MD  +104.900NP  +107.500PA  ≥ +1705.40
(2)  +1.00000MD  +0       NP  +0       PA  ≥ +3.00000
(3)  +0       MD  +104.900NP  +0       PA  ≤ +1074.40
(4)  +0       MD  +0       NP  +107.500PA  ≤ +1074.40
(5)  +0       MD  +104.900NP  +107.500PA  ≤ +1074.40
(6)  +0       MD  +104.900NP  +0       PA  ≤ +537.200
(7)  +0       MD  +0       NP  +107.500PA  ≤ +537.200
```

Summarized Solution for FAMILY PRACTICE Page : 1

Number	Variable	Solution	Opportunity Cost-Obj. 1	Opportunity Cost-Obj. 2	Opportunity Cost-Obj. 3	Opportunity Cost-Obj. 4
1	MD	+5.6088891	0	0		
2	NP	+5.1210675	0	0		
3	PA	+4.9972095	0	0		

Priority Level 1: Minimized Objective Function (Goal) = +1432904.3
Priority Level 2: Maximized Objective Function (Goal) = +1705.3999
Iteration = 7 Elapsed CPU second = .5507813

Analysis of OBJ Coefficients for FAMILY PRACTICE Page : 2

Number	Variable	Priority Level	Opportunity Cost	Objective Coefficient	Minimum Obj. Coeff.	Maximum Obj. Coeff.
1	NP	1	0	+53375.699	- Infinity	+148428.38
2	PA	1	0	+53375.699	- Infinity	+152107.25
3	MD	2	0	+112.50000	- Infinity	+ Infinity
4	NP	2	0	+104.90000	- Infinity	+ Infinity
5	PA	2	0	+107.50000	- Infinity	+ Infinity

Analysis of Constraints for FAMILY PRACTICE Page : 3

Constr.	Status	RHS	Shadow Price	Slack or Surplus	Minimum RHS	Maximum RHS
1	Tight	>=+1705.4000	+5758648.0	0	+1411.9000	+ Infinity
2	Loose	>=+3.0000000	0	+2.6088889	- Infinity	+5.6088886
3	Loose	<=+1074.4000	0	+537.20001	+537.20001	+ Infinity
4	Loose	<=+1074.4000	0	+537.20001	+537.20001	+ Infinity
5	Tight	<=+1074.4000	0	0	+1074.4000	+ Infinity
6	Tight	<=+537.20001	+5758648.0	0	0	+537.20001
7	Tight	<=+537.20001	+5758648.0	0	0	+537.20001

Input Data of The Problem FAMILY PRACTICE Page: 1

```
MIN   +159182MD  +53375.7NP  +53375.7PA
MAX   +112.500MD  +104.900NP  +107.500PA
Subject to
(1)   +112.500MD  +104.900NP  +107.500PA  ≥ +1870.59
(2)   +1.00000MD  +0       NP  +0       PA  ≥ +3.00000
(3)   +0       MD  +104.900NP  +0       PA  ≤ +1178.47
(4)   +0       MD  +0       NP  +107.500PA  ≤ +1178.47
(5)   +0       MD  +104.900NP  +107.500PA  ≤ +1178.47
(6)   +0       MD  +104.900NP  +0       PA  ≤ +589.240
(7)   +0       MD  +0       NP  +107.500PA  ≤ +589.240
```

Summarized Solution for FAMILY PRACTICE Page : 1

Number	Variable	Solution	Opportunity Cost-Obj. 1	Opportunity Cost-Obj. 2	Opportunity Cost-Obj. 3	Opportunity Cost-Obj. 4
1	MD	+6.1521778	0	0		
2	NP	+5.6170635	0	0		
3	PA	+5.4813023	0	0		

Priority Level 1: Minimized Objective Function (Goal) = +1571699.0
Priority Level 2: Maximized Objective Function (Goal) = +1870.5900
Iteration = 7 Elapsed CPU second = .5507813

Analysis of OBJ Coefficients for FAMILY PRACTICE Page : 2

Number	Variable	Priority Level	Opportunity Cost	Objective Coefficient	Minimum Obj. Coeff.	Maximum Obj. Coeff.
1	NP	1	0	+53375.699	+52084.750	+148428.38
2	PA	1	0	+53375.699	- Infinity	+54698.645
3	MD	2	0	+112.50000	- Infinity	+ Infinity
4	NP	2	0	+104.90000	- Infinity	+ Infinity
5	PA	2	0	+107.50000	- Infinity	+ Infinity

Analysis of Constraints for FAMILY PRACTICE Page : 3

Constr.	Status	RHS	Shadow Price	Slack or Surplus	Minimum RHS	Maximum RHS
1	Tight	>=+1870.5900	+5758648.0	0	+1515.9700	+ Infinity
2	Loose	>=+3.0000000	0	+3.1521778	- Infinity	+6.1521778
3	Loose	<=+1178.4700	0	+589.23999	+589.22998	+ Infinity
4	Loose	<=+1178.4700	0	+589.22998	+589.23999	+ Infinity
5	Tight	<=+1178.4700	+5758648.0	0	+589.23999	+1178.4800
6	Loose	<=+589.23999	0	+.01000977	+589.22998	+ Infinity
7	Tight	<=+589.23999	+5758648.0	0	+589.22998	+1178.4700