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Analysis of demand for services as represented by appointment availability suggest that William Beaumont's primary care services will not be able to meet the new demand. Further analysis of the information posed data quality and operational efficiency issues. These issues may be removed by the organization clearly defining content for appointment templates.

Finally, new methods for conducting the business of providing and managing healthcare were presented. Each innovation was coupled with a description of the possible impact of the recommendation on operations. Proposals included establishment of a Managed Care Department, Primary Care Service, Primary Care Teams, and appointment templates and management. In summary, William Beaumont Army Medical Center should seek to employ new business processes to improve operational efficiency within the primary care service.

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The Optimization of TRICARE Prime Empanelment and Appointment Templates to Meet an Increased Demand Due to Increased Enrollment by Eligible Beneficiaries at William Beaumont Army Medical Center

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Abstract

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The Optimization of TRICARE Prime Empanelment and Appointment Templates to Meet an Increased Demand Due to Increased Enrollment by Eligible Beneficiaries at William Beaumont Army Medical Center

Introduction

Conditions which prompted the study

William Beaumont Army Medical Center (WBAMC) currently operates within a consolidated Managed Care Organization (MCO) Model referred to as TRICARE. The TRICARE program is divided into three options; Prime, Extra and Standard. TRICARE Prime contains two operations, an Exclusive Provider Organization (EPO) for Active Duty military personnel and a Health Maintenance Organization (HMO) for other enrolled beneficiaries.

An EPO limits the beneficiaries to specific providers for healthcare services (Kongstvedt, 1997). Active duty personnel are required to initially be seen and evaluated by either a military or government service provider (TRICARE, 2000). Active duty personnel may then be referred to providers outside of the military system. At Fort Bliss, active duty personnel are required to enroll into TRICARE Prime under a WBAMC staff provider.

The HMO option for non-active duty beneficiaries allows for them to be enrolled to either WBAMC staff providers or contracted providers located within the community (TRICARE, 2000). Collectively the EPO and HMO operations are referred to as TRICARE Prime (Ledlow, Bradshaw & Shockley, 2000). TRICARE Extra operates as a Preferred Provider Organization (PPO)

(Zwanziger, et al., 2000). A PPO is a system that encourages enrollees to choose selected providers who have agreed to provide a discount for their services. This option provides more choice to the beneficiary regarding provider selection, and while the services are provided at a discount rate, usually 15-20% of a negotiated fee, the beneficiary will have more out of pocket expenses than if the services had been provided within the HMO option.

Finally, TRICARE Standard is similar to a traditional, non-enrolled indemnity plan with cost-shares and an annual deductible (TRICARE Administrative Guide, 2000). TRICARE Standard allows the beneficiary the greatest freedom of choice because they may choose any authorized provider. The individual is responsible for a 20-25% of allowable charges co-payment per visit/cost share and an annual deductible. All of these options operate separately and collectively under the consolidated TRICARE banner. While the Prime or HMO option is the most restrictive in provider choice, it is the least expensive for the beneficiary, the Extra or PPO option is less restrictive, but is more costly and the Standard option is least restrictive, but more expensive for the beneficiary.

Under this EPO, HMO model, WBAMC is charged with the responsibility of financing and delivering comprehensive healthcare services to a defined population, also referred to as beneficiaries, within a semi-fixed budget. The majority of the budget is a fixed appropriation. Operational adjustments to this amount occur due to recovery of funds from other health

insurance coverage possessed by some beneficiaries. Additional funds are received from the El Paso Veterans Affairs Healthcare System for providing services to their beneficiaries and from research grants.

William Beaumont Army Medical Center shares this mission, providing for the healthcare needs of the beneficiary population, with the TRICARE Managed Care Services Contractor for the region, TRIWEST. WBAMC meets this mission by using physicians, assisted by physicians assistants and nurse practitioners, as Primary Care Managers (PCM) for beneficiaries enrolled into the TRICARE Prime Option. The PCM is responsible for delivery and coordination of healthcare services to the beneficiaries enrolled to each PCM.

The Executive Leadership of WBAMC has reviewed the current utilization of primary care managers, as well as enrollment statistics, within the WBAMC catchment area. A catchment area is a legislatively defined region of approximately 40 miles radius from the facility. Within this area, military healthcare beneficiaries are able to enroll into TRICARE Prime and choose the military facility staff as their provider. Under the 1988 Champus Reform Initiative and the 1994 Defense Authorization Act, military retirees and their family members who are 65 or older loose eligibility for TRICARE when they become eligible for MEDICARE (TRIWEST, 2000).

The 2001 National Defense Authorization Act restored permanent lifetime TRICARE eligibility to Medicare eligible military retirees and their family members (Armed Forces News E-

mail Newsletter, 13 October, 2000). Current plans call for eligible beneficiaries to enroll in Medicare Part B and to be seen by network providers using Medicare as first payer and TRICARE as second payer. The effect of this change on the military healthcare system, especially the impact of second payer payments on the military healthcare budget are still being discussed in Congress and futher changes may be forthcoming (Philpott, 2001).

The Executive Leadership of WBAMC would like to see an increase in the number of individuals, especially the number of retires and family members under 65, enrolled in TRICARE Prime at WBAMC. Some benefits of enrollment within the WBAMC system for the patient, beneficiary or guardian include improved prevention and wellness services, continuity of care, a self-reported better health status (Grembowski, et al., 2000) and a decrease in out-of-pocket expense, since seeing WBAMC providers does not require a co-pay or payment of a deductible (Zwanziger, et al., 2000).

Benefits to the WBAMC healthcare system associated with increased enrollment under an HMO plan include decreased inpatient cost and utilization of inpatient services (Zwanziger, et al., 2000). Another organizational benefit related to increased enrollment is an improved continuity of care within the system. For example, the increased use of clinical practice guidelines and shared information management systems can allow providers to assess a patient's current treatment and recommend changes without having to repeat diagnostic procedures (Walker,

Howard, Lambert & Suchinsky, 1994; Beveridge, 1997). Finally, COL (Dr.) Hawley-Bowland, Commander WBAMC, has suggested that additional benefits of increased enrollment for WBAMC, might include improved control of outside specialist referrals and improved control of pharmacy expenditures via use of a specific medication formulary and medication prescription pathway (personal communication, 19 Sep 00).

Goal Statement

William Beaumont Army Medical Center has a TRICARE Prime enrollment, as of 19 Sep 2000, of 37,225. This number is 71% of the total eligible beneficiaries (52,767) living within the WBAMC catchment area (Appendix A). Eligible beneficiaries in the catchment area include active duty military personnel, their dependents, retirees and their dependents under the age of 65, and retirees and their dependents not eligible for Medicare. Forty-four percent or 9,852 of the 22,304 eligible retired service members and family members are currently enrolled into TRICARE Prime.

A new goal or projection of 15,613 or 70% of the eligible retired service members and family members in the WBAMC catchment area will be used in this report for comparison purposes to the old goal of 45%. This new goal was established based on conversation input from members of the Executive Leadership and WBAMC Department Chiefs and staff members. This new goal is expected to raise the total number of enrollees to 44,553 or 80% of the eligible population if all enrollment goals are met (Appendix B). This new goal represents a net increase

of 19.69%, or 20% (37,224 to 44,553) in the enrolled population.

The fact that the active duty and active duty dependent population of Prime enrollees is currently below the set goal was reported to be due to difficulty determining and communicating eligibility for enrollment due to student and transient status or lack of understanding regarding program enrollment policies and procedures. Individuals in student status and/or in transient status for less than 90 days are unable to enroll to a specific site till they reach their actual duty assignment (M. Ancker, WBAMC TRICARE Representative, personal communication, 19 Sep 00). Currently, educational programs are being offered to soldiers and family members in an attempt to increase TRICARE Prime enrollment.

It should also be noted that there are 10,620 Medicare eligible retirees and family members in the WBAMC catchment area. WBAMC may be called upon to provide care for these individuals when permanent lifetime TRICARE eligibility and operating procedures are finally established. A randomly selected enrollment goal of 30% has been discussed for comparison purposes. This will elevate the total enrollment to 47,739 or 75% of the total beneficiary population (Appendix C). It should be noted that the decrease in total enrollment percentage between the enrollment plans presented in Appendixes B and C is due to an increase in the total number of eligible beneficiaries obtained by including the Medicare eligible population.

Research Question

Will WBAMC's current primary care outpatient operation be able to absorb the projected increase in appointment demand due to an increased enrollment of TRICARE Prime eligible retirees and family members into the current operating capacity or number of appointments available for primary care? If not, how should WBAMC change its primary care outpatient operations to create a capacity equal to or greater than the projected demand? For purposes of this report, only primary care outpatient operations will be studied.

Literature Review

Primary Care

The Institute of Medicine, Committee on the Future of Primary Care has defined primary care as "the provision of integrated, accessible healthcare services by clinicians who are accountable for addressing a large majority of personal healthcare needs, developing a sustained partnership with patients, and practicing in the context of family and community" (Donaldson, Yordy, Lohr & Vanselow, 1996). The term integrated in this definition was intended to encompass "the provision of comprehensive, coordinated, and continuous services that provide a seamless process of care" (Donaldson, Yordy, Lohr & Vanselow, 1996). Primary care has also been described as the initial access or first step within a cost-effective, efficient, coordinated healthcare system (Sultz & Young, 1999). Finally, Barton (1999) defines primary care as the patient's first contact with the treatment (healthcare) system.

The primary care system can be described as the backbone of the healthcare system in the United States and the world (Garr, Rhyne & Kukulka, 1993). The primary care system of healthcare focuses on wellness and disease prevention. The goal of primary care is to keep patients healthy or delay any significant consequences of disease. Primary care has gained prominence within healthcare and HMOs because it is expected to result in reduced cost to the system due to reduced illness and the resulting reduced need for expensive healthcare services (Griffith, 1995).

Primary Care Manager

Primary Care Manager (PCM) is a term that is used in healthcare to describe the role of the person who serves as the initial point of contact or gatekeeper for access to the healthcare system (Ledlow, Bradshaw & Shockley, 2000). This term also describes the individual who is tasked with meeting the primary care medical needs of the patient. These needs include acute care for major and minor illness, routine wellness and prevention such as immunizations, and on going monitoring of chronic health problems.

The PCM is responsible for the diagnosis and development of an individualized, evidence based, treatment plan, including prescription medications and specialty consultation for the patient. PCMs have assumed a special position within the healthcare system because of their intake or gatekeeper position as well as their focus on prevention of disease and promotion of health (Kongstvedt, 1997). This role as gatekeeper has been described as elevating their position in the medical care 'food chain' to one above both specialist physicians and hospitals, because they now control access to specialists and hospitals (Kongstvedt, 1997). The expanding influence of this gatekeeper role, combined with the tight supply of primary care physicians, has also lead to increasing salary, opportunities, and prominence for primary care managers within the healthcare system (Kongstvedt, 1997).

Kongstvedt (1997), Griffith (1995) and Sultz and Young (1999) all report that physicians specializing in internal

medicine, family practice and pediatrics can serve as PCMs. Kongstvedt and Sultz and Young also suggest that obstetrics/gynecologists can serve as PCMs. Finally, Griffith suggests that not only should obstetrics/gynecologists be considered PCMs, but that emergency medicine physicians, psychiatrists, nurse practitioners and nurse mid-wives should also serve as PCMs. Currently, WBAMC utilizes Internal Medicine, Family Practice and Pediatric providers as PCMs (COL (Dr.) N. Gore, personal communication, 2 Oct 2000). The use of physicians, supported by physicians assistants, and nurse practitioners, specializing in internal medicine, family practice and pediatrics as primary care managers is consistent with military guidance (Appendix D) and current healthcare literature recommendations as noted previously.

Kongstvedt (1997) reports that the PCM should initiate or approve all requests for specialist care within the healthcare system. Schillinger, et al. (2000) reported that the use of a gatekeeping strategy decreased outpatient specialty and hospitalization rates while maintaining customer satisfaction rates. Rosenblatt, Hart, Baldwin, Chan and Schneeweiss (1998) reported that specialists did not feel comfortable providing primary care services and therefore did not offer primary care. These two reports support the use of PCMs to provide, manage and coordinate appropriate healthcare access for beneficiaries.

Managed Care Organizations, such as WBAMC, should realize organizational cost savings by the appropriate use of PCMs and by their limiting unnecessary referrals to specialists,

especially for services that they are able to provide (Ruta, et al., 1997). Like other MCO's, WBAMC should also recognize savings by providing primary and specialty medical care, as well as Optometry, Social Work, and other specific care, within the WBAMC system. WBAMC may then be able to use these savings to fund additional services, thereby expanding care opportunities and improving patient satisfaction.

Panel Size

The U. S. Army Medical Command published suggested beneficiary to provider ratios or panel sizes in 1998 (Appendix D). These suggested ratios or panels ranged from 500 to 2000 enrollees/beneficiaries per provider, depending on medical specialty (family practice, internal medicine, pediatrics), training (physician, physician assistant, nurse practitioner), status (military or civilian), and position (clinic or service chief). This correspondence suggests that location, demographics and other factors may influence the number of beneficiaries per provider. Kongstvedt (1997) suggests that severity of illness, provider case mix (the number of severely ill patients vs. generally healthy patients), as well as demographics of age and gender may also be considered when establishing provider/beneficiary ratios.

New guidance regarding provider/beneficiary ratios was issued by the Assistant Secretary of Defense, through the Department of the Army, Office of the Assistant Secretary, Manpower and Reserve Affairs, in 2000 (Appendix E). This guidance called for an overall enrollee/beneficiary ratio to

provider ratio of 1500 beneficiaries per PCM. Additional estimator data, included as an enclosure/appendix to the 2000 guidance, provides information suggesting that beneficiary ratios may range from 1205 to 2230 for military providers and 1310 to 2425 for civilian providers depending on demand, productivity, availability, and readiness considerations (Appendix E).

Kongstvedt (1997) reported that most civilians HMO plans called for a ratio of 1 provider per 1600 beneficiaries. He further stated that plans varied in size based on total population. Plans with less than 80,000 members averaged 1127 beneficiaries per provider with a one standard deviation range of 658 to 4762. Plans with over 80,000 members averaged 1515 beneficiaries per provider with a one standard deviation range of 855 to 6667 (Kongstvedt, 1997).

Primary Care Manager Availability

Current guidance calls for each PCM to have 25 appointments available per day or approximately 500 appointments per month (Appendix E). This compared favorably with reported numbers of 17 to 30 appointments per provider per day or 340 to 600 per month reported by healthcare providers in the Midwest (Nissen, 1994). Finally, the TRICARE Access Imperatives website (TRICARE, 2000), webpage on clinic templating described a scheduling system with 32, 15 minutes appointments per day. Appointments could be double booked for up to 30 minutes for specific types of care.

Ledlow, Bradshaw and Shockley (2000) state that "primary

care appointment availability is essential to the healthcare system for high beneficiary satisfaction, high quality care, and migration to an effective managed care wellness model". It is logical to assume that appointment availability is directly related to provider availability. If it is determined that the current level of appointments is not enough to meet projected demand, either primary care providers must increase the number of daily appointments or the number of providers must increase so as to increase the number of available appointments.

Patient Demand

Wingler and Sharp Consultants presented the results of a WBAMC commissioned study at the WBAMC Strategic Planning conference on 21 Sep 2000. They reported that the average WBAMC military beneficiary sees a primary care provider 4.2 times per year. They also reported that this number jumps to 5.6 visits per year for retirees over the age of 65.

The National Center for Health Statistics within the Centers for Disease Control and Prevention reports that overall the average person visited a primary care providers office 1.6 times per year and had a total number of outpatient visits of 3.1 times per year in 1998. This report further breaks down the number of total visits per patient by age group, 44 and under average 2.3 visits, 45 to 64 average 3.6 visits, 65 to 74 average 5.7 visits and at over 75 years of age a person averages 6.6 visits (Woodwell, 2000).

There appears to be a strong, direct relationship between patient demand and appointment availability. A previously

stated, if demand exceeds appointment availability then appointment availability must be increased to meet demand and provide patient satisfaction. The purpose of this project is to determine if current appointment availability will be able to meet projected demand associated with an increase in the TRICARE Prime enrollment population.

Additional Services

Total healthcare service demand includes not only primary care but also specialty care such as Cardiology and Orthopedics as well as outpatient services such as Physical Therapy, Occupational Therapy, Ambulatory Surgery, and Behavioral Science. Woodwell (2000) reports that 48% of all ambulatory care visits were for specialty care in 1998. Additionally, diagnostic support services such as laboratory and imaging need to be considered in any discussion regarding demand for care and the capacity to provide care. At this time, no data is available regarding the average number of diagnostic studies performed in the United States.

Griffith (1995) suggested that one way in which a MCO, such as WBAMC, can save money is to be able to provide primary care as well as specialty care medical and surgical services. By logical extension, WBAMC will be able to save money by providing these services within the facility and not paying for PRIME beneficiaries to receive the services outside of the facility. Will these services be able to support a projected increase demand for services generated by the projected increasing demand for primary care services by increasing primary care enrollment?

If not, should WBAMC still attempt to increase TRICARE Prime enrollment?

Staffing and Facility Support

Current facility ratios show that WBAMC provides 1.4 exam rooms and .6 support personnel per PCM (Appendix F). This is below the Department of Defense, Assistant Secretary of Defense (Health Affairs) recommended ratios of 2 exam rooms and 3.5 support staff per provider (Appendix E). The Health Affairs ratios are in line with civilian support ratios of 2 exam rooms and 4 support staff per provider (C. Gonzales, FNP, TRICARE Prime civilian network PCM, personal conversation, 5 Oct, 2000).

COL (Dr.) Hawley-Bowland, Commander WBAMC, reported that increasing support staff increased operational efficiencies and resulted in increased PCM appointment availability at her previous command (Personal conversation, 7 Sep 00). Is it possible that by increasing the number of exam rooms, as well as the support staff personnel ratios, to the Health Affairs recommended levels, that PCM productivity will increase? If so, will this result in increasing PCM appointment availability to meet projected appointment demand? If it is not possible to increase the ratio of exam rooms and support staff per PCM, what other methods or procedures are available to increase availability to meet projected demand and maintain patient satisfaction? Finally, if no methods to increase availability are available, should WBAMC attempt to increase TRICARE Prime enrollment and risk not being able to meet projected demand for service?

Methods of Improving Operational Efficiencies

Several methods of improving operational efficiencies are contained within the health services literature. Beveridge (1997) suggests that disease management, outcomes management and relationship management, combined with a program of prevention will enhance the overall quality of care while improving cost-effectiveness and operational efficiencies. Disease management, outcomes management and relationship management as well as case management are all terms used to describe aspects of care management.

Care management is described within Kongstvedt's (1997) Essentials of Managed Care as a means of reducing morbidity, improving patient functional status, improving patient and physician satisfaction and achieving a better control of cost of care. Landry and Knox (1996) also suggest that therapies and processes of care may have to be reengineered or reduced and an increasing focus will need to be placed on better patient education and motivation as a means of reducing provider services or provider appointment demand. Callahan, Stump, Stroupe and Tierney (1998) also called for more interventions regarding education and self-care behaviors as a means of reducing demand for healthcare provider services.

Okin, et al., (2000) reported that the use of case management services decreased outpatient visits. Sommers, Marton, Barbaccia and Randolph (2000) reported a net decrease in office visits of 2 per year for patients who are case managed. Kaufman, et al., (2000) also documented improved cost savings

within the healthcare system with case management. In both cases the decrease in demand by patient under case management services should open up provider appointments for use by additional beneficiaries.

Methods and Procedures

Demand Forecast

A summary report of William Beaumont Army Medical Center's outpatient appointment utility and availability data for the last six months of calendar year 2000 was obtained from the hospital's clinical support division (CSD). The information was obtained by CSD from the Appointment Utilization Report feature contained within the Composite Health Care System (CHCS) database. The raw data were then entered into a Microsoft excel spreadsheet and used to determine the percentage of unbooked appointments (Appendix G pages 1 and 2).

The data for the primary care services, Internal Medicine or Prime Adult Medicine Clinic, Pediatrics and Family Practice, were consolidated onto a separate spreadsheet (Appendix H). The Prime Adult Medicine Clinic (PAMC) data were selected as a representative, due to the high volume as well as low availability of appointments. The PAMC data was then imported into a Microsoft excel spreadsheet and used within a demand-forecasting model as presented in the Chase, Aquilano and Jacobs text Operations Management for Competitive Advantage (2001) (Appendix I).

This use of this model is based on the assumption that booked appointments is a representative suggestion regarding access demand (Murray & Tantau, 2000). Three methods of forecasting demand are used in the spreadsheet. They are a simple moving average, a weighted moving average and a least squares/linear regression model.

The simple moving average and weighted moving average were both computed twice. For the two-month simple moving average, the prediction was based on the average booked appointments or demand recorded for the previous two months. This process was also used to determine the three-month prediction. The two month weighted moving average is calculated as the sum of 40% of the appointment demand two months in advance of the projected month and 60% of the appointment demand one month in advance of the projected month. The three month weighted moving average was computed by combining 20% of the first month's appointment demand, 30% of the second month's and 50% of the third month's demand to arrive at the forecasted demand for the fourth month.

The least squares/linear regression model was calculated by determining the slope and intercept of a line of best fit for the appointment data. This was computed using the slope and intercept function within the Microsoft excel spreadsheet. The demand model was repeated without the use of November and December data for comparison. This was done in an attempt to account for the variability of demand during this holiday season.

A mean absolute deviation (MAD) test was conducted to identify the most appropriate format to use in forecasting the demand for appointments within the PAMC based on the current and projected TRICARE Prime enrollment (Appendix I). Determining the absolute value associated with the deviation from the projected value and determining an average value resulted in the MAD value. The MAD test is also used to support the face value

of the validity and reliability of the demand-forecasting model.

Initial calculations were not expected and a second calculation was conducted to verify results. This was accomplished by repeating the calculation process using the Prime Adult Medicine Clinic total service numbers arrived by including appointments with resource share and weekend clinic providers (Appendix J). The similarity of the results, especially regarding identification of appointment trends supports the face validity and reliability of the process, if not the conclusions.

Additionally, this demand forecast model was repeated using Prime Adult Medicine Clinic data obtained from the Worldwide Workload Report (Appendix K). The WBAMC Business Management Division provided the PAMC data used from this exercise. This model included data for calendar years 1999 and 2000. This additional data was not available using the appointment utilization option within CHCS.

Availability Analysis

The data contained in the Primary Care appointment utilization spread sheet was imported into another Microsoft Excel spread sheet to aid in the computation of projected demand. Based on projections found in Appendix B and C, Appendix B resulted in a net increase of 20% over current population and Appendix C demonstrated a net increase of 28% over current population, increases in demand for 20% and 28% were projected, based on number of booked appointments or demand. These projections were then compared to the appointment

availability numbers. This comparison was completed to determine if the current PCM appointment system would be able to meet demand for the projected enrollment (Appendix L).

Results

Demand Forecast

The demand-forecasting model for the PAMC (Appendix J), based on the mean absolute deviation results, suggests that the least squares/linear regression model is the best method to predict future demand. However, since the slope in this model is negative, sometime in the future there will be no appointment demand. Dropping the information from November and December, due to decreased demand that may be related to the holiday season, results in a positive slope. However, the overall result is that the lowest mean absolute deviation number is associated with the 3 month weighted moving average. This change in methodology resulted in a positive slope but a different recommendation for forecasting model.

Applying both methods to the total demand for services over a six month period within the PAMC again resulted in a recommendation of least squares as the forecasting model, yet still has a negative slope, eventually resulting in no demand for services. Again, this is an unreasonable expectation and was recalculated with only four months of data, to try to account for decreased utilization over the holidays as well as reduced work schedules to accommodate holiday and leave request.

The second analysis of four months of data also demonstrated that the 3-month weighted moving average would be the best forecasting model, based on the lowest MAD value. However, in this case the slope for the least squares model was also negative. Since the appointment utilization model was selected

as a means to measure the demand for services, and since the results were less than expected, another means of measuring workload was desired for comparison.

This source of data was the Worldwide Workload Report (WWR). The forecasting models were applied to PAMC workload obtained from the WWR through BMD. Again, the lowest mean absolute deviation was associated with the least squares/linear regression model, however the slope of the line of best fit was again negative. Essentially, each model suggests that the continuation of the decrease in demand will eventually lead to no demand for services. While this prediction may be statistically accurate, clinically, they do not seem to be realistic.

Availability Analysis

The information contained on the Appointment Utilization spreadsheet demonstrates that the family practice service at the CTMC currently operates with 4.28% average availability and that the internal medicine clinic currently operates with an average availability of 5.27% (Appendix H). Both of these numbers are well below the projected increases of 20 and 28% expected in demand with increased enrollment (Appendix L). The Pediatric Clinic operates with 23.14% average availability, a value within the 20% projected demand levels.

Examination of the data in Appendix G, facility summary of appointment utilization suggest that some areas possess large over-capacity. These areas include medical specialty care, mental health and surgery. Further investigation revealed that

the excessive capacity might be due to template construction and not represent actual excess capacity; this issue will be addressed in the discussion section of this project.

Finally, the primary care appointment utilization - demand comparison worksheet resulted in several interesting predictions. The projections for demand are based on 20% and 28% increases in enrollment contained in Plans A and B (Appendix B & C). The comparison table suggests that family practice and internal medicine will not be able to meet demand. Pediatrics appears to have the ability to absorb a 20% increase in demand without difficulty. However, the increased demand associated with a 28% increase in enrollment could only be meet in two of the six months. These results suggest that the staffing pattern within primary care should be reviewed and possibly adjusted.

Discussion and Conclusions

No conclusive, acceptable method to forecast demand for primary care healthcare services at William Beaumont Army Medical Center was identified during this project. MAD values to identify a forecast model changed with elimination of data. The majority of data sets that were modeled in this project suggest that the demand for primary care services will decrease. This projection does not agree with staff expectations or the primary care healthcare mission of the facility.

If there is a limited documented demand for primary care services, there may a limited reason for the continued existence of William Beaumont Army Medical Center. Can the military healthcare system support a tertiary treatment facility with such decreasing demand? Would it be more effective for the military healthcare system to transport patients from other facilities to WBAMC for specialty care or contract for such care at local facilities?

Should WBAMC shift operational focus from tertiary care to primary care, or is there an appropriate mix of specialty care services that better support the primary care mission of WBAMC? What future resources such as staffing, financial operational support, construction and renewal support, as well as Managed Care Contractor Support are provided to WBAMC by the US Army Medical Department to meet organizational goals and objectives, and will these resources align with projected patient demand for services? These are important questions, but they go beyond the scope of this project and will be deferred at this time.

Finally, is availability of appointments a true measure of demand or utilization? Which aspect of health services comes first availability or demand? Is there a better representative of population demand for services that availability? This project is based on the assertion that demand for service can be measured by appointment availability as suggested by Murray and Tantau (2000).

The difficulty with forecasting demand based on historical booking data may be caused by several different factors. First, seasonal trends in demand associated with the end of year holiday season had a negative impact on the short-term six-month model. However, application of the forecasting model to two years worth of utilization data still suggested that demand would decrease over time. Additionally, unexpected deployments, training requirements and personnel issues still cloud the ability to forecast demand based on historical utilization.

Additionally, the use of historical data at WBAMC is made more difficult by the lack of data due to the virtual non-existence of primary care at WBAMC as recently as three years ago (Personal communication, LTC (P) Williams, WBAMC Chief of Staff, 6 April 2001). WBAMC possess limited primary care providers, 3 family practice physicians and 5 internal medicine physicians for a service population of approximately 62,000 in FY 2001. This is a decrease from FY 2000 of 3 providers without a decrease in patient demand for services.

Additional providers may improve access for TRICARE Prime adult patients. Additional providers may increase availability

enough to determine a better assessment of the demand for services. Finally, if primary care managers are the gateway to secondary services, additional providers and appointments may mean further referrals for specialty services and decreased excess capacity in those areas.

As mentioned previously, management of appointment data may need to be reviewed. Excessive availability in Physical Therapy was credited to appointment availability associated with use of the gym equipment for rehabilitation. Excessive availability in Nutrition was identified and associated by the staff with a failure by TRICARE to book patients into all classes in a specific series, such as weight control. "Walking the patient in" to the rest of the classes was reported by the nutrition care staff as the current solution to capture the workload. This method does not affect appointment utilization, but will impact WWR. Discussions between information management, Triwest, and nutrition have not been able to identify a solution to this scheduling problem at this time.

Finally, excessive capacity in gastroenterology was traced to an excessive availability of the clinic nurse for treatment appointments and not to the physicians for examination and diagnosis. While this type of template was established for the convenience of the patient, it has resulted in the appearance of appointment availability in this project that actually did not exist. Use of provider specific data may be one method to avoid this problem.

The TRICARE Management Activity offers local facilities

support with template management. One of the many tools offered is the Template Analysis Tool or TAT. The TAT provided a four week retrospective and four-week prospective analysis of appointment availability and utilization at military healthcare facilities within the military healthcare system. Analysis of information available via this tool may help local authorities better plan provider templates.

Currently, this tool is not in use at WBAMC. The rational given is that templates are already loaded for the 4 weeks and should not be adjusted. Information obtained from the TAT may be used to better project template demand. William Beaumont Army Medical Center's higher command, the Great Plains Regional Medical Command, is currently studying use of the TAT at Fort Leonard Wood and further guidance regarding the TAT is expected this calendar year.

Examination of current operational practices should also include an evaluation of current templates. Do the templates developed by the providers in the clinic meet the demands of the patient population? The Clinical Support Division (CSD) of WBAMC reports that current average provider productivity in the internal medicine clinic (PAMC) is 16, ranging from a low of 8 patients per day to a high of 21 patient visits per day for military and civilian employees and 26.5 visits per day for a resource sharing provider from TRIWEST.

The Family Practice clinic providers see and average of 14.5 patients per day, with individual provider averages ranging for 11 to 17 patient visits per day. Finally, in Pediatrics, CSD

reports that the military and civilian employee providers see and average of 15 patients per day while the resource sharing providers average 31 patient visits per day. Current, this discrepancy in visits between providers is being justified due to additional duties for military providers including education, inpatient services and military specific requirements.

Analysis of the appointment utilization information by CSD suggests that there may be an increased demand for new and primary care appointments at the current enrollment size. The current demand for initial primary care and consult request may be met by inclusion of the template suggested in Appendix M and N. These templates could be adjusted, based on demand, to allow the physician greater time to discuss treatment options with the patient while determining the plan of care. The utility of this template should also result in increased availability of appointments within the current system and should allow for consistent research and administration days for the staff for continuing medical education and attaining compliance with administrative and military duties.

Changes in current operations may also impact projected demand. Examining historical data would not capture the impact of the implementation of managed care policies that result in less utilization of services by TRICARE prime enrollees. Policies that increase the efficiencies of services offered to prime enrollees may increase enrollment and satisfaction and at the same time reduce demand for appointments. If this is so, there needs to be a way to capture services offered by non-

providers, such as case managers, to document actions that reduce demand.

Another method of improving primary care access and availability may be the establishment of a family practice residency program. Establishment of a Family Practice (FP) residency program would increase the number of providers able to see the general prime patient population. It would also free up internal medicine providers to focus on more acute, critical cases.

This option should also allow pediatrics to easily meet the demand for services by coordinating resident rotations. This support to the pediatrics department may allow for the changing of current resource sharing pediatrics providers with family practice providers. Also, the rotations of family practice residents through Obstetrics and Gynecology would increase the availability of general services and improve access.

Finally, the leadership of William Beaumont Army Medical Center should examine the need for specialty services and training with the limited beneficiary population. Does a total beneficiary population of 63,387 support the need for all the services currently provided? Would WBAMC and the military healthcare system benefit by relocating some services and paying for limited use services in the civilian market? As previously mentioned, these questions are beyond the scope of this project and will be addressed at a later time.

The elimination of low producing services may allow for the physical expansion of primary care services. The reappointment

of the associated staff to primary care may improve the efficiencies of the primary care providers. This process may allow WBAMC to meet the suggested goals of 2 exam rooms and 3 support staff per provider. Implementation of these practices should be considered and re-evaluated periodically to assure that services and access are improved.

In conclusion, and in answer to the research question, if enrollment plan A (Appendix B), a net increase of 20% over Sep 2000 enrollment is set as the enrollment goal, primary care services as currently operated, is projected to not be able to absorb the total increase in appointment demand. Logically, this also means that primary care services will not be able to meet the increased demand associated with a 28% increase in enrollment associated with plan B (Appendix C).

Variations in physical capacity, support staff, template management, and residency programs have been suggested as a means of improving access. Additionally, the use of historical date and the difficulty associated with future projections due to variations in the beneficiary population, staffing pattern, and readiness issues were noted. These issues form the basis for the following operational recommendations.

Recommendations

The Executive Leadership needs to determine the focus of care at William Beaumont Army Medical Center. If the primary goal of the organization is to meet the primary care needs of the enrolled population; than several reorganization or restructuring options should be evaluated. Implementation of these any or even all of these options may result in improved operating efficiency, cost savings and increased patient satisfaction.

First, establish a Primary Care Service. This service may be contained within the Department of Medicine. It should include Internal Medicine, Pediatrics and Family Practice. The purpose of this service should be to improve the access and provision of primary care to enrollees by consolidating services under one area and improving communication within the chain of command by having one point of contact.

Establishment of a Primary Care Service would also support the establishment of a Family Practice residency. The service should be able to support the education of residents due to the consolidated service and single point of contact, decision maker located at the head of the service. The establishment of a Family Practice residency may also help improve the operating efficiency of the organization by increasing availability of primary care services. Finally, if the military healthcare system decides that the orthopedic residency would be more effective at a larger post with more active duty troops and orthopedic injuries, the family practice residency may be able

to pull back into WBAMC enough primary care visits that the sending of orthopedic cases into the TRICARE network will have no major impact on operations or the bid price adjustment associated with use of the network.

Obstetrics and Gynecology may occasionally be viewed as primary care services, however, because of the military use of Obstetricians and Gynecologist as general surgery backfill, their utility as a referral only clinic, as well as their integration with both medicine and surgery, it is suggested that they not be included in the primary care service at this time. Emergency medicine is another service that is occasionally included in a primary care service. However, because of the trauma program currently at WBAMC and its ties to the surgery department, it is suggested that emergency medicine not be included in primary care at this time. Both of these decisions may be revisited at a future date.

Secondly, establish a Managed Care Department. This department would be used to coordinate care within the facility as well as within the TRICARE network, through close interaction with TRIWEST, the military managed care contractor for the region. This service may also contain components from the utilization management service as well as the quality improvement and business management division. The purpose of this service should be to improve the quality, effectiveness and efficiency of care at WBAMC.

Establishment of a Managed Care Department would facilitate a consolidated, coordinated effort intended to improve patient

care operations. It would provide a single source of data and information, which the hospital leadership could reference when making operating decisions. Finally, it would provide a consolidated department to deal with external service issues with local healthcare agencies and an internal service to provide specialty services such as disease and case management to TRICARE prime patients.

Third, within the primary care service, consider the establishment of primary care teams. The teams should be composed of two physicians, two physician extenders, and a registered nurse educator/case manager/triage and service coordinator. The physicians would be responsible for the development and oversight of a plan of care for patients in their respective enrollment panels. Patients may be assigned to the individual physician as the primary care manager by name, and the physician extender and registered nurse will supplement the physician in the role of primary care manager

The extenders would be responsible for implementing, assessing and monitoring the patient condition and evaluating the effectiveness of the plan of care, as well as attending to the urgent care needs of the patient. The extender should notify the physician of any significant changes in condition that may force a major alteration in the patient's plan of care. Coordination of appointment templates between the physicians and extenders could easily result in a total appointment availability of forty to fifty appointments per day.

The registered nurse on the team would be responsible for

coordinating the plan of care, including consults, follow up appointments and secondary services such as rehabilitation. The nurse would also be able to provide education on chronic illness care and screen telephone calls, providing information and forwarding request for services to team members. As reported earlier, case management services may result in a decrease in patent utilization of services. This possibility may allow each five-person team to be responsible for 5000 individual enrollees, 2500 for each provider pair.

Implementation of this suggestion would require that WBAMC provide a maximum of 18 physicians, 18 extenders and 9 registered nurses in primary care to barely meet the 20% net increase patient enrollment goal of 44,553 in plan A (Appendix B). More maneuverability would be achieved with ten teams or 20 physicians, 20 extenders and 10 registered nurses. Ten teams should easily be able to meet the primary care needs of 50,000 enrollees, well above the 28% enrollment increase number of 47,739 projected in plan B (Appendix C).

The physician component of the teams could be made up of pairings of internal medicine and family practice as well as pairings of family practice and pediatrics. The first team, internal medicine and family practice, would focus on an older population with older children and the second team, family practice and pediatrics, would focus on a younger population with younger children. Adult nurse practitioners, family nurse practitioners and physician assistants could be paired with internal medicine providers. Family nurse practitioners and

physician assistants could be paired with family practice providers and pediatric nurse practitioners, family nurse practitioners and physician assistants could be paired with pediatricians.

Clinical nurse specialist or registered nurses could fill case manager positions. In each case, additional skills must be identified and training in case management provided if needed. Social workers could be assigned to support the registered nurses in discharge planning or arrangements for counseling or other mental health services located within the social work department. Finally, additional personnel such as a Doctor of Pharmacy privileged provider or clinical nurse specialist credentialed with prescriptive authority may be co-located in the clinic to assist with patient care and access to services.

This five-person team should also improve patient satisfaction and continuity of care. Establishment of such teams should allow for a measure of consistency of provider during military personal training, deployments, and relocations. This would be accomplished by pairing up military and civilian providers or military providers on different permanent change of station rotation cycles. Variations in skill mix among members of the team should reduce the risk of deployment of the entire team, thus providing a measure of consistency of care.

Forth, implement a choice of new provider template as contained in Appendix M and N. This should improve efficiency and may result in increased availability. The suggested template in appendix M provides for 25 appointments per day for

a clinic provider, while the template in appendix N would result in 20 appointments per day.

The templates were developed using information regarding standard appointment types contained on the TRICARE Access Imperatives website. Review and adoption of standard appointment types within WBAMC should reduce confusion among staff and patients regarding the type of appointment to book for the patient. This change should result in smoother, quicker appointment bookings and improved employee, including providers, and patient satisfaction.

Pair the providers with extenders operating under a template with 28 fifteen-minute appointments per day and the system should easily be able to meet the goal of 20 to 25 appointments per provider per day. This coupling should easily allow the provider team to meet the goal of 800 to 1000 appointments per month. The new template may improve provider productivity by allowing additional time for administrative duties, such as signing inpatient charts in the record room or military duties such as a firing range or readiness processing.

Implementation of the new template could be modified for each provider and specialty based on information obtained from the TRICARE Template Analysis Tool (TAT) website offered by the TRICARE Management Activity (TMA). Currently, templates are constructed to support the provider; use of the TAT would encourage template construction to support the needs of the service populations. As mentioned, this option is being evaluated and may be implemented upon guidance from higher

command.

Template management should be a partnership between the provider and the organization. Ledlow, Bradshaw and Shockley (2000) suggested that the best person to manager the template or schedule is not the provider but someone else within the organization that is focused on the primary goal of the organization. Therefore, it is suggested that the registered nurse on the team control the template. Communication between the provider, patients and nurse, in consultation with CSD, should lead to the development and management of a provider template that will meet the demands of the patient populations for service.

Finally, William Beaumont Army Medical Center should try to provide some measure of reward or special service to TRICARE Prime enrollees. Patients, especially the active duty dependent and retiree and retiree dependents have choices regarding healthcare. A new healthcare or business process for WBAMC should be to identify ways the have these eligible beneficiaries choose WBAMC for their healthcare.

This may be done by only providing certain services to this identified population. Establishing a pharmacy service window for this population may be one way to provide a reward or enticement for enrollment into the TRICARE prime program. Establishment of a walk in urgent care center for prime enrollees within the emergency department may also be another way to provide extra service to prime enrollees.

In conclusion, WBAMC leadership needs to re-examine the

method of operation of the facility, its purpose, goal and methodology. The leadership of the facility needs to look for better ways of doing business - so as to draw patients into the facility. These methods may be either operational or service oriented; either way, to goal is to bring patient care back into WBAMC. In the current age of TRICARE, patients have a choice; the goal of WBAMC should be to operate in such a manner as to make the patients want to choose to receive their healthcare at WBAMC. This operational focus, while requiring a change in some aspects of current operation, should ensure the overall operation of the facility well into the future.

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APPENDIX A

WBAMC TRICARE Prime Enrollment

William Beaumont Army Medical Center
TRICARE Prime Enrollment

Patient Category	Catchment Population	Prime Enrollment	Enrollment Percentage	Goal
Active Duty - Fort Bliss	11,438 (18%)	9,188	80%	95%
WSMR		337		
AD-Family Members	19,025 (30%)	16,247	85%	95%
WSMR		838		
Prime Retirees + FM	22,304 (35%)	9,852	44%	45%
WSMR		763		
Total Eligible	52,767 (83%)	37,225	71%	70%
Medicare Eligible Pop	10,621 (17%)			
Total Beneficiaries	63,387 (100%)			

Source: TRIWEST Commanders Update Briefing 19 Sep 2000

APPENDIX B

WBAMC TRICARE Prime Enrollment - Plan A

William Beaumont Army Medical Center
TRICARE Prime Enrollment Projection

Plan A

Patient Category	Catchment Population	Prime Enrolled	Enrollment Percentage	Goal
Active Duty - Fort Bliss	11,438 (18%)	10,866	95%	95%
WSMR		337		
AD-Family Members	19,025 (30%)	18,074	95%	95%
WSMR		838		
Prime Retirees + FM	22,304 (35%)	**15,613**	**70%**	**70%**
WSMR		763		
Total Eligible	52,767 (83%)	**44,553**	**80%**	**80%**
Medicare Eligible Pop	10,621 (17%)			
Total Beneficiaries	63,387 (100%)			

APPENDIX C

WBAMC TRICARE Prime Enrollment - Plan B

William Beaumont Army Medical Center
TRICARE Prime Enrollment Projection

Plan B

Patient Category	Catchment Population	Prime Enrolled	Enrollment Percentage	Goal
Active Duty - Fort Bliss	11,438 (18%)	10,866	95%	95%
WSMR		337		
AD-Family Members	19,025 (30%)	18,074	95%	95%
WSMR		838		
Prime Retirees + FM	22,304 (35%)	**15,613**	**70%**	**70%**
WSMR		763		
Total Eligible	52767 (83%)	**44,553**	**80%**	**80%**
Medicare Eligible Pop	10,621 (17%)	**3,186**	**30%**	**30%**
Total Beneficiaries	63387 (100%)	**47,739**	**75%**	**75%**

APPENDIX D

PCM Summary Guide Documents

DASG-ZH

MEMORANDUM THRU Commanders, MEDCOM Regional Medical Commands

FOR Commanders, Military Treatment Facilities (MTFs)

SUBJECT: Primary Care Manager (PCM) Guidance

1. The beneficiary to primary care manager ratio has been discussed in health care forums since the advent of managed care. The military health system has also been engaged in this discussion and has conducted extensive study on the subject.

2. I understand that many of our MTFs have implemented a team approach to enrollment. The composition of these teams is largely MTF specific. I support the team approach.

3. Attached you will find, by provider type, the ratios of beneficiary to provider that have been demonstrated to be optimal in our setting. Variation in these ratios is to be expected from MTF to MTF due to site specific differences such as location, demographic composition and other factors. These variations should be considered in conjunction with the enclosed guidance to define your appropriate ratios.

4. I challenge you to use these ratios for primary care planning purposes and relook this issue in one year. My point of contact is MAJ Shonna Mulkey, TRICARE Division, Office of the Assistant Chief of Staff for Health Policy and Services, DSN 471-6518 or Commercial (210)221-6518.

FOR THE SURGEON GENERAL

3 Encls
as

JOHN S. PARKER
Brigadier General, MC
Assistant Surgeon General
for Force Projection

SUMMARY OF PREVIOUS GUIDANCE
REGARDING PRIMARY CARE MANAGER RATIO/CAPACITY

1. There is wide variation in PCM ratios used by civilian health care institutions. In the literature as well as in practice the field reflects considerable controversy regarding an appropriate methodology for determining primary care capacity. This is one of the most fundamental, yet unsettled, topics in managed care.

2. In the military, proscriptive guidance on the subject has not been issued out of respect for local initiative and the fact that so many regional and site specific variables exist. In the 19 Dec 95 memorandum entitled Policy Guidelines for Implementing TRICARE Primary Care Programs in the Military Health Services System, the Assistant Secretary of Defense for Health Affairs (ASD/HA) states: "The number and mix of primary care providers must satisfy demand and ensure access to all necessary services. Ratios will vary from region to region based on enrollee demographics and epidemiological data." The ASD then makes reference to the Request for Proposal language in TRICARE managed care support contracts. The language specifies, "The PCM requirement is a ratio of one to every 2,000 enrollees." This ratio is considered the maximum ratio or ceiling for one primary care provider. Thus, the 1 to 2,000 ratio will usually be adjusted downward as necessary. The memorandum concludes that, as the TRICARE program matures, "resourcing should be based on calculations of appropriate proportions of primary care practitioners, instead of relying on demand-oriented projections that reflect current practice patterns."

3. The Policy Guidelines for Implementing Managed Care Reforms in the Military Health Services System, dated Jan 96, emphasize as one of the guiding principles of TRICARE: promoting optimal use of the military health system direct care resources. In implementing TRICARE Managed Care Support Contracts, the guidelines provide that the "contractor will work with the Lead Agent and local MTF commanders to determine the optimal configuration of the network as subordinate and complementary to the direct care system capabilities of the region where the majority of the care is delivered…. The primary care system is the baseline upon which Lead Agents build additional network needs, develop referral policy and measure access standards."

4. The 1998 TRICARE Marketing Plan states that, in general, few MTFs are enrolled to capacity in the Prime option. A contributing factor listed in the marketing plan is "unused MTF capacity" which removes the imperative to enroll in order to guarantee access to health care at the MTF. As of 1 Oct 98, MTFs will be funded based on the number of beneficiaries enrolled in TRICARE Prime with their PCM at their MTF. The implementation of EBC budgeting heightens the importance of accurately determining PCM capacity. Greater service level involvement is expected when budgeting and resourcing are at issue.

PROCESS USED IN DEVELOPING THE SUGGESTED PCM RATIOS

1. Many MTFs have requested guidance from MEDCOM on the subject of appropriate PCM ratios. As an initial step in addressing these requests, the Health Care Advisory Board (HCAB) was asked to conduct a customized research project assessing the military's primary care workforce and developing a methodology for determining optimal primary care capacities for Army MTFs. The HCAB conducted the research and forwarded a 180 page document containing relevant articles as well as summaries of interviews from individuals with years of experience in military health care. A copy of this research document is available upon request from the TRICARE Division, MEDCOM, DSN 471-6518.

2. In December 1997, MEDCOM generated a request for information regarding the primary care manager (PCM) capacity for each MTF down to the free-standing clinic level. This request was made as a result of a tasking from the Assistant Secretary of Defense for Health Affairs (ASD/HA). The response revealed a surprisingly large variation in the PCM to beneficiary ratios among MTFs. For example, at one extreme was a medical center that reported a ratio of 1 PCM per 950 beneficiaries. At the other end of the spectrum was a medical center that reported 1 PCM per 2,100 beneficiaries. Similarly, one Medical Department Activity (MEDDAC) reported a PCM ratio of 1 to 2,300 while another MEDDAC in the same general area reported a 1 to 940 ratio. Certainly, some variation in PCM to beneficiary ratios is to be expected from MTF to MTF based on TRICARE regional and demographic differences and other factors. However, the need for some basic standardization will become increasingly important over the next year with the implementation of enrollment based capitation. These facts served to reinforce the need for PCM ratio guidance.

3. Guidance from the ASD/HA has indicated a need for mature TRICARE programs to begin moving toward "appropriateness" as a standard for resourcing rather than demand-oriented projections. Measures of appropriateness are generally ascertained through benchmarking. In the HCAB report, the article by Goodman et al, "Benchmarking the US Physician Workforce: An Alternative to Needs-Based or Demand-Based Planning," provides an excellent outline of this process. While there is a lack of consensus regarding the specific methodology to be used to determine optimal PCM ratios, there is apparent agreement on the value of benchmarking with similar facilitates to determine the appropriateness of existing ratios. For military facilities, perhaps the most useful benchmarking data is data from other MTFs since they have similar demands, missions and readiness issues. To this end, the enclosed PCM ratios are offered as a means of providing all Army MTFs with a suggested baseline formula. This will facilitate the benchmarking process and allow MTF Commanders

to see where they are in the overall scheme of current research and military practice.

4. While many MTFs have requested guidance on this subject, many others have already done significant work in determining an optimal PCM capacity ratio. If you have made progress toward this goal, or if you have comments regarding the suggested ratios, we would like to hear about it. Your work could assist others and could also be used by MEDCOM in future planning guidance. Please address any comments to the TRICARE Division, U.S. Army MEDCOM, DSN 471-6518 or commercial (210)221-6518.

SUGGESTED BENEFICIARY-TO-PROVIDER RATIOS

Provider Type	Beneficiary to Provider Ratio
Pediatrics - Contract/Civil Service provider - Military provider - Clinic Officer in Charge (OIC)	Civilian Standard per literature (1,400-2,000:1) - 2,000:1 (no inpatient responsibilities) - 1,200:1 (limited inpatient responsibilities) - 600:1 (limited inpatient responsibilities)
Pediatric Nurse Practitioner - Contract/Civil Service provider - Military Provider - Clinic OIC	Civilian Standard (extend physician capabilities) - 1,000:1 (no inpatient responsibilities) - 700:1 (no inpatient responsibilities) - 600:1 (no inpatient responsibilities)
Family Practice - Contract/Civil Service provider - Military provider - Clinic OIC	Civilian Standard per literature (2,000-3,000:1) - 2,000:1 (1,000 children/1,000 adults)(no inpatient resps) - 1,600:1 (600 children/1,000 adults)(limited inpt resps) - 800:1 (300 children/500 adults)(limited inpt resps)
Family/Adult Nurse Practitioner - Contract/Civil Service provider - Military provider - Military OIC	Civilian Standard (extend physician capabilities) - 1,000:1 (500 children/500 adults) - 800:1 (300 children/500 adults) - 600:1 (300 children/300 adults)
General Medical Officer (Serve as part of a family practice team) - Contract/Civil Service provider - Military provider*	Civilian Standard per literature (2,000-3,000:1) - 2,000:1 (all adult patients) - 1,600:1
Physician Assistants - Contract/Civil Service provider - Military provider*	Civilian Standard (extend physician capabilities) - 1,000:1 (500 children/500 adults) - 800:1
Internal Medicine - Contract/Civil Service provider - Military provider	Civilian Standard per literature (1,100-1,200:1) - 1,100:1 (limited inpatient responsibility) - 600:1 (limited inpatient responsibility)

* These are FTEs that may be the sum of hours available from TOE providers.

Note: The provider category refers to full-time equivalent (FTE) figures defined as provision of 1,800 to 2,000 hours per year. Readiness and administrative duties, leave and education requirements have been considered in determining military ratios. These ratios assume an adequate ancillary support staff and an adequate physical plant. The Automated Staffing Assessment Model includes 2 support personnel per category I and II provider. Support staff for primary care include RNs, LVNs, nursing assistants, technicians and clerical staff. It assumes that MTF Commanders will choose the support staff that most cost-effectively meet the needs of their population. While PCM ratios for internal medicine are provided, no ratios are provided for obstetrics/gynecology due to a lack of consensus in the literature. However, MTF Commanders are encouraged to utilize gynecologists as PCMs when appropriate.

APPENDIX E

HA Tasker - PCM Enrollment

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
MANPOWER AND RESERVE AFFAIRS
111 ARMY PENTAGON
WASHINGTON DC 20310-0111

REPLY TO ATTENTION OF

23 MAR 2000

MEMORANDUM FOR THE SURGEON GENERAL

SUBJECT: Policy to Improve Military Treatment Facility (MTF) Primary Care Manager Enrollment Capacity

Reference memorandum, Assistant Secretary of Defense (Health Affairs), subject as above, March 5, 2000, enclosed.

The reference memorandum is forwarded for action. Please forward the MTF enrollment capacity assessments and the comprehensive capacity plans through this office to the Assistant Secretary of Defense (Health Affairs).

My point of contact for this action is COL Christie Smith who can be reached at (703) 697-1482, DSN: 227-1482 or [redacted]. Please have your action officer contact COL Smith upon receipt of this memorandum.

John P. McLaurin III
Deputy Assistant Secretary
(Military Personnel Programs)

Enclosure

[Categorical Listing] [Numerical Listing]

THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, DC 20301-1200

6 March 2000

MEMORANDUM ASSISTANT SECRETARY OF THE ARMY (M&RA)
FOR ASSISTANT SECRETARY OF THE NAVY (M&RA))
ASSISTANT SECRETARY OF THE AIR FORCE (M,RA,I&E)

SUBJECT: Policy to Improve Military Treatment Facility (MTF) Primary Care Manager Enrollment Capacity

At our recent TRICARE Access Summit, one of the policy imperatives agreed to by participants was the development of a plan to improve provider availability and MTF enrollment capacity. The military treatment facility's capacity to enroll its beneficiaries is affected by the number of Primary Care Managers (PCM) at the MTF, their availability to see patients, readiness considerations, patient demand for visits, and productivity of providers which is determined by availability of sufficient clinic support personnel, facility redesign and management actions that emphasize improved access.

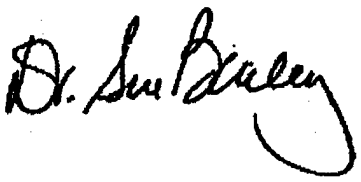
This policy memorandum puts forth a triservice developed uniform enrollment capacity planning model. This policy also identifies a framework for program improvement as well. The goal is to optimize MTFs and recapture appropriate network workload. A review of civilian literature and work done within the Services suggest that within the Military Health System (MHS), approximately 1,500 members could be enrolled to each PCM if necessary support staff and other resources are made available. For some PCMs it is not reasonable to expect 1,500 enrollees, particularly where the alignment of assets in support of mobilization commitments takes priority over realignment of assets in support of primary care or the average patient severity index is high. The 1,500 enrollees per provider is an overall goal. A review of the number of currently authorized PCMs does suggest that with appropriate reengineering inside the MTFs and across the MHS, we have enough providers to enroll all MHS current users in the MTF catchment areas to providers in the direct care system. However, to accomplish this goal will take considerable refocusing of our primary care clinics operations to include all of the above identified variables.

Using the model provided, each MTF should identify its baseline enrollment capacity and develop a plan to move toward an enrollment objective of 1,500 enrollees per PCM. This is a critical component of meeting our MTF baseline optimization objectives. The Services will conduct an initial assessment of each MTF's present enrollment, availability of examination
rooms and support staff by 14 April 2000. A phased comprehensive capacity plan for achievable enrollment targets should be completed by 30 June 2000. This plan should address all the significant determinants of enrollee/provider ratio and have projected completion dates for each item. MTF enrollment plans should be provided to their respective Services' point of contact with an information copy provided to the regional Lead Agent in support of MHS Optimization and TRICARE 3.0 managed care support contract implementation. Monthly enrollment status reporting will continue to be provided by the regional Lead Agents to the MHS Operations Directorate, TMA to monitor program progress with increasing MTF enrollment.

The PCM ratio of enrollees to provider depends primarily on four factors: demand, productivity,

availability, and readiness considerations. Each of these factors needs to be managed to produce optimum results in terms of cost, quality, and access. To reach 1,500 enrollees per PCM will require significant reductions in the average number of primary care visits per enrollee by increasing their health and appropriate utilization of resources through demand management, e.g., the use of nurse advice lines and nurse triage systems, self-help pamphlets, and prevention measures. It will require greater productivity through the use of appropriate support staff, examination rooms, scheduling techniques and practice patterns. It will also require the availability of assigned PCMs to staff primary care clinics. Our beneficiaries will also have to believe that we are serious about providing continuity of care and committed to meeting their expectations if we are to entice them back to the MTF. Finally we will have to continue balancing the unique demands that are incurred by the MHS readiness mission.

Attached at **TAB A** is a more detailed discussion of an equation that quantifies the effects of each of these enrollment capacity factors. Resource managers within the services will be provided a spreadsheet model that can estimate the current capacity of each MTF based on their assigned PCMs and other local factors. Increasing enrollment is an important competitive strategy to recapture workload into the MTF. Achieving increased productivity must be accomplished through improved business processes and support systems, and not by simply laying an increased burden on our providers. A target goal of 1,500 enrollees per PCM is ambitious, but by managing the demand and increasing productivity, this goal could be achievable over the next few years with proper resourcing and other necessary support to our MTF commanders.



Dr. Sue Bailey

Attachment:
As stated

cc:
Surgeon General of the Army
Surgeon General of the Navy
Surgeon General of the Air Force

MHS Enrollment Capacity Planning Model

This MHS **enrollment capacity planning model** will help facilities predict their capacity to provide primary care, standardize enrollment projections for resource allocation and will be used as a basis for managed care support contract bids. This model will allow facilities to:

- Predict the portion of the catchment area population which can be effectively enrolled
- Develop realistic targets for enrollment of specific populations to individual providers
- Identify factors which could be improved to increase enrollment capacity
- Receive financial resources commensurate with enrollment capacity and predicted workload
- Monitor performance and improve key determinants of enrollment capacity

The Model

The number of beneficiaries who can be enrolled to a single primary care provider can be estimated using the determinants in the following formula. Altering any of these variables or preferably, all of the variables in combination, will produce significant increases in the enrollee/provider ratio.

Enrollees/Provider	=	**Weeks Worked/Year**	**x**	**Clinical Hours/Week**	**x**	**Visits/Hour**
		Annual Visits/Enrollee				

Numerous factors will determine enrollment capacity and must be addressed to optimize clinic productivity, decrease inappropriate or excessive utilization and produce better patient outcomes:

- Scope and complexity of practice
- Direct clinical support staff
- Number and availability of exam rooms per provider
- Clinical support tools
- Business support tools

- Information management
- Demand management tools
- Demographic factors (contributes to calculation of visits per beneficiary per year)
- Reserve integration
- Community support
- Operational unit organic medical support

The specific determinants of the number of enrollees per provider are as follows:

Weeks Worked/Year and Clinical Hours/Week. The number of hours a provider can dedicate to clinical activities is predicated on the number of hours the provider is available to perform clinical duties. Military providers generally take 4 weeks of leave per year and use an additional 2 weeks for continuing education and readiness training – leaving 46 weeks for clinical duties. Civilian providers employed by DoD also take leave and participate in a week of continuing education – conservatively yielding between 44-47 weeks of clinical availability.

Civilian general and family practice clinicians spend an average of 47 hours per week in direct patient care. This includes office or clinic visits, hospital rounds, surgery, and other direct patient care activities. Thus, all 47 hours are not spent seeing clinic patients. Conservatively, 35 to 40 hours per week (7 to 8 hours per day) should be allocated for direct patient care. For military providers, this estimate must be further reduced by a "Military Unique Factor" (approximately 8%) which reflects time when military providers are not available due to unique military training (including readiness) and other requirements. For civilian providers, clinical hours will depend on the provisions of their contracts or other terms of employment.

Clinical availability is also dependent on facility and provider commitments for direct support of operational requirements. Many of our facilities provide personnel for base training as well as to augment deployments, which are not part of the regularly planned command mission. Careful review of all non-clinical activities and requirements is necessary to increase provider and support staff availability for direct patient care. The number and timing of staff meetings, optional duty requirements, and non-patient care responsibilities etc., should all be reviewed and reorganized to prioritize patient care duties.

Graduate medical education training programs impose special staffing requirements that mitigate staff's normal clinical availability. However, the trainees add some measure of clinical throughput that must be included when calculating the effect of the teaching demands on overall availability of the staff.

Full integration of Reserve providers and support staff can substantially add to staffing levels without increasing personnel costs. Reserve readiness will be enhanced by their experience.

Likewise, the availability of community support must be considered. Facilities in relatively

mature managed care areas may be able to contract for services at more cost effective rates than other facilities. Business case analyses should drive contracting and other outsourcing decisions.

Visits/Hour. The number of patients which our providers can see each clinical hour is dependent on a wide variety of factors and is the single most fertile area for process improvement. A proper number of well-managed and trained direct clinical support staff is the most important factor to optimize a provider's patient contact time and productivity. "Direct clinical support staff" are those personnel who are immediately available to assist with clinic operations. Staffing varies widely in the Military Health System (MHS); productivity is maximized where more than 3 support personnel are assigned for each primary care provider. Experience from the civilian health care sector indicates that 3 to 3.5 support staff per provider who are directly in the clinic is optimal for a patient throughput of 3.5 to 4 visits per hour. MHS primary care providers would likewise be more productive if this level of support staff were available.

The number and availability of exam rooms per provider can be increased using many strategies. Optimizing the use of existing space can be achieved by modifying operating hours to spread clinical workload, altering provider schedules, and "reclaiming" clinical spaces.

Clinical and business support tools which improve information management can also dramatically improve productivity. Examples are: innovative and customized scheduling techniques, missed appointment tracking, and automated patient interaction. Near term IM/IT products will facilitate better utilization of resources and increased provider and system productivity.

Annual visits per enrollee. A variety of studies have demonstrated military beneficiary (non-Medicare eligible) primary care visits to range from 3.1 to 4.3 per year. The industry utilization rates of 3.5 visits per beneficiary per year falls near the middle of this range. Our population also has some proscribed visits above those expected in the civilian sector – e.g.,overseas screening and mandated physical examinations.

Demographic factors play an important role in predicting the level of effort, which will be required to care for the catchment area population. Each catchment area is unique in its case severity index (CSI). For example, if the population is predominantly retirees or others who contribute to a high CSI, more assets will be required to provide care, fewer visits per hour will be possible, and the average number of visits per beneficiary may be higher.

In some areas, operational unit organic medical personnel will be serving as primary care providers and may deliver a significant portion of primary care to active duty beneficiaries. These medical assets are not normally included in fixed facilities' workload measurements and can substantially reduce the fixed facilities' 'annual visits/enrollee' for active duty.

There is a wide variety of demand management tools currently available and which will effectively reduce demand. Self-care books and Health Care Information Lines (HCIL) provide clinical information to improve beneficiary medical autonomy, decreasing reliance on unscheduled visits to acute care and expensive hospital portals. Case management is another tool for identifying high volume/cost users with illnesses or injuries which are amenable to early

intervention. These and other methods will be described fully in an upcoming Population Health Improvement tool.

Concentration on preserving and improving the health of the beneficiary population is the single most important factor in reducing health services demand. A healthier population will, in composite, require fewer services. Eighty more beneficiaries could be enrolled to each primary care provider if demand were reduced by only one visit per year for every 10 enrollees.

Calculations. Using the formula and range of variables described above, the following calculations can be made:

Enrollees/Provider	=	**Weeks Worked/Year**	x	**Clinical Hours/Week**	x	**Visits/Hour**
		Annual Visits/Enrollee				

- Weeks worked/year vary from 46 weeks (military) to 47 weeks (civilian)
- Clinical hours may vary from 35 to 40 hours per week (reduced by 8% for active duty providers = Military Unique Factor)
- Visits per hour may vary from 3.5 to 4 patient visits per hour
- Annual primary care visits vary from 3.1 to 4.3 per non-Medicare eligible enrollee

Enrollees/Provider	=	**(46 to 47weeks)/Year**	x	**(35 to 40 hrs)/ civilian (32 to 37 hrs)/ military*/week**	x	**(3.5 to 4.0) visits/hour**
		(3.1 to 4.3) visits/enrollee				

* decreased by 8% Military Unique Factor for active duty

Enrollees/Provider	=	**1205 to 2230** **1310 to 2425**	for Military providers **for Civilian providers**

Conclusions. Enrollment capacity rates above 1300 beneficiaries per primary care provider may readily be accomplished by considering the factors described above and modifying those which hinder current productivity. The MHS expectation is that each primary care provider while in clinic seeing patients will be supported by 3 to 3.5 clinical support staff, have 2 examination rooms available, and nominally care for 3.5 patients per hour (25 patients per day). Realignment of existing staff, movement of staff between MTFs, retraining of staff and supplementation of existing staff are all actions which may be required to optimize provider/support staff ratios.

Each facility commander/commanding officer must examine all the above factors to determine their impact on enrollment capacity. Factors which reduce the clinicians' productivity should be identified and minimized.

Expectations: 1500 beneficiaries enrolled per primary care provider
3.5 support staff per primary care provider
2 examination rooms per primary care provider
25 patients seen per day per primary care provider

APPENDIX F

Facility Comparison

Great Plains Regional Medical Command
Facility Comparison

Facility Name	TRICARE Enrolled				Exam Rooms	Support Staff
	AD	ADFM	< 65	65 +		
BAMC	4,658	12,261	12,947	5,656	1.3	.67
CARSON	14,238	20,290	8,564	2,217	2	.67
						MTF
					MTF 1.5	1.25
					TMC	TMC
HOOD	40,379	46,300	9,896		1/.6/.83	.17/0/0
HUACHUCA	3,594	6,546	3,918		1	2.4
LEAVENWORTH	4,336	7,682	3,384		1.8	.82
LEONARD WOOD	5,257	9,257	5,125		2	1
POLK	7,389	10,770	3,346		2	1.8
						MTF 1.2
RILEY	8,420	13,540	3,795		2	CTMC 1.6
SILL	8,763	16,656	4,086	1,339	2	0.75
WBAMC	9,498	16,650	9,919		1.4	0.3

In order to use the MTF Primary Care Capacity Estimator -
Ft. Hood and Ft. Riley will need to calculate a single average number for Exam Rooms and Support Staff.

SOURCE: Great Plains RMC
TRICARE enrolled - CEIS Equivalent Lives Summary Mar 00
Exam Rooms/Support Staff - Family Practice Reengineering Jan 00

APPENDIX G

Organizational Statistics

William Beaumont Army Medical Center
Outpatient Data (1/2)

	Jul-00			Aug-00			Sep-00			Oct-00			Nov-00			Dec-00			
	Booked	Available	% Open	Booked	Available	% Open	Booked	Available	% Open	Booked	Available	% Open	Booked	Available	% Open	Booked	Available	% Open	Average
Primary Care																			
CTMC-TC													2005	3280	38.87%	1194	2369	49.60%	44.24%
CTMC-FP													1368	1467	6.75%	1073	1142	6.04%	6.40%
CTMC-Opt													112	114	1.75%	72	73	1.37%	1.56%
Opt	135	139	2.88%	98	103	4.85%	63	65	3.08%	125	128	2.34%	203	203	0.00%	163	166	1.81%	2.49%
PAMC	1905	1967	3.15%	2613	2713	3.69%	2167	2276	4.79%	2318	2419	4.18%	1863	1946	4.27%	1605	1727	7.06%	4.52%
PAMC-RS	462	470	1.70%	430	450	4.44%				212	222	4.50%	479	484	1.03%	454	467	2.78%	2.89%
PAMC-W	228	250	8.80%	138	178	22.47%	187	245	23.67%	84	123	31.71%	145	184	21.20%	161	181	11.05%	19.82%
Peds	1162	1671	30.46%	1648	1965	16.13%	1262	1485	15.02%	1228	1627	24.52%	1527	1996	23.50%	1137	1697	33.00%	23.77%
Peds-RS	870	1474	40.98%	1015	1239	18.08%	947	1082	12.48%	783	998	21.54%	664	790	15.95%	832	1043	20.23%	21.54%
Peds-AH	407	595	31.60%	443	572	22.55%	422	542	22.14%	403	479	15.87%	514	610	15.74%	456	480	5.00%	18.82%
Peds-WB	123	154	20.13%	152	177	14.12%	136	163	16.56%	146	185	21.08%	125	212	41.04%	109	216	49.54%	27.08%
Peds-WB-RS	190	226	15.93%	176	206	14.56%	154	163	5.52%	142	176	19.32%	94	140	32.86%	109	160	31.88%	20.01%
Peds-NB FU	8	11	27.27%	3	37	91.89%	12	44	72.73%	11	50	78.00%	10	39	74.36%	3	4	25.00%	61.54%
Totals	5490	6957	21.09%	6716	7640	12.09%	5350	6065	11.79%	5452	6407	14.91%	5624	6604	14.84%	7368	9725	24.24%	16.49%
Procedures																			
APV Cardio	10	22	54.55%	10	34	70.59%	5	16	68.75%	7	14	50.00%	24	50	52.00%	16	30	46.67%	57.09%
APV ENT	36	50	28.00%	31	70	55.71%	21	87	75.86%	24	40	40.00%	16	29	44.83%	12	18	33.33%	46.29%
APV Gastro	38	153	75.16%	58	438	86.76%	62	275	77.45%	78	464	83.19%	72	379	81.00%	48	323	85.14%	81.45%
AVP Gen Surg	148	191	22.51%	144	204	29.41%	124	177	29.94%	116	171	32.16%	92	114	19.30%	71	102	30.39%	27.29%
APV Ob/Gyn	12	42	71.43%	7	18	61.11%	10	21	52.38%	4	15	73.33%	7	17	58.82%	6	10	40.00%	59.51%
APV Hand	21	49	57.14%	14	84	83.33%	7	21	66.67%	16	42	61.90%	12	40	70.00%	10	29	65.52%	67.43%
APV Neuro	1	2	50.00%	1	5	80.00%	4	8	50.00%	3	5	40.00%	1	2	50.00%	1	2	50.00%	53.33%
APV Ophth	38	51	25.49%	43	86	50.00%	29	134	78.36%	22	30	26.67%	26	35	25.71%	16	21	23.81%	38.34%
APV Ortho	27	53	49.06%	25	73	65.75%	25	55	54.55%	22	44	50.00%	27	50	46.00%	19	42	54.76%	53.35%
APV Peds	3	8	62.50%	5	16	68.75%	1	2	50.00%	5	5	0.00%	4	5	20.00%				27.75%
APV Peds Ortho	0	5	100.00%	1	5	80.00%	0	5	100.00%	1	3	66.67%	0	5	100.00%	2	8	75.00%	86.94%
APV Plas	8	24	66.67%	4	66	93.94%	4	6	33.33%	1	5	80.00%	7	13	46.15%	8	18	55.56%	62.61%
APV Pulm	4	6	33.33%	6	9	33.33%	14	18	22.22%	4	5	20.00%	5	7	28.57%	2	3	33.33%	28.47%
APV Uro	75	103	27.18%	145	201	27.86%	93	149	37.58%	158	196	19.39%	130	170	23.53%	110	148	25.68%	26.87%
APV Vas	7	21	66.67%	5	12	58.33%	6	21	71.43%	8	19	57.89%	2	4	50.00%	4	9	55.56%	59.98%
Flex Sig Clinic	10	10	0.00%	48	52	7.69%	71	79	10.13%	86	89	3.37%	55	60	8.33%				5.90%
Pulmon Ex & Fun	116	182	36.26%	136	216	37.04%	111	174	36.21%	70	70	0.00%	121	361	66.48%	98	204	51.96%	37.99%
Sleep Lab				0	2	0.00%													0.00%
Totals	438	790	44.56%	683	1591	57.07%	587	1248	52.96%	625	1217	48.64%	601	1341	55.18%	325	763	57.40%	52.64%
Ob/Gyn	1417	1521	6.84%	1556	1717	9.38%	1348	1441	6.45%	1663	1817	8.48%	1734	1890	8.25%	1449	1531	5.36%	7.46%
Medical Speciality Care																			
Adult Immunizations	95	103	7.77%	102	123	17.07%	104	111	6.31%	122	1362	91.04%	168	180	6.67%	101	103	1.94%	21.80%
Allergy	65	67	2.99%	107	118	9.32%	55	69	20.29%	72	92	21.74%	77	85	9.41%	40	44	9.09%	12.14%
Cardio	183	230	20.43%	325	377	13.79%	227	261	13.03%	212	248	14.52%	249	301	17.28%	224	458	51.09%	21.69%
Derm	200	211	5.21%	268	290	7.59%	272	285	4.56%	347	388	10.57%	437	493	11.36%	238	262	9.16%	8.07%
Ex FM	170	186	8.60%	186	197	5.58%	145	165	12.12%	165	203	18.72%	194	201	3.48%	144	144	0.00%	8.08%
Endo	83	107	22.43%	88	148	40.54%	68	107	36.45%	126	195	35.38%	89	135	34.07%	89	133	33.08%	33.66%
Gastro	92	113	18.58%	149	200	25.50%	143	211	32.23%	140	285	50.88%	152	314	51.59%	118	214	44.86%	37.27%
ID	16	20	20.00%	24	60	60.00%	13	16	18.75%	28	53	47.17%	13	25	48.00%	21	29	27.59%	36.92%
Nephro	93	155	40.00%	60	135	55.56%	90	156	42.31%	70	133	47.37%	101	152	33.55%	104	142	26.76%	40.92%
Neuro	137	191	28.27%	156	191	18.32%	136	156	12.82%	124	137	9.49%	103	129	20.16%	120	135	11.11%	16.70%
Nutrit	102	262	61.07%	136	405	66.42%	97	283	65.72%	107	364	70.60%	103	259	60.23%	66	133	50.38%	62.40%
Onc	232	1063	78.17%	232	1311	82.30%	204	1112	81.65%	210	1257	83.29%	243	1148	78.83%	184	1081	82.98%	81.21%
Onc-Cou	414	790	47.59%	498	990	49.70%	445	790	43.67%	436	890	51.01%	476	870	45.29%	439	780	43.72%	46.83%

William Beaumont Army Medical Center
Outpatient Data (2/2)

Peds-Asthma Ed	4	12	66.67%	3	14	78.57%	1	13	92.31%	7	15	53.33%	11	62	82.26%	5	70	92.86%	77.67%
Peds-Cardio				26	28	7.14%	28	30	6.67%	41	43	4.65%	38	40	5.00%	33	33	0.00%	4.69%
Peds-Con Sed																3	4	25.00%	25.00%
Peds-Endo	18	19	5.26%	22	22	0.00%	17	18	5.56%	18	18	0.00%	15	16	6.25%	15	18	16.67%	5.62%
Peds-Gastro				5	8	37.50%	12	13	7.69%	12	13	7.69%	15	15	0.00%				13.22%
Peds-Hem/Onc	6	17	64.71%	19	28	32.14%	12	20	40.00%	10	26	61.54%	6	20	70.00%	7	15	53.33%	53.62%
Peds-Immun	874	1114	21.54%	1209	1258	3.90%	658	1271	48.23%	608	1337	54.53%	519	1188	56.31%	516	1117	53.80%	39.72%
Peds-Neph	47	57	17.54%													11	11	0.00%	8.77%
Peds-Neuro	137	191	28.27%	53	69	23.19%	39	41	4.88%	12	12	0.00%	10	10	0.00%	51	53	3.77%	10.02%
Pulmon	98	109	10.09%	114	135	15.56%	94	113	16.81%	95	98	3.06%	104	107	2.80%	104	110	5.45%	8.96%
Rheum	129	133	3.01%	98	98	0.00%	84	88	4.55%	116	133	12.78%	93	94	1.06%	65	67	2.99%	4.08%
Thyroid										25	80	68.75%	13	40	67.50%	16	34	52.94%	63.06%
Totals	3100	5047	38.58%	3880	6205	37.47%	2944	5329	44.76%	3103	7382	57.97%	3229	5884	45.12%	2613	5087	48.63%	45.42%
Therapy																			
PT	1138	2198	48.23%	1614	2607	38.09%	1372	2286	39.98%	1641	2092	21.56%	1479	1871	20.95%	1142	1512	24.47%	32.21%
PT-CTMC	186	470	60.43%	162	541	70.06%	235	450	47.78%	362	614	41.04%	449	676	33.58%	258	339	23.89%	46.13%
OT	497	779	36.20%	548	700	21.71%	532	668	20.36%	514	593	13.32%	447	493	9.33%	391	610	35.90%	22.80%
Speech	110	124	11.29%	36	41	12.20%	115	122	5.74%	119	129	7.75%	84	109	22.94%	12	29	58.62%	19.76%
Totals	1931	3571	45.93%	2360	3889	39.32%	2254	3526	36.07%	2636	3428	23.10%	2459	3149	21.91%	1803	2490	27.59%	32.32%
Surgical Services																			
ENT	301	325	7.38%	338	360	6.11%	136	146	6.85%	199	212	6.13%	178	190	6.32%	111	118	5.93%	6.45%
Gen Surg	668	902	25.94%	808	1155	30.04%	721	882	18.25%	721	981	26.50%	612	866	29.33%	513	641	19.97%	25.01%
Hand	159	196	18.88%	237	381	37.80%	178	185	3.78%	223	238	6.30%	170	182	6.59%	150	168	10.71%	14.01%
Neuro	45	46	2.17%	90	91	1.10%	50	50	0.00%	124	125	0.80%	115	116	0.86%	94	95	1.05%	1.00%
Ophth	353	375	5.87%	304	321	5.30%	281	285	1.40%	230	235	2.13%	184	185	0.54%	214	216	0.93%	2.69%
Ortho	376	398	5.53%	566	621	8.86%	501	543	7.73%	576	640	10.00%	463	510	9.22%	371	452	17.92%	9.88%
Ortho-Peds	24	24	0.00%	58	65	10.77%	44	48	8.33%	32	34	5.88%	31	43	27.91%	36	45	20.00%	12.15%
Pain	44	48	8.33%	73	83	12.05%	59	64	7.81%	34	38	10.53%	42	48	12.50%	43	46	6.52%	9.62%
Phy Med	81	85	4.71%	91	91	0.00%	130	133	2.26%	220	239	7.95%	145	149	2.68%	129	134	3.73%	3.55%
Plas	97	188	48.40%	133	240	44.58%	62	158	60.76%	85	174	51.15%	112	227	50.66%	83	211	60.66%	52.70%
Pod	184	187	1.60%	287	291	1.37%	252	254	0.79%	287	290	1.03%	288	290	0.69%	243	252	3.57%	1.51%
Pod-RS	268	409	34.47%	321	505	36.44%	267	404	33.91%	290	460	36.96%	266	456	41.67%	239	328	27.13%	35.10%
Uro	350	379	7.65%	684	915	25.25%	522	716	27.09%	691	898	23.05%	840	1035	18.84%	614	814	24.57%	21.08%
Vas	181	274	33.94%	190	284	33.10%	182	256	28.91%	138	182	24.18%	142	184	22.83%	127	158	19.62%	27.09%
Totals	3131	3836	18.38%	4180	5403	2.527567	3385	4124	17.92%	3850	4746	18.88%	3588	4481	19.93%	2967	3678	19.33%	57.87%
Mental Health																			
ADMH													248	349	28.94%	138	154	10.39%	19.66%
FA	162	218	25.69%	162	205	20.98%	128	170	24.71%	111	177	37.29%	70	92	23.91%	71	93	23.66%	26.04%
OpA	96	224	57.14%	142	308	53.90%	121	257	52.92%	129	264	51.14%	137	288	52.43%	104	215	51.63%	53.19%
OpC/A	172	414	58.45%	255	444	42.57%	226	340	33.53%	313	417	24.94%	206	382	46.07%	158	308	48.70%	42.38%
SA	51	319	84.01%	28	248	88.71%				167	705	76.31%	266	1050	74.67%	264	1123	76.49%	66.70%
Totals	481	1175	59.06%	587	1205	51.29%	475	767	38.07%	720	1563	53.93%	927	2161	57.10%	735	1893	61.17%	53.44%
Preventive Med																			
Occup Health	12	160	92.50%	54	320	83.13%	32	256	87.50%	53	288	81.60%	43	256	83.20%	24	256	90.63%	86.43%
Audiology													86	242	64.46%	50	144	65.28%	64.87%
Community Health													29	72	59.72%	18	72	75.00%	67.36%
Totals													158	570	72.28%	92	472	80.51%	76.39%
Dental	26	36	27.78%	14	42	66.67%	10	39	74.36%	20	50	60.00%	5	50	90.00%	10	50	80.00%	66.47%
Oral Surg	52	97	46.39%	88	145	39.31%	49	138	64.49%	71	117	39.32%	66	94	29.79%	52	75	30.67%	41.66%
Mcafee													870	1562	44.30%	731	1505	51.43%	47.87%
Totals	16078	23190	30.67%	20118	28157	28.55%	16434	22933	28.34%	18193	27015	32.66%	18276	25910	29.46%	18077	27053	33.18%	30.48%

APPENDIX H

WBAMC Primary Care Appointment Utilization

William Beaumont Army Medical Center

Primary Care Appointment Utilization 2000

	July			August			September		
	Booked	Available	% Open	Booked	Available	% Open	Booked	Available	% Open
CTMC-TC							112	171	34.50%
CTMC-FP							80	82	**2.44%**
CTMC-Opt									
Opt	135	139	2.88%	98	103	4.85%	63	65	3.08%
PAMC	1905	1967	3.15%	2613	2713	3.69%	2167	2276	4.79%
PAMC-RS	462	470	1.70%	430	450	4.44%			
PAMC-W	228	250	8.80%	138	178	22.47%	187	245	23.67%
PAMC-T	2595	2687	**3.42%**	3181	3341	**4.79%**	2354	2521	**6.62%**
Peds	1162	1671	30.46%	1648	1965	16.13%	1262	1485	15.02%
Peds-RS	870	1474	40.98%	1015	1239	18.08%	947	1082	12.48%
Peds-AH	407	595	31.60%	443	572	22.55%	422	542	22.14%
Peds-WB	123	154	20.13%	152	177	14.12%	136	163	16.56%
Peds-WB-RS	190	226	15.93%	176	206	14.56%	154	163	5.52%
Peds-NB FU	8	11	27.27%	3	37	91.89%	12	44	72.73%
Peds-T	2760	4131	**33.19%**	3437	4196	**18.09%**	2933	3479	**15.69%**
Total	10845	13775	**21.27%**	13334	15177	**12.14%**	10829	12318	**12.09%**

	October			November			December		
	Booked	Available	% Open	Booked	Available	% Open	Booked	Available	% Open
CTMC-TC	2229	3378	34.01%	2005	3280	38.87%	1194	2369	49.60%
CTMC-FP	1463	1529	**4.32%**	1368	1467	**6.75%**	1073	1142	**6.04%**
CTMC-Opt	108	121	10.74%	112	114	1.75%	72	73	1.37%
Opt	125	128	2.34%	203	203	0.00%	163	166	1.81%
PAMC	2318	2419	4.18%	1863	1946	4.27%	1605	1727	7.06%
PAMC-RS	212	222	4.50%	479	484	1.03%	454	467	2.78%
PAMC-W	84	123	31.71%	145	184	21.20%	161	181	11.05%
PAMC-T	2614	2764	**5.43%**	2487	2614	**4.86%**	2220	2375	**6.53%**
Peds	1228	1627	24.52%	1527	1996	23.50%	1137	1697	33.00%
Peds-RS	783	998	21.54%	664	790	15.95%	832	1043	20.23%
Peds-AH	403	479	15.87%	514	610	15.74%	456	480	5.00%
Peds-WB	146	185	21.08%	125	212	41.04%	109	216	49.54%
Peds-WB-RS	142	176	19.32%	94	140	32.86%	109	160	31.88%
Peds-NB FU	11	50	78.00%	10	39	74.36%	3	4	25.00%
Peds-T	2713	3515	**22.82%**	2934	3787	**22.52%**	2646	3600	**26.50%**
Total	14579	17714	**17.70%**	14530	17866	**18.67%**	12234	15700	**22.08%**

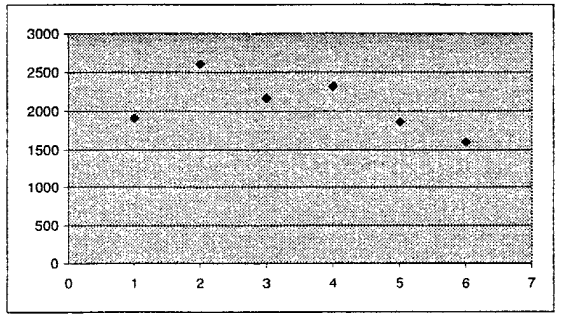
APPENDIX I

Demand Forecasting Model - PAMC Providers

Primary Care Access - Demand Forecasting Model
Prime Adult Medicine Clinic - WBAMC Providers
Appointment Utilization Data

6 Month Analysis

			Projected Visits			Projected Visits			Projected Visits			Projected Visits			Projected Visits		
	Month/2000	Actual Visits	2 mo SMA	Difference	Absolute Value	3 mo SMA	Difference	Absolute Value	2 mo WMA	Difference	Absolute Value	3 mo WMA	Difference	Absolute Value	Least Squares	Difference	Absolute Value
1	July	1905													2336	431	431
2	August	2613													2233	-380	380
3	September	2167	2259	92	92				2330	163	163				2130	-37	37
4	October	2318	2390	72	72	2228	-90	90	2345	27	27	2248	-70	70	2027	-291	291
5	November	1863	2243	380	380	2366	503	503	2258	395	395	2332	469	469	1924	61	61
6	December	1605	2091	486	486	2116	511	511	2045	440	440	2060	455	455	1821	216	216
	Mean Absolute Deviation (MAD) =				258			368			256			331			151

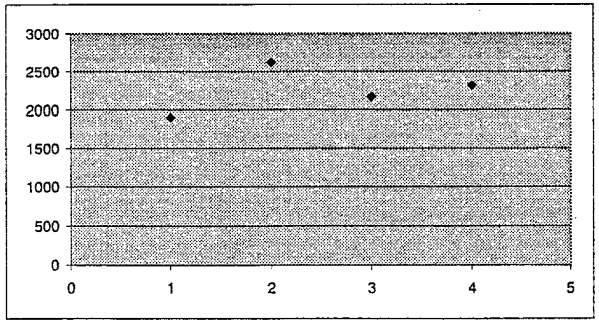


Actual Visits for July (1) to December (6) 2000

Slope = -102.8285714
Intercept = 2438.4

4 Month Analysis

			Projected Visits			Projected Visits			Projected Visits			Projected Visits			Projected Visits		
	Month/2000	Actual Visits	2 mo SMA	Difference	Absolute Value	3 mo SMA	Difference	Absolute Value	2 mo WMA	Difference	Absolute Value	3 mo WMA	Difference	Absolute Value	Least Squares	Difference	Absolute Value
1	July	1905													2132	227	227
2	August	2613													2211	-402	402
3	September	2167	2259	92	92				2330	163	163				2290	123	123
4	October	2318	2390	72	72	2228	-90	90	2345	27	27	2248	-70	70	2370	52	52
	Mean Absolute Deviation (MAD) =				82			90			95			70			88



Actual Visits for July (1) to October (4) 2000

Slope= 79.3
Intercept= 2052.5

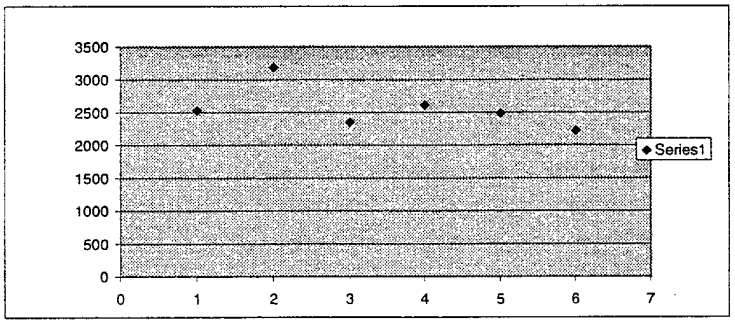
APPENDIX J

Demand Forecasting Model - PAMC All Providers

Primary Care Access - Demand Forecasting Model
Prime Adult Medicine Clinic - Total Services
Appointment Utilization Data

6 Month Analysis

Month/2000	Actual Visits	Projected Visits 2 mo SMA	Difference	Absolute Value	Projected Visits 3 mo SMA	Difference	Absolute Value	Projected Visits 2 mo WMA	Difference	Absolute Value	Projected Visits 3 mo WMA	Difference	Absolute Value	Projected Visits Least Squares	Difference	Absolute Value
1 July	**2529**													2805	276	276
2 August	**3181**													2708	-473	473
3 September	**2354**	2855	501	501				2920	566	566				2612	258	258
4 October	**2614**	2768	154	154	2688	74	74	2685	71	71	2637	23	23	2516	-98	98
5 November	**2487**	2484	-3	3	2716	229	229	2510	23	23	2649	162	162	2420	-67	67
6 December	**2220**	2551	331	331	2485	265	265	2538	318	318	2499	279	279	2324	104	104
	Mean Absolute Deviation (MAD) =			247			189			245			155			**132**

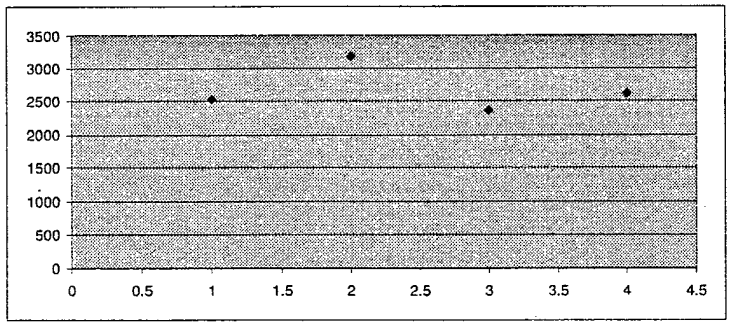


Actual Visits for July (1) to December (6) 2000

Slope = -96.2
Intercept = 2900.867

4 Month Analysis

Month/2000	Actual Visits	Projected Visits 2 mo SMA	Difference	Absolute Value	Projected Visits 3 mo SMA	Difference	Absolute Value	Projected Visits 2 mo WMA	Difference	Absolute Value	Projected Visits 3 mo WMA	Difference	Absolute Value	Projected Visits Least Squares	Difference	Absolute Value
1 July	**2529**													2755	226	226
2 August	**3181**													2698	-483	483
3 September	**2354**	2855	501	501				2920	566	566				2641	287	287
4 October	**2614**	2768	154	154	2688	74	74	2685	71	71	2637	23	23	2584	-30	30
	Mean Absolute Deviation (MAD) =			328			74			319			**23**			159



Actual Visits for July (1) to October (4) 2000

Slope= -57.2
Intercept= 2812.5

APPENDIX K

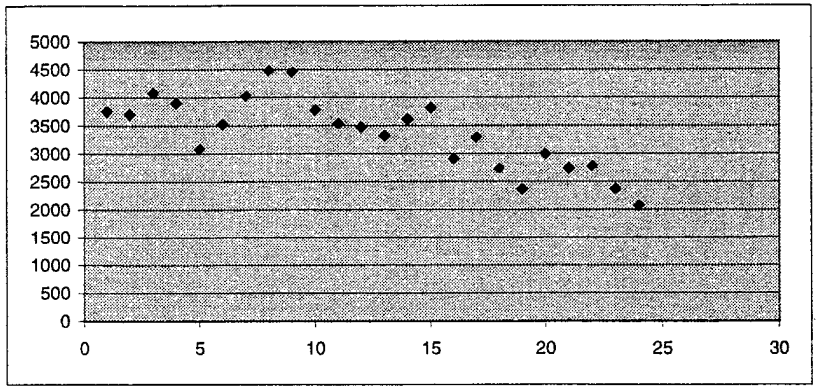
Demand Forecasting Model - PAMC WWR Data

Primary Care Access - Demand Forecasting Model

Prime Adult Medicine Clinic

Worldwide Workload Report

	Appointments	2 mo SMA	Difference	Absolute Value	3 mo SMA	Difference	Absolute Value	2 mo WMA	Difference	Absolute Value	3 mo WMA	Difference	Absolute Value	LS/LR	Difference	Absolute Value
1	**3752**													4183	431	431
2	**3704**													4112	408	408
3	**4085**	3728	-357	357				3723	-362	362				4042	-43	43
4	**3897**	3895	-3	3	3847	-50	50	3933	36	36	3904	7	7	3971	74	74
5	**3089**	3991	902	902	3895	806	806	3972	883	883	3915	826	826	3900	811	811
6	**3525**	3493	-32	32	3690	165	165	3412	-113	113	3531	6	6	3829	304	304
7	**4020**	3307	-713	713	3504	-516	516	3351	-669	669	3469	-551	551	3758	-262	262
8	**4482**	3773	-710	710	3545	-937	937	3822	-660	660	3685	-797	797	3687	-795	795
9	**4451**	4251	-200	200	4009	-442	442	4297	-154	154	4152	-299	299	3616	-835	835
10	**3775**	4467	692	692	4318	543	543	4463	688	688	4374	599	599	3545	-230	230
11	**3550**	4113	563	563	4236	686	686	4045	495	495	4119	569	569	3474	-76	76
12	**3482**	3663	181	181	3925	443	443	3640	158	158	3798	316	316	3403	-79	79
13	**3322**	3516	194	194	3602	280	280	3509	187	187	3561	239	239	3332	10	10
14	**3622**	3402	-220	220	3451	-171	171	3386	-236	236	3416	-206	206	3261	-361	361
15	**3816**	3472	-344	344	3475	-341	341	3502	-314	314	3504	-312	312	3190	-626	626
16	**2912**	3719	807	807	3587	675	675	3738	826	826	3659	747	747	3120	208	208
17	**3297**	3364	67	67	3450	153	153	3274	-23	23	3325	28	28	3049	-248	248
18	**2733**	3105	372	372	3342	609	609	3143	410	410	3285	552	552	2978	245	245
19	**2361**	3015	654	654	2981	620	620	2959	598	598	2938	577	557	2907	546	546
20	**2997**	2547	-450	450	2797	-200	200	2510	-487	487	2660	-337	337	2836	-161	161
21	**2740**	2679	-61	61	2697	-43	43	2743	3	3	2753	13	13	2765	25	25
22	**2776**	2869	93	93	2699	-77	77	2843	67	67	2741	-35	35	2694	-82	82
23	**2368**	2758	390	390	2838	470	470	2762	394	394	2809	441	441	2623	255	255
24	**2070**	2572	502	502	2628	558	558	2531	461	461	2565	495	495	2552	482	482
				387			418			374			378			317



Actural Visits JAN 99 (1) to Dec 00 (24)

Slope = -70.93

Intercept = 4254.32

APPENDIX L

WBAMC - Demand Comparison Worksheet

William Beaumont Army Medical Center
Primary Care Appointment Utilization - Demand Comparison Worksheet
2000

	July								August							
CTMC-FP	Booked	Available	20% Increase	Difference	% Difference	28% Increase	Difference	% Difference	Booked	Available	20% Increase	Difference	% Difference	28% Increase	Difference	% Difference
PAMC	1905	1967	2286	319	16.22%	2438	471	23.97%	2613	2713	3136	423	15.58%	3345	632	23.28%
PAMC-RS	462	470	554	84	17.96%	591	121	25.82%	430	450	516	66	14.67%	550	100	22.31%
PAMC-W	228	250	274	24	9.44%	292	42	16.74%	138	178	166	-12	-6.97%	177	-1	-0.76%
PAMC-T	2595	2687	3114	427	**15.89%**	3322	635	**23.62%**	3181	3341	3817	476	14.25%	4072	731	21.87%
Peds	1162	1671	1394	-277	-16.55%	1487	-184	-10.99%	1648	1965	1978	13	0.64%	2109	144	7.35%
Peds-RS	870	1474	1044	-430	-29.17%	1114	-360	-24.45%	1015	1239	1218	-21	-1.69%	1299	60	4.86%
Peds-AH	407	595	488	-107	-17.92%	521	-74	-12.44%	443	572	532	-40	-7.06%	567	-5	-0.87%
Peds-WB	123	154	148	-6	-4.16%	157	3	2.23%	152	177	182	5	3.05%	195	18	9.92%
Peds-WB-I	190	226	228	2	0.88%	243	17	7.61%	176	206	211	5	2.52%	225	19	9.36%
Peds-NB F	8	11	10	-1	-12.73%	10	-1	-6.91%	3	37	4	-33	-90.27%	4	-33	-89.62%
Peds-T	2760	4131	3312	-819	**-19.83%**	3533	-598	**-14.48%**	3437	4196	4124	-72	-1.71%	4399	203	4.85%

	September								October							
	Booked	Available	20 % Increase	Difference	% Difference	28% Increase	Difference	% Difference	Booked	Available	20% Increase	Difference	% Difference	28% Increase	Difference	% Difference
CTMC-FP	1463	1529	1756	227	15%	1873	344	22%	80	82	96	14	17%	102	20	25%
PAMC	2167	2276	2600	324	14%	2774	498	22%	2318	2419	2782	363	15%	2967	548	23%
PAMC-RS									212	222	254	32	15%	271	49	22%
PAMC-W	187	245	224	-21	-8%	239	-6	-2%	84	123	101	-22	-18%	108	-15	-13%
PAMC-T	2354	2521	2825	304	12%	3013	492	20%	2614	2764	3137	373	13%	3346	582	21%
Peds	1262	1485	1514	29	2%	1615	130	9%	1228	1627	1474	-153	-9%	1572	-55	-3%
Peds-RS	947	1082	1136	54	5%	1212	130	12%	783	998	940	-58	-6%	1002	4	0%
Peds-AH	422	542	506	-36	-7%	540	-2	0%	403	479	484	5	1%	516	37	8%
Peds-WB	136	163	163	0	0%	174	11	7%	146	185	175	-10	-5%	187	2	1%
Peds-WB-I	154	163	185	22	13%	197	34	21%	142	176	170	-6	-3%	182	6	3%
Peds-NB F	12	44	14	-30	-67%	15	-29	-65%	11	50	13	-37	-74%	14	-36	-72%
Peds-T	2933	3479	3520	41	1%	3754	275	8%	2713	3515	3256	-259	-7%	3473	-42	-1%

	November								December							
	Booked	Available	20% Increase	Difference	% Difference	28% Increase	Difference	% Difference	Booked	Available	20% Increase	Difference	% Difference	28% Increase	Difference	% Difference
CTMC-FP	1368	1467	1642	175	12%	1751	284	19%	1073	1142	1288	146	13%	1373	231	20%
PAMC	1863	1946	2236	290	15%	2385	439	23%	1605	1727	1926	199	12%	2054	327	19%
PAMC-RS	479	484	575	91	19%	613	129	27%	454	467	545	78	17%	581	114	24%
PAMC-W	145	184	174	-10	-5%	186	2	1%	161	181	193	12	7%	206	25	14%
PAMC-T	2487	2614	2984	370	14%	3183	569	22%	2220	2375	2664	289	12%	2842	467	20%
Peds	1527	1996	1832	-164	-8%	1955	-41	-2%	1137	1697	1364	-333	-20%	1455	-242	-14%
Peds-RS	664	790	797	7	1%	850	60	8%	832	1043	998	-45	-4%	1065	22	2%
Peds-AH	514	610	617	7	1%	658	48	8%	456	480	547	67	14%	584	104	22%
Peds-WB	125	212	150	-62	-29%	160	-52	-25%	109	216	131	-85	-39%	140	-76	-35%
Peds-WB-I	94	140	113	-27	-19%	120	-20	-14%	109	160	131	-29	-18%	140	-20	-13%
Peds-NB F	10	39	12	-27	-69%	13	-26	-67%	3	4	4	0	-10%	4	0	-4%
Peds-T	2934	3787	3521	-266	-7%	3756	-31	-1%	2646	3600	3175	-425	-12%	3387	-213	-6%

APPENDIX M

Suggested Template for Primary Care - 25 Appointments

Suggested Template for Primary Care
Internal Medicine

Appointment Time	Appointment Type
745	SD
800	SD
815	SD
830	SD
845	SD
900	SD
915	SD
930	SD
945	SD
1000	PCM/SPEC
1030	PCM/SPEC
1100	PCM/SPEC
1230	PCM/SPEC
1300	ROUT
1315	ROUT
1330	ROUT
1345	ROUT
1400	ROUT
1415	ROUT
1430	ROUT
1445	ROUT
1500	ROUT
1515	ROUT
1530	PCM/SPEC
1600	PCM/SPEC

Total Appointments 25 (9SD/10Rout/6PCM/Special)

SD or ACUT - 15 minute appt for acute illness evaluation and treatment
PCM/SPEC - 30 minute appt for initial interview for new patient, consultation or procedure
ROUT - 15 minute appot for follow-up, wellness and health promotion as needed

Appointment Types available - http://www.tricare.osd.mil/tai/Access_Standards.htm

Suggested Template for Primary Care
Internal Medicine

Appointment Time	Appointment Type
750	SD
810	SD
830	SD
850	SD
910	SD
930	SD
950	SD
1010	SD
1030	ROUT
1050	ROUT
1210	PCM/SPEC
1250	PCM/SPEC
1330	ROUT
1350	ROUT
1410	ROUT
1430	ROUT
1450	ROUT
1510	ROUT
1530	ROUT
1550	PCM/SPEC

Total Appointments 20 (8SD/9Rout/3PCM/Special)

SD or ACUT - 15 minute appt for acute illness evaluation and treatment
PCM/SPEC - 30 minute appt for initial interview for new patient, consultation or procedure
ROUT - 15 minute appot for follow-up, wellness and health promotion as needed

Appointment Types available - http://www.tricare.osd.mil/tai/Access_Standards.htm