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Demand Management:

The Primary Care Role at Ireland Army Community Hospital (IACH)

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Abstract

In spite of managed care efforts, literature indicates that managed care has not proven to be the panacea for pervasive health care issues. If the Military Health System is continuing to parallel civilian health care trends, it is plausible that Military Treatment Facilities are also not effectively managing care. The executive leaders of Ireland Army Community Hospital are concerned about the primary care role in demand management for the organization. Several factors contributing to this concern are the variability of primary care managers, deficiencies in the continuity of care, the lack of internal policies governing primary care practices, and demand management limitations. This exploratory study sought to analyze high user rates as they correlate to demand management. The analysis of primary care management, as represented by the number of visits a high user was actually seen by their primary care manager, suggests that poor continuity of care results in a higher demand for services. The analysis of non-active duty beneficiaries indicated that targeting female population health and specific age groups could potentially mitigate this demand. Recommendations include surveying primary care staff on population health perceptions, strategic plan development and implementation of a primary care team concept.

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Introduction

Background

Health care in the United States (U.S.) has experienced dramatic transformations throughout the last few decades. Perhaps one of the most momentous changes has been the introduction and migration to managed care. The widespread adoption of managed care resulted, in part, because of national health care quality issues and as a direct response to a health care cost crisis (Smith, Thorton, & Sollom, 2001). Managed care is "any method of health care delivery designed to reduce unnecessary utilization of services, contain costs, and measure performance, while providing accessible, quality, effective health care" (Tefft, 1999, p. 857). The foundation of managed care is the ability to plan health care and influence health and health behaviors for a defined population (Tefft).

The Military Health System (MHS) (see Appendix A for terms and definitions) is a large and complex health care system designed to maintain the health and readiness of active duty service members, to medically support military operations, and to provide medical services to dependents and other entitled Department of Defense (DoD) personnel (United States General Accounting Office [GAO], 2003b). Mirroring civilian health care trends, the restructuring of military facilities and personnel strength in addition to increasing health care costs prompted the establishment of the military managed care program, TRICARE, by the DoD (GAO, 2000a).

Fashioned after civilian managed care, the TRICARE health care system uses the existing military infrastructure as the basis for a managed care program (Lillie & Sobel, 2001). Military management in partnership with civilian health care contractors upholds the primary mission of TRICARE, providing quality health care for MHS beneficiaries in a cost-effective manner (Bibb, 2002). The TRICARE Clinical Quality Forum (TCQF) defines quality health care in the MHS as

"the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (Assistant Secretary of Defense for Health Affairs [ASD/HA], 2002, p. 2). In addition, key principles for MHS emphasis include: accountability, continuity of care, quality improvement, and medical readiness (ASD/HA, 2002).

TRICARE is designed to provide expanded access to care, choice of health care options, consistent high-quality health care benefits, and reduced health care costs for beneficiaries (Lillie & Sobel, 2001). Currently numbering more than 8.7 million, DoD beneficiaries can receive their care at military treatment facilities (MTFs) or through the TRICARE civilian provider network (GAO, 2003a). TRICARE offers three health care options for MHS beneficiaries. Beneficiaries can elect to receive health care through TRICARE Prime, which is similar to a civilian health management organization. Active duty service members are required to use the TRICARE Prime option at no cost. Other TRICARE Prime beneficiaries receive most of their care within the MTF facility with minimal, if any, costs. TRICARE Extra is another alternative equivalent to a preferred provider option, offering an expanded network of providers. While TRICARE Extra allows a more diverse selection of providers, beneficiaries pay a cost share for services received. The third choice, TRICARE Standard, is comparable to a fee-for service plan. Beneficiaries can receive care on a space available basis in the MTF or they can elect to receive care from non-network providers. TRICARE Standard is the most expensive of the three alternatives with beneficiaries paying the highest cost share starting at 20% (Lillie & Sobel).

Since the implementation of TRICARE, various DoD polices have ensued in an effort to optimize military health care. In 1995, the DoD published policy guidelines for implementing TRICARE Primary Care Programs throughout the MHS (ASD/HA, 1995). The guidelines

affirmed the importance of primary care, through the use of primary care managers (PCMs), for a successful managed care program. The intent of primary care, or first contact care, was to be continuous, comprehensive, coordinated, and accountable. Primary care services were defined as a broad spectrum of comprehensive measures including: prevention, health education and counseling, diagnostic and therapeutic services, minor surgery, consultation, and specialty referral (ASD/HA, 1995).

Under the PCM concept, enrolled members would be assigned an identified individual provider or team of primary care providers for comprehensive health care. The guidelines also mandated the provision of the PCMs name and telephone number to enrollees. Primary care ratios were set at a maximum ratio of one PCM to every 2,000 enrollees. Allowable variations during the development of the PCM panel sizes ranged from professional competence to support staff capabilities (ASD/HA, 1995). Further policy guidance tasked each Armed Forces Service to develop an implementation plan for assigning beneficiaries a by-name PCM (ASD/HA, 1999). Based on military and civilian health care practices, the guidance indicated that PCM designation had proven to be the best solution to ensure patient satisfaction, provide preventive services, and coordinate health care (ASD/HA, 1999).

A review of more recent civilian literature and MHS research resulted in policy guidance resetting PCM enrollee capacity at 1,500 beneficiaries, if the required support staff and resources were available (ASD/HA, 2000). The guidance included an enrollment capacity model that focused on demand, productivity, availability, and readiness considerations. To achieve the 1,500 enrollees per PCM would 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 (ASD/HA, 2000).

In 2000, the DoD concentrated efforts on the concept of demand management through population health improvement, consequently publishing the 2001 Population Health Improvement Plan and Guide (TRICARE Management Activity [TMA], 2001). The intent was to develop and implement a population health plan and model that optimized clinical outcomes throughout the MHS. This would improve the populations' health by shifting from an emphasis on disease and injury intervention to prevention and health promotion (TMA, 2001). The belief was that the MHS's greatest impact on population health would result from a shift in emphasis from interventional (individual) to preventive (population-based) services in MTFs (TMA, 2001).

Based on this premise, seven key process elements were identified for implementation throughout the MHS: (a) identify the population, (b) forecast demand, (c) manage demand, (d) manage capacity, (e) provide evidence-based primary, secondary, and tertiary care prevention, (f) perform community outreach and (g) analyze performance and health status (TMA, 2001). These process elements are sequential in nature; one element cannot effectively and efficiently be completed without the completion of the one prior. This study will focus primarily on the first three key process elements: identify the population, forecast demand, and manage demand.

Conditions that Prompted the Study

Ireland Army Community Hospital (IACH) falls within the U.S. Army Medical Activity (USA MEDDAC) at Fort Knox, Kentucky. Servicing a seven state area with a beneficiary population of approximately 236,614, the Medical Activity supports two power projection platforms and one power support platform. IACH, a 30-bed inpatient facility, maintains a variety of outpatient clinics to include seven primary care clinics, four in-house primary care clinics and three off-site clinics. As of September 29, 2004, TRICARE Prime enrollees, specific

to IACH in-house primary care, totaled 25,805. The IACH mission is "to take care of service members, past and present, their families and support of worldwide deployment of military forces" (Ireland Army Community Hospital Homepage, n.d.). The demands of this mission allow unique resource sharing and team collaborations through the utilization of a variety of primary care providers serving as PCMs.

In spite of managed care efforts, literature indicates that managed care has not proven to be the panacea for pervasive health care issues. Health care has a tendency to focus on the acute rather then the chronic, on provisional fixes rather than long-term processes, and on individual health rather then population health (Koperski, 2000). If the MHS is continuing to parallel civilian health care trends, it is plausible that MTFs are also not effectively managing care. The executive leaders of IACH are concerned about the primary care role in demand management for the organization. Several factors contributing to this concern are the variability of PCMs, deficiencies in the continuity of care, the lack of internal policies governing primary care practices, and demand management limitations.

Due to the Global War on Terrorism (GWOT), the IACH primary care manager staffing has been volatile. The 29 primary care managers include: active duty providers, Government Service (GS) contract providers--personnel contracted directly with the government, GWOT contract providers--personnel obtained through a company contracted by the government, and Veteran's Administration (VA) providers--personnel obtained through a resource-sharing partnership. This labor mix (see Appendix B) is significant as half of the IACH active duty providers serve in the Professional Filler System (PROFIS) and GWOT contract providers can only be hired on a temporary basis.

The PROFIS system necessitates filling assigned positions in deployable medical units by

personnel serving in MTFs. During non-deployment periods the PROFIS designated personnel work in the MTF to maintain clinical skills. When deployable units conduct readiness training or are activated to deploy, the PROFIS assigned personnel rotate out of the MTF into these units with no replacement guarantee. The enrollees empanelled to these deployed PCMs are moved, in total, to another PCM (K. Ford, personal communication, September 29, 2004). GWOT contract provider hires are externally funded therefore these contracts must meet certain criteria. The temporary GWOT positions are authorized when a military or civilian provider deploys or if new workload can be directly attributed to GWOT circumstances. While PROFIS and GWOT practices are a necessity of the current wartime mission, they certainly detract from optimal continuity of care protocol.

Another limitation in the continuity of care at IACH is the method in which health care is currently delivered. A major problem with the delivery of medical care in the U.S. is that it is largely reactive; people interact with their doctor only when they are sick (Snyderman & Williams, 2003). In kind with the civilian sector, it appears that the existing model of primary care delivery at IACH is designed to react to patients with acute illnesses and urgent health care needs.

Often the only interaction TRICARE Prime enrollees at IACH have with their PCM is through acute appointments during which the patient's present with their medical record. A strong indicator of the reactive way physicians are trained to practice is through the sole use of the medical record (Snyderman & Williams, 2003). The initial focus is to determine the patient's chief complaint and the history of the present illness through a diagnosis and plan of treatment. This methodology does not compel health care providers to think about a plan for disease prevention or health promotion (Snyderman & Williams). Potential connections are

additionally diminished, as oftentimes acute appointments are scheduled with providers other then the assigned PCM. Patient and PCM relationships are further devalued if the individual receives the acute care in the Emergency Department, especially if the patient presentation is due to a chronic condition. Presently, there are no internal policies instituted requiring the relay of patient medical information to the PCM for any care provided outside the PCMs purview. Substandard record systems and poor continuity of care can certainly encourage the duplication of health care investigations and expensive procedures (Koperski, 2000).

Demand management for IACH primary care managers is challenging due to several limitations. Foremost is the ability of PCMs to define their population. Since one of the primary missions of the MHS is to provide health care to active duty personnel, the assumption might be that the population is defined and in relatively good health with established and functional preventive health measures. However, the mix of beneficiaries served by the MHS has shifted from active duty personnel toward other beneficiary populations (Belisle, 1999; Ringel, Hosek, Vollard, & Mahnovski, 2002). Family members and retirees currently make up approximately 80% of the MHS beneficiary population (GAO, 2000).

In July 2004, IACH converted to the next generation TRICARE contract with Health Net Federal Services (HNFS). A Memorandum of Understanding (MOU) outlines responsibilities of both IACH and HNFS. Health Net is responsible for monitoring actual enrollment against stated capacity to ensure MTF optimization. PCMs at IACH do not receive respective by-name panel listings of enrolled beneficiaries (K. Ford & S. Antoine, personal communication, 23 September 2004). In addition, neither IACH nor HNFS consistently provides TRICARE Prime enrollees with formal notification of PCM assignment as dictated by DoD policy (ASD/HA, 1999).

IACH also has limited ability to define the health of its enrolled population. Demand

management is designed to encourage the appropriate utilization of health services by offering triage programs and providing patients with information about their disease, disease process, and desired outcomes (Kongstvedt, 2001). Hensrud (2000a) states that the first component of delivering preventative services in the primary care setting is through the use of health risk assessments. Implemented in 1996, the policy mandating TRICARE Prime enrollees to annually complete the DoD Health Enrollment Assessment Review (HEAR) was rescinded in November 2003 until further notice (ASD/HA, 2003). Presently, IACH does not direct any type of formal or informal health assessment of its enrollee population. Additionally, due to management contract issues, the use of triage/advice nursing lines at IACH was abandoned in 1997.

Statement of the Problem or Question

The effective demand management by primary care managers is essential in reaching optimization goals set externally by DoD and internally by the MTF. Throughout fiscal year (FY) 04, IACH exceeded the Department of Defense, Medical Command (MEDCOM) and North Atlantic Regional Medical Center (NARMC) established benchmark for the allowable number of preventable admissions of non-active duty beneficiaries (See Appendix C). Non-active duty beneficiaries refer to those individuals enrolled in TRICARE Prime (Decision Support Center, Office of the Surgeon General [OTSG], n.d.). Preventable admission categories include: Chronic Obstructive Pulmonary Disease, Bacterial Pneumonia, Asthma, Congestive Heart Failure, Angina, Cellulitis, Diabetes, Gastroenteritis, and Kidney/Urinary Infections (Decision Support Center, OTSG). Preventable admission data consist of direct care, care received in the MTF, and purchased care, care provided by a civilian facility. Additionally, from November 30, 2003 to November 30, 2004, the number of high users accessing IACH equaled 1,178 beneficiaries. The parameter for a high user, as set by the Customer Requirements

Specification Version 1.0, is 10 or more visits to an MTF within a one-year period (M. K. Waterman, personal communication, February 2, 2005). The total cost of preventable admissions during that time frame totaled $317,503.53.

The primary care role in demand management at IACH appears to occur haphazardly. The number of high users and excessive preventable admissions may be in part to several mitigating factors such as the variability of PCMs, deficiencies in the continuity of care, lack of policies governing primary care practices, and demand management limitations. IACH executive leadership needs to determine whether current primary care practices are promoting optimal management of patients.

Literature Review

For over two decades, health policy studies have consistently called for the strengthening of primary care delivery as a method to control health care spending, improve access to care, and assure health care quality (Safran, et al., 1998). The key elements of primary care have been identified as accessibility, continuity, comprehensiveness, integration of care, clinical interaction, interpersonal treatment, and trust (Glasgow, Goldstein, Ockene, & Pronk, 2004). In 1996, the Institute of Medicine redefined primary care as "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community" (Martin, et al, 2004, p. 6; Parchman & Burge, 2004, p. 22). The adapted definition clarified that primary care is not just a discipline or specialty but functions as the essential foundation of a successful, sustainable health care system (Martin, et al.).

Studies have also contributed to highlighting the significance of primary care. A study on the clinic management, productivity, and costs associated with several Navy clinics

discovered that the use of primary care might actually lead to less specialty care (Levy, Almendarez, Christensen, & Ziegler, 2003). Lee (2003) introduced findings from a primary care study indicating the need to have a strong primary health care team of family physicians and primary care practitioners to provide services on health promotions. Primary care is health care provided by physicians in the specialties of family practice, internal medicine, and pediatrics (Kongstvedt, 2001). The principal role of primary care physicians is an inevitable evolution of managed care (Fox, 2001). On average, annually in the U.S., 3 out of every 4 people see a physician with the majority of these visits occurring with primary care practitioners (Hensrud, 2000a).

The primary care provider in the MHS is the PCM who should establish and maintain a medical affiliation with each enrolled beneficiary (Lillie & Sobel, 2001). The DoD defines a PCM as a health care provider designated to provide primary and preventative care services and facilitate appropriate referrals for other services including specialty service referrals for TRICARE Prime enrollees (Kongsvedt, 2001). The PCM can also be a specific primary care clinic, site, provider, or group of providers (Lillie & Sobel). PCMs typically are physicians specialized in Family Practice, Internal Medicine, Pediatrics, and Obstetrics and Gynecology. Other supervised Family Nurse Practitioners, Nurse Midwives, and Physician Assistants may also be privileged by an MTF to serve as a PCM (Shi & Singh, 2001).

Although the MHS is comparable to a civilian Health Maintenance Organization (HMO), there is a significant difference as well. Due to the military readiness and operational nature of the MHS, the flux of primary care managers is an inexorable reality. Military PCMs maintain many military-unique responsibilities such as leadership functions and readiness requirements, which decrease the time that they can practice patient care (Johnson, 2002). A study conducted

by the Navy found that between 46% to 93% of the "typical" military provider's time is spent in military and readiness training, residency training, and/or indirect patient care (Helmers, 2001). As military PCMs strive to accomplish non-medical military duties, enrolled beneficiaries are repeatedly transferred to or seen by other health care providers.

Continuity of care is a core attribute of primary care (Institute of Medicine, 1996; Safran, Montgomery, Chang, Murphy, & Rogers, 2001; Saultz, 2003). Safran, et al. (1998) found that the transfer of patients from one primary care provider to another often severs the primary care relationship; opportunities for sustained partnerships and whole-person knowledge of patients are often compromised. Additionally, the efficacy of continuity of care and patient satisfaction are sacrificed. A study by Flocke, Stange, and Zyzanski (1997) found that 25% of patients involuntarily forced to change primary care physicians within the previous two years rated their current physicians significantly lower on several measures of quality of care than did patients who had not been forced to change physicians (Grumbach, 1999). In a separate study Flock, Stange, and Zyzanski (1998) discovered that patients were more likely to receive recommended clinical preventive services if there was good interpersonal communication with the physician, a high degree of coordination of care, and high physician accumulated patient knowledge over time. Whether based on perception or reality, the repercussions of the unpredictability of PCMs can be devastating for the TRICARE Prime enrollment and subsequently the access, cost, and quality of health care provided by the MTF.

Managed care promotes the development of patient access to preventative health care by encouraging the use of primary care physicians (Shi & Singh, 2001). Managed care organizations (MCOs) have the advantages of a large, defined population and an integrated comprehensive care system optimal for engaging in preventive health (Shi & Singh). MCOs also

have data about the health and health care of that population making it possible to address prevention measures in a way that is nearly impossible in a fragmented health delivery market (Solberg, 2001). This theory is not a new one. Thomas A. Edison, 1847-1931, stated, "The doctor of the future will give no medicine, but will interest his patients in the care of the human frame, in diet, and in the cause and prevention of disease" (Hensrud, 2000a, p. 165).

However, physicians are currently underutilizing preventive services because of continued disease model practices (Hensrud, 2000a). Numerous studies illustrate the lack of physician involvement in preventive services. Jaen, Stange, and Nutting (1994) indicated that physicians only perform 20% to 60% of the recommended preventative activities. Other studies revealed that while increasing proportions of physicians believe educating patients about health-related risk factors and the importance of health promotion is a physician responsibility; the amount of preventative care actually being provided is actually decreasing (Aita & Crabtree, 2000; Hensrud, 2000a). Physician involvement is essential for many preventative services; for example, the factor most strongly associated with women receiving a screening mammogram is a physician recommendation (Jaen, et al.). Despite their proven effectiveness, barriers to the delivery of clinical preventive services still exist (Glasgow, Bull, Piette, & Steiner, 2004; McMenamin, et al., 2004). Many notable civilian sector barriers to preventative medicine (Hensrud, 2000a; Smith, Meyer, & Goodson, Gottlieb, & Huang 1999) maintained by physicians, patients, and health systems hold true in MTFs (See Appendix D).

Primary prevention denotes an action taken to prevent the development of a disease in a person who is well and currently free of disease (Gordis, 2000). Clinical preventative services, such as screening tests, counseling for risk reduction, and immunizations, have been identified as key components in health promotion and disease prevention. Research suggests that delivery of

such services reduces disease and improves the health of the population (McMenamin, et al., 2004). Research increasingly demonstrates that the quality of preventative care and chronic illness management will also profoundly reduce the number of other adverse health events suffered, saving billions of dollars in unnecessary costs (National Committee for Quality Assurance [NCQA], 2004). Preventable illnesses make up approximately 70% of the burden of illness and the associated costs (Fries, et al., 1993). The challenge of advocating health promotion and preventative medicine is a contradiction. It is difficult to demonstrate cost effectiveness for primary care preventive services that result in achieving the intended goal; "nothing happening" (Tefft, 1999, p. 857).

For several decades, the needs of the American public have been shifting from predominately acute, episodic care to care for chronic conditions. Chronic diseases develop over time and often exist for years before symptoms prompt patients to seek interventions. Affecting almost half of the U.S. population and accounting for the majority of health care expenditures, chronic conditions are now the leading cause of illness, disability, and death (Institute of Medicine, 2001). Chronic conditions account for about 74% of the United States' overall annual health costs, 80% of hospital admissions, 90% of hospital days, 75% of total prescription costs, and 70% of charges for laboratory and radiology procedures (McConnell & Conyea, 2004). Both the prevalence and costs of chronic care of the aging population are expected to rise at least 15% by the year 2010, and 60 % by 2050 (Glasgow, Orleans, Wagner, Curry, & Solberg, 2001). With more than 125 million Americans living with at least one chronic condition and with chronic diseases accounting for roughly $1 trillion worth of health care expenditures (Snyderman & Williams, 2003), the need for primary care preventive programs has never been greater.

A review of 48 MEDLINE studies about the U.S. quality of care showed that 50% of

recommended preventative care, 40% of recommended chronic care, and 30% of recommended acute care were not provided (Grol, 2002). NCQA (2004) reported that 1,000 Americans or more die each week because the health care system regularly fails to deliver appropriate care, with thousands more being hospitalized. The disparity between the care Americans receive and the care delivered through the nation's best plans results in from 42,000 to 79,000 premature deaths each year (NCQA). Preventative activities have remarkable potential not only to decrease morbidity and mortality but also to influence the quality of life, therefore primary and secondary preventative services should be a part of most physicians' practices, particularly those in primary care (Hensrud, 2000b). Even still, the majority of Americans with major chronic illnesses are believed to be receiving inappropriate or ineffective health care management (Wagner, et al., 2001).

Efforts to control the demands of the chronically ill must take in account that the large majority of patients with preventable conditions such as diabetes and asthma receive the majority of their care in primary care practices (Rothman & Wagner, 2003). Additionally, approximately 58% of all office visits were to primary care clinicians (Rothman & Wagner). The ability to adequately manage these patients has significant implications on whether these patients will tax the system as high users or as preventable admissions.

High clinic users, those defined as having greater then 10 visits per year, must be effectively and efficiently managed. All patients can benefit from aggressive demand management practices. As high users are monitored through a continuum of care to alleviate overuse, other patients are then able to gain access to available health care services. This type of demand management optimization will not only improve access, cost, and quality but will also enhance the elusive realm of patient satisfaction. In fact, a study by Morgan, Pasquarella, and

Holman (2004) found that 78% of high user patient satisfaction is associated with long-term continuity of care, which is defined as seeing a PCM regularly over multiple visits.

There also appears to be correlation between high user care and preventable admissions. Several studies have validated preventable admission rates as an indicator of the effectiveness of primary care (Gill & Mainous, 1998; Backus, Moron, Bacchetti, Baker & Bindman, 2001; Zhan, Miller, Wong, & Myer, 2004). A study examining the correlation of preventable hospitalizations and access to health care (Bindman, et al., 1995) emphasized the requirement for validation of preventable hospitalization rates as a method for measuring the effectiveness of outpatient care delivery. This study found lower preventable hospitalization rates in areas where patients reported continuity of care and access to care (Bindman, et al., 1995). Another study by Oster and Bindman (2003) found that patients with chronic medical conditions that do have regular medical care increased both urgent care visits and hospitalizations.

Purpose

The optimization of health care in the MHS has been the focus of the DoD for several years. With the publication of the 2001 Population Health Improvement Plan and Guide (TMA, 2001), the goal throughout the MHS has been to develop a population health plan and model while optimizing clinical outcomes. The responsibility of developing and implementing such plans and models has been relegated to the individual MTF level. IACH needs to determine whether current primary care practices are promoting optimal management of patients.

The purpose of this study is to conduct an analysis examining high user rates as they correlate to demand management. My hypothesis is that IACH high users are a result of poor primary care demand management. Poor primary care demand management is indicated by a lack of continuity of care with assigned PCM's and/or whether these high users have had a

preventable admission.

Method and Procedures

Data Mining

The method of data collection will be through a monitoring process. Data for this project came from three primary sources: the MHS Management Analysis and Reporting Tool (M2), the Military Health System Population Health Portal (MHSPHP), and the Composite Health Care System (CHCS). Due to the sensitive nature of data stored in each of these sources, access is restricted and stringently controlled. One of the Executive Information and Decision Support Data Marts, M2, is a powerful ad-hoc query tool used to obtain summary and detailed views of population, clinical, and financial data from all MHS regions (Executive Information and Decision Support [EI/DS], n.d.). Operating as a Business Objects program, M2 includes MTF and purchased care data integrated with eligibility and enrollment data. M2 data culled for this study include age, gender, and preventable admissions.

The MHS Population Health Portal (MHSPHP) is a tri-service, web-based tool that can generate detailed action lists for clinical preventive services and disease condition management at the MTF and clinic level (LeVee, 2005). MHSPHP is designed to assist health care managers in proactively managing health care. MHSPHP provided the high user data for this study.

CHCS is designed to be the primary data collection system for all workload statistics within the MTF. This information is available to all other data mart systems electronically or manually (TMA, n.d.). CHCS was accessed to individually determine the total number of visits for each non-active duty high user beneficiary with their assigned PCM as well as to determine the total number of times the individual frequented the emergency room.

Data Analysis.

This study is exploratory in nature due to the limited literature and research on military population health and the fact that there is not an established baseline for comparison. The study will analyze high users at IACH for a 12-month period (November 30, 2003 through November 30, 2004). The convenience sample will only include non-active duty beneficiaries assigned to IACH internal primary care clinics due to the focus on non-active duty preventable admissions currently exceeding the established benchmark by higher headquarters.

Utilizing an ex post facto design, the measured variables used to determine demand management population health measures will include basic demographic information such as gender and age, in addition to PCM visits, PCM visit percentage, Emergency Room (ER) visits, preventable admission and high user statuses. The independent variables are gender, age, PCM visits, PCM visit percentage, ER visits, and preventable admission status. The dependent variable is the high user status of having greater then 10 visits during a one-year period. The dependent variable, which is a continuous variable, is coded as the actual number of visits that categorize the beneficiary as a high user.

Gender is whether the beneficiary is male = 1 or female = 0. Age, the actual age at the time of the study, is broken into age groups as defined in the M2 Data Dictionary (EI/DS, 2004) (see Appendix E). PCM visits are defined as the raw number of encounters where the beneficiary actually presents to the facility and interacts with the individual's assigned PCM. The PCM visit percentage is the total number of PCM visits divided by the total number of high user visits during the 12-month period (see Appendix E for percentage groupings). ER visits are the raw number of visits by the beneficiary to the IACH emergency room. Preventable admission is a dichotomous variable indicating whether a beneficiary has had a preventable

admission; 1 if yes, 0 if no. Multiple admissions were not considered in this study.

The analysis of data will be conducted by using the Statistical Package for the Social Sciences (SPSS) version 9.0 integrating both descriptive and inferential statistics. Descriptive statistics will provide an analysis of frequencies and determination of common themes. Parametric and nonparametric correlations will emphasize associations and an analysis of variance, with a level of $p < .05$, will confirm the implied differences in determined associations and predictive models. Inferential statistics utilized the Student's *t* test to analyze and evaluate results with a probability level of .05. The null hypothesis is that high users are not a result of gender, age, PCM visits, PCM visit percentage, ER visits, or of having a preventable admission.

Validity and Reliability

The validity and reliability of this study were largely dependent on the accuracy of the data. Data for this study were pulled from three separate data sources. However, all three of these sources rely heavily on accurate documentation and coding by IACH personnel. The accuracy of data was mitigated by the sample design, which adequately represented the characteristics of the population it intended to represent with little bias or systematic variation. This held especially true for data culled from the M2 and MHSPHP data marts.

In addition, IACH management analysts periodically conduct data audits of information coming out of these data marts to ensure accuracy. There have been very few discrepancies noted to date and none from the specific data pulled for this study (L. Clingan, personal communication, 19 January 2005). Additionally, the high user status, PCM and ER visits data culled through MHSPHP and M2 were further validated by individually canvassing each sample member's CHCS registration and appointment record sectors for accuracy.

Limitations

This study has several limitations. First is the replicability and generalization of this study to other MTFs. Military treatment facilities are unique in many aspects. They often have regional differences, variations in facility size, and distinctive command philosophies and missions. As a result, MTF demand management practices could vary significantly.

Another limitation is the data collection. The data collection period could only be based on the 12-month time period (November 30, 2003 through November 30, 2004) due to the manner in which MHSPHP data are stored. This significantly reduced the population and subsequently the sample size.

The variability of PCM availability was not taken into account for this time frame. It is probable that providers were often unavailable to see panel members due to leave, illness, and/or military training. This confounder was not included in the analysis. However, the unavailability of a PCM could have affected the number of PCM visits and ER visits. As previously mentioned, the accuracy of health care documentation and coding entries could not be verified.

Ethical Considerations

Due to the nature of this exploratory study, historical patient information maintained in data marts served as analysis data. Data in M2, MHSPHP, and CHCS are extremely sensitive in nature and stringently controlled. Access to these three sources was attained through application to the proponents of M2 and MHSPHP. CHCS access was provided by the IACH Information Management Division. Data were treated in compliance with Health Insurance Portability and Accountability Act (HIPAA) requirements. In addition, anonymity measures included creating and using a tracking log for all M2 data calls, the use of encrypted emails and spreadsheets, and assigning alphanumeric pseudonyms for all patient identification and PCM cells.

Results

The total population for this study was $N = 1{,}178$ high users. The convenience sample ($n = 647$) only included non-active duty beneficiaries assigned to internal IACH primary care clinics. Table 1 illustrates the high users excluded from the study.

Table 1

High user exclusions

Group/Reason	Number Excluded
Active Duty beneficiaries	445
Unassigned PCM in CHCS	16
Infants born during study time period	10
No CHCS record	1
Total:	532

Note: $N = 1{,}178$; $n = 647$.

Table 2 presents the characteristics of the study sample. Females made up 85% of the population sample. The largest age category groups were 7 (45-64 yrs) at 29.8%, 1 (0 – 4 yrs) at 15.5%, and 6 (35-44 yrs) at 15.1% respectively. These age categories combined for a total of 60.4% of the sample population. The number of PCM visits ranged from 0 – 18 visits. However, more then 50% of the high users had 3 or less encounters with their PCM during the 12-month period. The PCM visit percentage indicated that over 65% of high users had 30% or less visits with their assigned PCM. The number of ER visits ranged from 0 – 28 visits with

Table 2

Characteristics of Study Population

Characteristics	*n*	(%)	Cumulative %	*M*	*SD*
Gender				0.15	0.36
Male	97	15.00	15.00		
Female	550	85.00	100.00		
Age Groups				4.97	2.47
1 (0-4 yrs)	100	15.50	15.50		
2 (5-14 yrs)	67	10.30	25.80		
3 (15-17 yrs)	23	3.60	29.40		
4 (18-24 yrs)	36	5.50	34.90		
5 (25-34 yrs)	84	13.00	47.90		
6 (35-44 yrs)	98	15.10	63.00		
7 (45-64 yrs)	193	29.80	92.80		
8 (65-69 yrs)	16	2.50	95.30		
9 (70-74 yrs)	16	2.50	97.80		
10 (75+ yrs)	14	2.20	100.00		
PCM Visits				3.21	2.81
0	116	17.90	17.90		
1	102	15.80	33.70		
2	90	13.90	47.60		
3	79	12.20	59.80		
4	74	11.40	71.20		
5	58	9.00	80.20		
6	50	7.70	87.90		
7	35	5.40	93.30		
8	14	2.20	95.50		
9	9	1.40	96.90		
10	6	0.90	97.80		
11	6	0.90	98.70		
12	5	0.80	99.50		
15	2	0.30	99.80		
18	1	0.20	100.00		

Characteristics	*n*	(%)	Cumulative %	*M*	*SD*
ER Visits				2.65	2.93
0	155	24.00	24.00		
1	130	20.00	44.00		
2	103	15.90	60.00		
3	73	11.30	71.30		
4	54	8.30	79.60		
5	44	6.80	86.40		
6	27	4.20	90.60		
7	25	3.90	94.40		
8	10	1.50	96.00		
9	10	1.50	97.50		
10	5	0.80	98.30		
11	2	0.30	98.60		
12	3	0.50	99.10		
13	1	0.20	99.20		
14	2	0.30	99.50		
19	1	0.20	99.70		
20	1	0.20	99.80		
28	1	0.20	100.00		
% of PCM Visits				2.77	1.79
1 (.00-.10)	226	34.90	34.90		
2 (.11-.20)	116	17.90	52.90		
3 (.21-.30)	101	15.60	68.50		
4 (.31-.40)	83	12.80	81.30		
5 (.41-.50)	60	9.30	90.60		
6 (.51-.60)	31	4.80	95.40		
7 (.61+)	30	4.60	100.00		
Preventable Admission				0.02	0.13
Yes	11	1.70	98.30		
No	636	98.30	100.00		
Total	**647**	**100.00**			

Note. Data were derived from SPSS.

more then 50% of high users accessing the ER 3 times or less. Only 1.7% of the high users had a preventable admission. Standard deviations ranged from *SD* = .13 (Preventable Admission) to *SD* = 2.93 (ER Visits). These differences are marginal indicating that all relationships show little dispersion of the sample data.

Univariate analyses were conducted to determine whether gender, age, PCM visits, PCM visit percentage, ER visits, or preventable admissions are associated with high user status. The results in Table 3 illustrate that three independent variables proved to be statistically significant. In order of significance, the significant variables are PCM visits percentage ($F = 9.73$), ER visits ($F = 9.09$), PCM visits ($F = 3.72$).

Table 3

Regression Analysis).

Variables	Model	*SS*	df	*MS*	*F*
Gender	Regression	10.39	1	10.39	0.50
	Residual	13328.07	645	20.66	
	Total	13338.46	646		
Age	Regression	260.30	9	28.92	1.41
	Residual	13078.17	637	20.53	
	Total	13338.46	646		
PCM Visits	Regression	1016.23	14	72.59	3.72*
	Residual	12322.23	632	19.50	
	Total	13338.46	646		

% PCM Visits	Regression	8684.69	104	83.51	9.73*
	Residual	4653.77	542	8.59	
	Total	13338.46	646		
ER Visits	Regression	2629.76	17	154.69	9.09*
	Residual	10708.70	629	17.03	
	Total	13338.46	646		
Prev Admissions	Regression	0.58	1	0.58	0.03
	Residual	13337.88	645	20.68	
	Total	13338.46	646		

Note. * $p < .001$

The Student's *t* test results in Table 4 were derived through a regression analysis. Three of the six independent variables were highly statistically significant predictors of high user status

Table 4

Summary of inferential statistics.

Variables	*r*	r^2	*t*	*Y'=f(X)*
Gender	+.03	.00	-.71	Y' = 14.64 – 0.35X
Age	+.05	.00	1.33	Y' = 14.11 + 0.10X
PCM Visits	+.14	.02	3.51*	Y' = 13.88 + 0.22X
PCM Visit Percentage	+.12	.01	-3.05*	Y' = 15.43 – 0.30X
ER Visits	+.29	.09	7.79*	Y' = 15.35 – 3.34X
Preventable Admission	+.01	.00	.17	Y' = 13.39 – 0.45X

Note. * = $p < .001$; data were derived through SPSS analysis.

($p < .001$). On average, one would expect 99.99% of the time that the statistical results described above were not due to chance alone.

Discussion

Throughout FY 04, IACH exceeded the higher headquarters established benchmark for the allowable number of preventable admissions of non-active duty beneficiaries. Non-active duty beneficiaries refer to those individuals enrolled in TRICARE Prime (Decision Support Center, Office of the Surgeon General [OTSG], n.d.). The total cost of these preventable admissions equaled $317,503.53. Preventable admission categories include: Chronic Obstructive Pulmonary Disease, Bacterial Pneumonia, Asthma, Congestive Heart Failure, Angina, Cellulitis, Diabetes, Gastroenteritis, and Kidney/Urinary Infections (Decision Support Center, OTSG). Preventable admission data consist of direct care, care received in the MTF, and purchased care, care provided by a civilian facility. Additionally, from November 30, 2003 to November 30, 2004, the number of high users accessing IACH totaled 1,178 beneficiaries. The primary care role in the demand management of high users at IACH appears to occur haphazardly for a myriad of mitigating factors. These factors include variability of PCMs, deficiencies in the continuity of care, lack of policies governing primary care practices, and demand management limitations. While these factors are notably interrelated, the lack of continuity of care with an assigned PCM is predominant.

It is evident by the frequency of visits by high users at IACH that primary care services are not functioning optimally. As illustrated in Appendix F, high user visits range from 11 – 50 visits in a 12-month period. Approximately 15% of the high users have accessed IACH primary care 17 or more times in a year. The analysis of data for this study have shown that confounding factors such as the number of PCM visits, the PCM visit percentage, and number of ER visits not

only have a significant influence on high user status, they illustrate the lack of continuity of care. The fact that almost 60% of high users had only 3 or less encounters with their PCM in a 12-month time period certainly impedes the benefits of continuity of care. With limited military literature regarding the crux of this study, it is unknown whether this trend extends beyond IACH to other MTFs. However, literature does support military PCM availability variability (Helmers, 2001; Levy, Almendarez, Christensen, & Ziegler, 2003; Morgan, Pasquarella, & Holman, 2004), which can be detrimental to continuity of care.

These findings are noteworthy when examining the plethora of literature confirming the importance of continuity of care via the PCM. Continuity of care not only serves to enrich the overall quality of care, but also enhances patient satisfaction and cost-effectiveness. One continuity of care study illustrated that patients who have established a continuity of care relationship with a physician tend to value it and to report greater satisfaction and quality of care (Nutting, Goodwin, Flocke, Zyzanski, & Stange, 2003). In a study conducted by Morgan, Pasquarella, and Homan (2004), continuity of care for high clinic users was a more important determination of satisfaction then access. Within the high user group, seeing a provider that one has a rapport with all of the time defined almost 75% of overall satisfaction (Morgan, Pasquarella, & Homan). While the study at hand focused on non-active duty beneficiaries, the study by Morgan, Pasquarella, & Homan, found that family members of active duty soldiers had significantly lower levels of satisfaction than all other respondents. This is especially noteworthy since the population of MHS beneficiaries served has migrated from active duty personnel to other beneficiary populations (Belisle, 1999; Ringel, Hosek, Vollard, & Mahnovski, 2002). Family members and retirees currently make up approximately 80% of the MHS beneficiary population (GAO, 2000). In addition to patient satisfaction, continuity of care is

believed to affect a significant increase in health care costs.

Although there was little statistical significance in this study with the independent variable, preventable admissions, the cost of these preventable admissions cannot be dismissed. Only 1.70% of high users in this study had a preventable admission. This signifies that the majority of IACH preventable admissions do not qualify as a high user. However, at a minimum, these findings may indicate that preventable admission beneficiaries are not being seen on a regular basis through primary care services or by their PCM. Conversely, many more high users may have been preventable admissions if they had not been seen so frequently, even if the majority of their visits did not occur with their primary care manager.

Wagner, et al. (2001) suggest that PCMs can and should play the key role in an efficient, cost-effective system by providing immediate and convenient access to care and providing trust-enhancing continuity of care. A study by De Maeseneer, De Prins, Gosset, and Heyerick (2003) found that continuity with a family practice physician is related to lower total health care costs. Additionally, their study was able to show that provider continuity remains one of the most important explaining variables of total health care costs to include costs for specialist visits and hospitalizations (De Maeseneer, De Prins, Gosset, & Heyerick). A cost-effective system would allow for optimal demand management of the high user but also has been found to be associated with lower likelihood of future hospitalizations (Gill & Mainous, 1998). Oster and Bindman (2003) note that most preventable admission hospitalizations occur through expensive emergency department encounters. Interventions that improve continuity of care may lead to early detection of chronic diseases, prevent deterioration of these conditions, minimize emergency department utilizations, and ultimately may result in fewer preventable admissions (Oster & Bindman).

Gender and age variables also proved to be statistically insignificant. Nonetheless, the information gleaned from the analysis of these variables is noteworthy. It was not surprising to find that the majority of non-active duty beneficiaries were female (85%). This was anticipated since a large portion of this beneficiary category is family member spouses. With a predominantly male active duty force, spouses would typically be women. Illustrating this distinction enables primary care service planners to define the population requiring services more accurately, especially when it comes to this group of high users. Additionally, more then 60% of non-active duty high users fell predominately into three age groups: 7 (45-64 yrs), 1 (0 – 4 yrs), and 6 (35 – 44 yrs). The findings from reviewing this data indicate the potential need for a focus on pediatric and older adult demand management.

The results of this study provided the initial step in assisting IACH executive leadership in internally developing a strategic plan for the future of the primary care mission. Strategic planning is the actual process of creating strategy in which an organization elects to move from where it currently is to a desired state some time in the future (Ginter, Swayne, & Duncan, 2002). Strategic planning is especially necessary in the military health system which must contend with endless regulatory, political, economic, social, demographic, technological, and competitive changes.

Even as fiscal responsibility remains at the MTF level, DoD spending has doubled in the past four years. The ASD/HA has emphasized the need for health care professionals to use best management efforts to control these rising costs (Gilmore, 2005). This study will aid in financial stewardship as it details a significant aspect of demand management that will aid in staunching the outflow of costly resources associated with high user visits and preventable admissions.

As indicated by the extensive literature on the benefits of primary care demand

management, there are many avenues and requirements for further study. The information gleaned from this study will be beneficial in future primary care studies and could be replicated for research regarding other IACH demand management measures or research conducted by civilian health care facilities or other MTFs. Future studies should include provider profiling, patient acuity levels, high user diagnoses, and preventable admissions studies.

A provider profiling analysis would examine assigned primary care manager behaviors for their assigned high users based on their specific specialization (family practice, internal medicine, nurse practitioner, etc.), actual PCM clinic, and status (military or civilian). If the PCM is military, the variability of availability could be factored in to add validity. Patient acuity levels should be included in examinations of preventable admissions and high users. In addition, PCM visits should have acuity levels and costs associated with each visit. At a minimum, these studies would define the associated total costs and validate the genuine health need of these patients.

Further study on high users could include all beneficiary categories to determine whether gender is in fact significant. In addition, known high user diagnoses should be included, especially if the diagnosis falls into one of the preventable admission categories. Preventable admission studies should be conducted due to the validation of preventable admission rates serving as an indicator of the effectiveness of primary care (Gill & Mainous, 1998; Backus, Moron, Bacchetti, Baker & Bindman, 2001; Bindman, et al., 1995; Zhan, Miller, Wong, & Myer, 2004).

Conclusion and Recommendations

Conclusion

The purpose of this study was to conduct a statistical analysis examining high user rates

as they correlate to demand management. The hypothesis was that IACH high users are a result of poor primary care demand management. Poor primary care demand management was indicated by a lack of continuity of care with assigned PCM's and/or whether these high users had a preventable admission. The findings of this study clearly indicate that primary care services at IACH are not functioning optimally. The information from this study will prove invaluable in the development, modification, and/or implementation of varied population-based primary care services at IACH. The use of historical data gleaned from the analysis of the high users illustrates the inefficiencies of the primary care system in optimizing population health that require mitigation.

Recommendations

Improving primary care services at IACH could be onerous. The variability of PCMs, deficiencies in the continuity of care, lack of policies governing primary care practices, and demand management limitations will make attempts at altering the primary care system challenging. Additionally, it is possible that current practices and personnel have become so entrenched in the way health care is conducted that limited time is actually spent reflecting on the effectiveness and efficiency of everyday routines. As a result, primary care practices appear to be more reactive then proactive and the ability to change as the health care environment changes has diminished. This has negative implications on primary care services, quality of patient care, and staff and patient satisfaction. IACH executive leadership recognized the need to develop a strategic plan for the future of the primary care mission. The completion of this study was only a first inquiry of this endeavor. Vital to the creation of a strategic plan, is attaining buy in by primary care stakeholders, redefining the primary care population, and the development of potential course of actions.

One method of determining stakeholder buy-in would be through the administration of a survey targeted at IACH primary care providers. A sample survey (see Appendix G) was modified from a survey administered in a 1994 study entitled "Readiness to Put Prevention Practice into Inventory" (Goodson, Gottlieb, & Smith, 1999). In addition, two additional questions, numbers 4 and 5, were derived from a study conducted regarding physician behavior (Hensurd, 2000b). The intent of the proposed survey would be to highlight differing staff perceptions and provide important insights into the practice of prevention at IACH (see Appendix C).

Additional survey modifications include the addition of demographic information and the implementation of a Likert scale for rating of survey questions. The initial study's survey used *yes or no* responses. The use of the Likert scale allows the comparison of one person's score with a distribution of scores from a well-defined sample group (Cooper & Schindler, 2002). The Likert scale in this study will have ratings that range from 1 (strongly disagree) to 5 (strongly agree). The use of the Likert scale is beneficial for executive leaders when the organization plans to conduct an experiment or undertake a program of change or improvement (Cooper & Schindler, 2003). Additionally, the Likert scale will aid in determining the reliability and validity of the survey instrument by allowing statistical analysis. To encourage candid and accurate responses, a cover letter endorsed by the MEDDAC Commander would be used to solicit participation and inform participants that their input is voluntary and confidential

In redefining the primary care population, certain challenges must be met. PCMs must know which beneficiaries are enrolled to their panels, what clinical preventive needs and disease/conditions these beneficiaries have, and who the high users are. A major goal should be to identify subgroups in the population who are at high risk for disease. Once these groups are

identified, it would aid in the classification of high risk factors or characteristics and the ability to modify those factors (Gordis, 2000). In addition, identifying high-risk groups can permit preventive efforts to populations more likely to benefit from interventions related to their disease (Gordis).

The informational ability to identify subgroups in the MHS already exists. MHSPHP data can be used to assess population health demographics, forecast clinical preventive service and demands of the enrolled population. The Population Health Portal facilitates MTF compliance with DoD population health management requirements. It allows for primary care high user analysis of potential case management patients, the allocation of resources, and the identification of process improvement opportunities. Population health shifts the health care delivery to before the patient actually requires medical attention. This methodology can identify health risks and aid in the design of clinical and educational interventions to prevent or minimize the need for consumption of medical services (Levy, Almendarez, Christensen, & Ziegler, 2003).

Part of defining the population requires the implementation of individual health assessments. As mentioned previously, the 1996 policy mandating TRICARE Prime enrollees to annually complete the DoD HEAR was rescinded until further notice (ASD/HA, 2003). Presently, IACH does not direct any type of formal or informal health assessment of its enrollee population. In order to practice rationally and prospectively, in addition to seeing patients when they present with symptoms, each individual should have an individually formulated health plan (Synderman & Willams, 2003).

Research increasingly demonstrates that many opportunities to deliver needed care are missed simply because physicians and health plans lack the ability to identify and track patients who need it (NCQA, 2004). Martin, et al. (2004) suggest that new guidance supports the move

from acute, episodic treatment for patients to customizing continuous care according to patients needs. In order to delay or prevent preventive health complications, physicians will need to use the best-available risk-assessment tools and assign their patients to appropriate primary or early secondary prevention programs (Synderman & Williams, 2003).

The PCM assignment by name was the first fundamental step in MTF optimization to enable providers to provide consistent quality health care through the collection and utilization of information for health status improvement of both the individual and enrolled populations. However, deployment of military providers, as well as military unique requirements may disrupt the desired and intended purposes of PCM enrollment. Therefore, to provide the desired continuity of care and accountability, PCMs should be organized into primary care teams. These teams would be aligned with the existing four in-house primary care clinics. With the variability of PCMs at IACH, the concept of utilizing primary care teams may be a beneficial solution especially for beneficiaries identified as high users.

Better quality is associated with effective primary care team work and well organized health care processes (Grol, 2004). Safran (2003) asserts that the potential for primary care teams to improve health care and health has never been greater due to an aging population that is living longer with increasing incidence and prevalence of major chronic illness (Ferlie & Shortell, 2001). This holds true for the MHS whose population is predominately made up of non-active duty beneficiaries and the recent creation of TRICARE for Life, which provides services to retirees after the age of 65. Developing and implementing a strategic plan to optimize demand management of primary care services at IACH is necessary; this study serves as a first step in that direction.

Appendix A

Terms and Definitions

AD	Active Duty
ANOVA	Analysis of Variance
ASD/HA	Assistant Secretary of Defense for Health Affairs
CHCS	Composite Health Care System
CITPO	Clinical Information Technology Program Office
DoD	Department of Defense
EI/DS	Executive Information and Decision Support
ER	Emergency Room
GAO	United States General Accounting Office
GS	Government Service
GWOT	Global War on Terrorism
HEAR	Health Enrollment Assessment Review
HIPAA	Health Insurance Portability and Accountability Act
HMO	Health Maintenance Organization
HNFS	Health Net Federal Services
IACH	Ireland Army Community Hospital
M2	Military Health System Management Analysis and Reporting Tool
MCO	Managed Care Organization
MEDCOM	Medical Command
MEDDAC	Medical Activity
MHS	Military Health System

MHSPHP	Military Health System Population Health Portal
MOU	Memorandum of Understanding
MTF	Military Treatment Facility
NARMC	North Atlantic Regional Medical Center
NCQA	National Committee for Quality Assurance
OTSG	Office of the Surgeon General
PCM	Primary Care Manager
PROFIS	Professional Filler System
SPSS	Statistical Package for Social Sciences
TCQF	TRICARE Clinical Quality Forum
TMA	TRICARE Management Activity
U.S.	United States
USA MEDDAC	United States Army Medical Activity
VA	Veteran's Administration

Appendix B

IACH Primary Care Manager Labor Mix

		Employment Affiliation			
Primary Care Area	Military	GS	VA	GWOT	Total
Primary Care Clinic 1	3 (2 PROFIS)	1	0	1	5
Primary Care Clinic 2	1(1 PROFIS)	0	4	1	6
Primary Care Clinic 3	1	0	5a	0	6
Pediatrics	3 (1 PROFIS)	1	0	2	6
Internal Medicine	2 (1 PROFIS)	1	3	0	6
Total	10 (5 PROFIS)	3	12	4	29

Note. $_{a}$ = 1 provider serving as a lead physician and maintaining a partial panel.

Appendix C

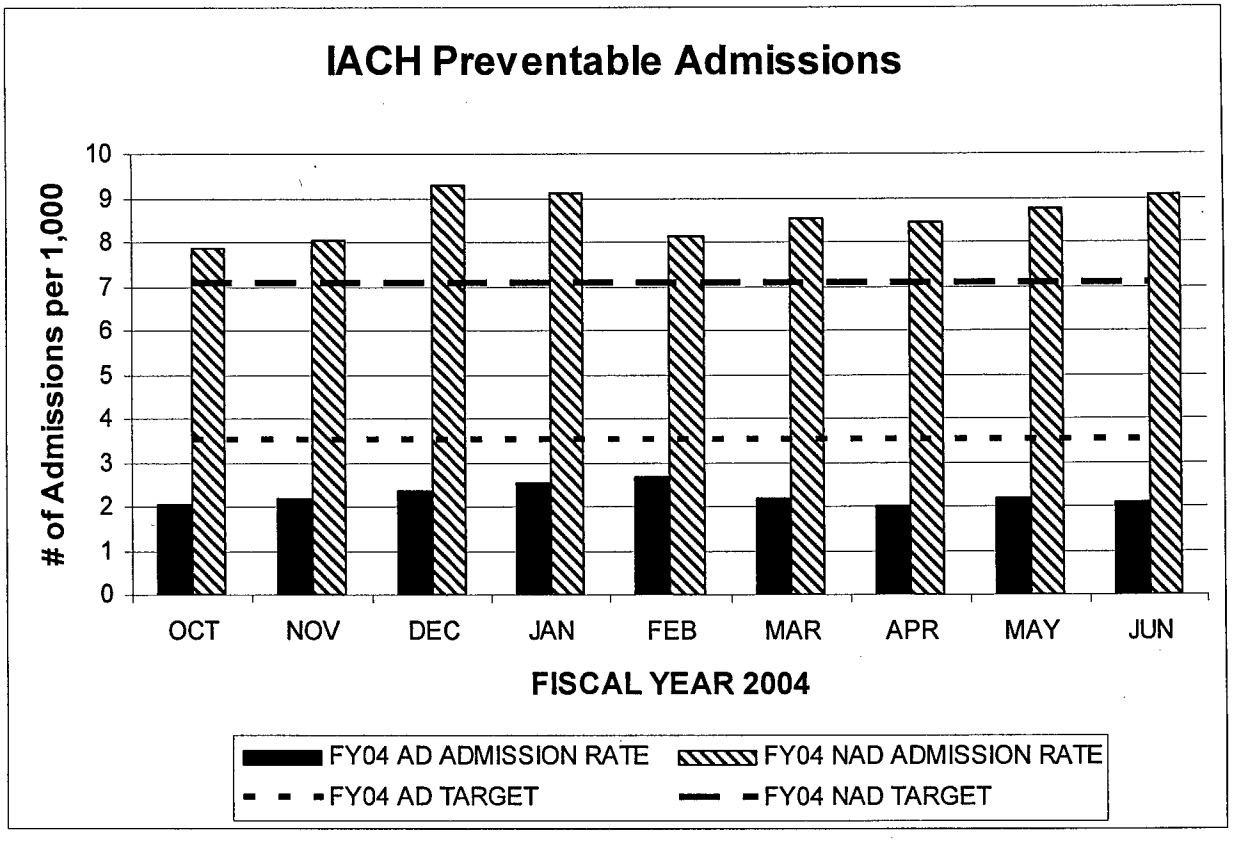

Figure 1. The benchmarks for the number of monthly preventable admissions to hospitals could not exceed 3.51 per 1,000 active-duty personnel or 7.07 per 1,000 non-active duty enrollees (Decision Support Center, OTSG, n.d.).

Note. Source data includes available preventable admission data from FY 04 culled from M2.

Appendix D

Barriers to Primary Care Preventative Practices

Barrier Group	Barriers
Physicians	Knowledge
	Uncertainty about conflicting recommendations
	Uncertainty about the value of tests or interventions
	Disorganized medical records
	Delayed and indirect gratification from screening
	Lack of time
	Negative attitudes and personal characteristics
Patients	Ignorance of benefits
	Doubts about the physician's ability to detect a hidden disease
	Discomfort
	Conscious or unconscious desire not to change unhealthy habits
	Social and cultural norms
	Social and cultural norms
Health System	Population mobility
	Patients with multiple physicians
	Categorical, sporadic screening programs
	Inadequate information systems
	Lack of specific preventive service systems

Note. Adapted from Hensrud, D. D. (2000a). Clinical preventive medicine in primary care: Background and practice: 1. Rationale and current preventative practices. *Mayo Clin Proc, 75(2),* 165-172.

Appendix E

Independent Variable Groupings

Variable	Grouping	Parameter
Gender		
	Male	1
	Female	0
Age Groups		In Years
	1	0 - 4
	2	5 - 14
	3	15 - 17
	4	18 - 24
	5	25 - 34
	6	35 - 44
	7	45 - 64
	8	65 - 69
	9	70 - 74
	10	75 +
PCM Visits	0 - 18	Raw Number of Visits
PCM % Visits		%
	1	.00-.10
	2	.11-.20
	3	.21-.30
	4	.31-.40
	5	.41-.50
	6	.53-.60
	7	.61 +
ER Visits	0 - 28	Raw Number of Visits
Preventable Admission		
	Yes	1
	No	0

Appendix F

High User Visits

Visits	Frequency	(%)	Cumulative %
11.00	150	23.20	23.20
12.00	115	17.80	41.00
13.00	77	11.90	52.90
14.00	69	10.70	63.50
15.00	56	8.70	72.20
16.00	36	5.60	77.70
17.00	43	6.60	84.40
18.00	21	3.20	87.60
19.00	14	2.20	89.80
20.00	13	2.00	91.80
21.00	6	0.90	92.70
22.00	7	1.10	93.80
23.00	5	0.80	94.60
24.00	9	1.40	96.00
25.00	8	1.20	97.20
26.00	5	0.80	98.00
28.00	2	0.30	98.30
29.00	1	0.20	98.50
30.00	1	0.20	98.60
32.00	1	0.20	98.80
33.00	3	0.50	99.20
34.00	2	0.30	99.50
37.00	1	0.20	99.70
50.00	2	0.30	100.00

Note. Data were derived through SPSS analysis.

Appendix G

Primary Care Preventative Services Survey

1 _____ Indicate your provider status

1 = Physician, 2 = Nurse Practitioner, 3 = Nurse, 4 = Administration, 5 = Other

2 _____ Indicate your employment affiliation

1 = Army, 2 = VA, 3 = GS Civilian, 4 = Contract Employee, 5 = Other

3 _____ Indicate your gender

1 = Female, 2 = Male

4 _____ Indicate your age

1 = 19 to 24 years, 2 = 25-34 years, 3 = 35-44 years, 4 = 45 years and older

5 _____ Indicate if you are of Hispanic origin

1 = Yes, I am of Hispanic origin, 2 = No, I am not of Hispanic origin

6 _____ Indicate your race

1 = White, 2 = Black, 3 = Hispanic, 4 = Asian, 5 = American Indian, 6 = Other

7 _____ Indicate how many months you have served in a military treatment facility/hospital

8 _____ Indicate how many months you have served in a civilian hospital

Use the scale below to indicate your agreement/disagreement with the following statements.

Strongly disagree	Moderately disagree	Agree	Moderately agree	Strongly agree
1	2	3	4	5

1 _____ Prevention is an important aspect of the care we provide at Ireland Army Community Hospital (IACH).

2 _____ I think prevention should be more strongly emphasized at IACH.

3 _____ Someone in my organization has the vision, leadership, and authority to make prevention happen here.

4 _____ I have received adequate instruction to support preventive care.

5 _____ I am confident in my ability to help patients bring about behavior change.

6 _____ Primary care providers have adequate time to do patient education/counseling on a one-on-one basis.

7 _____ The nurses at IACH regard patient education as one of their main tasks.

8 _____ The physicians at IACH regard patient education as one of their main tasks.

9 _____ IACH leadership is willing to allocate resources (time, training, personnel, space) to implement a comprehensive clinical preventive program.

10 _____ The internal communication is strong among staff and physicians in our organization.

11 _____ IACH has already implemented specific programs for prevention (such as smoking cessation, diabetes, etc.)

12 _____ IACH has effective referral mechanisms for patients to receive any screening tests not provided in our organization (i.e. mammography, lab, etc.,)

13 _____ IACH has effective referral mechanisms for patient to receive behavior change counseling.

14 _____ Primary care staff follow-up on patients referred to other services (i.e. record tests results on charts)

15 IACH has a quality assurance system in place to assess and improve service delivery (e.g. Total Quality Management (TQM)

16 _____ IACH has a system in place to report the percentage of eligible patients that are receiving the screening tests they need (i.e. Pap smears, immunizations)

Note. The survey instrument was modified from a 1994 study (Goodson, Gottlieb, & Smith, 1999). Questions 4 and 5 were derived from a study conducted regarding physician behavior (Hensurd, 2000b).

References

Aita, V. A., & Crabtree, B. (2000). Historical reflections on current preventive practice. *Preventive Medicine, 30,* 5-16.

Assistant Secretary of Defense for Health Affairs. (1995). *Policy guidelines for implementing TRICARE primary care programs in the military health services system.* Retrieved September 23, 2004, from http://www.tricare.osd.mil/policy/fy96/mhss16.html

Assistant Secretary of Defense for Health Affairs. (1999). *Policy memorandum: Individual assignments to primary care managers by name.* Retrieved September 23, 2004, from http://www.tricare.osd.mil/policy/ha99pol/clin9933.htm

Assistant Secretary of Defense for Health Affairs. (2000). *Policy to improve Military Treatment Facilities (MTF) primary care manager enrollment capacity.* Retrieved September 21, 2004, from http://www.tricare.osd.mil/policy/ha00pol/clin00_001.html

Assistant Secretary of Defense for Health Affairs. (2002). *Military Health System definition of quality in health care.* Retrieved November 15, 2004 from http://www.ha.osd.mil/policies/2002/02-016.pdf

Assistant Secretary of Defense for Health Affairs. (2003). *Policy guidance for the Health Enrollment Assessment Review program.* Retrieved October 10, 2004, from http://www.ha.osd.mil/policies/2003/03-024.pdf

Backus, L., Moron, M., Bacchetti, P., Baker, L. C., & Bindman, A. B. (2001). Effect of managed care on preventable hospitalization rates in California. *Medical Care, 40(4),* 315-324.

Belisle, D. J. (1999). *Effective utilization management in a military treatment facility.* Unpublished manuscript. Available from DTIC ADA421236. U.S. Army-Baylor

University at San Antonio.

Bibb, S. C. (2002). Healthy People 2000 and population health improvement in the Department of Defense military health system. *Military Medicine, 167(7),* 552-555.

Bindman, A. B., Grumbach, K., Osmond, D., Komaromy, M., Vranizan, K., Lurie, N., Billings, J., Stewart, A. (1995). Preventable hospitalizations and access to health care. *JAMA, 274(4),* 305-311.

Cooper, D. R., & Schindler, P. S. (2003). *Business research methods* (8th Ed.). New York: McGraw-Hill.

Decision Support Center; Office of the Surgeon General (OTSG). (n.d.). Performance plan between Deputy Secretary of Defense and Assistant Secretary of Defense (Health Affairs), FY 2004-2008. Retrieved December 28, 2004 from https://ke2.army.mil/otsg/main.php

De Maeseneer, J. M., De Prins, L., Gosse, C., & Heyerick, J. (2003). Provider continuity family medicine: Does it make a difference for total health care costs? *Annals of Family Medicine, 1(3),* 144-148.

Executive Information and Decision Support (EI/DS). (n.d.). *EI/DS data marts.* Retrieved December 29, 2004, from http://www.tricare.osd.mil/peo/eids/data-marts.htm

Executive Information and Decision Support (EI/DS) (Ed.). (2004, October). *M2 data dictionary.* (Available from the EI/DS, eids@mhs-helpdesk.com)

Flocke, S. A., Stange, K. C., & Zyzanski, S. J. (1997). The impact of insurance type and forced discontinuity on the delivery of primary care. *The Journal of Family Practice, 45(2),* 129-135.

Flocke, S. A., Stange, K. C., & Zyzanski, S. J. (1998). The association of attributes of primary

care with the delivery of clinical preventive services. *Medical Care, 36(8)*, AS21-AS30.

Fox, P. D. (2001). An overview of managed care. In Kongstvedt, P. R. (Ed.) *The managed care handbook* (4th ed.) (pp. 3-16). Gaithersburg, MD: Aspen.

Fries, J. F., Koop, C. E., Beadle, C. E., Cooper, P. P., England, M. J., Greaves, R. F., et al. (1993). Reducing health care costs by reducing the demand for medical services. *The New England Journal of Medicine, 329(5),* 321-325.

Gill, J. M., & Mainous, A.G. (1998). The role of provider continuity in preventing hospitalizations. *Archives of Family Medicine, 7,* 352-357.

Gilmore, G. J. (2005, January 25). DoD healthcare spending doubled in past four years. United States Department of Defense Link News. Retrieved 2 February 2005 from http://www.defenselink.mil/news/Jan2005/n01252005_2005012508.html

Ginter, P. M, Swayne, L. E., & Duncan, W. J. (2002). *Strategic management of health care organizations* (4th Ed.). Malden, MA: Blackwell.

Glasgow, R. E., Bull, S. S., Piette, J. D., & Steiner, J. F. (2004). Interactive behavior change technology: A partial solution to the competing demands of primary care. *American Journal of Preventative Medicine, 27(2),* 80-87.

Glasgow, R. E., Goldstein, M. G., Ockene, J. K., & Pronk, N. P. (2004). Translating what we have learned into practice: Principles and hypotheses for interventions addressing multiple behaviors in primary care. *American Journal of Preventative Medicine, 27,* 88-101.

Glasgow, R. E., Orleans, C. T., Wagner, E. H., Curry, S. J., & Solberg, L. I. (2001). Does the chronic care model serve also as a template for improving prevention? *The Milbank Quarterly, 79(4),* 579-612.

Goodson, P., Gottleib, N. H., & Smith, M. M. (1999). Put prevention into practice. Evaluation of program initiation in nine Texas clinical sites. *American Journal of Preventative Medicine, 17(1),* 73-78.

Gordis, L. (2000). Epidemiology (2nd Ed.). Philadelphia: W. B. Saunders.

Grol, R. (2002). Changing physicians competence and performance: Finding the balance between the individual and the organization. *The Journal of Continuing Education in the Health Professions, 22,* 244-251.

Grol, R. (2004). Quality improvement in primary care: A change of culture, towards a culture of change. *European Journal of General Practice, 10(20),* 43-44.

Grumbach, K. (1999). Primary care in the United States – The best of times, the worst of times. *The New England Journal of Medicine, 341(26),* 2008-2010.

Helmers, S. (2001). The Bremerton enrollment capacity model: An enrollment capacity model supporting the military health system optimization plan. *Military Medicine, 166(12),* 1099-1106.

Hensrud, D. D. (2000a). Clinical preventive medicine in primary care: Background and practice: 1. Rationale and current preventative practices. *Mayo Clin Proc, 75(2),* 165-172.

Hensrud, D. D. (2000b). Clinical preventive medicine in primary care: Background and practice: 2. Delivering primary preventive services. *Mayo Clin Proc, 75(3),* 255-264.

Hensrud, D. D. (2000c). Clinical preventive medicine in primary care: Background and practice: 3. Delivering preventive screening services. *Mayo Clin Proc, 75(4),* 381-386.

Institute of Medicine. (1996). *Primary care: America's health in a new era.* Retrieved 8 December 2004, from http://www.nap.edu/readingroom/books/primary/summary.html

Institute of Medicine. (2001). *Crossing the quality chasm: a new health system for the 21st century. An executive summary.* Retrieved 1 May, 2004, from http://books.nap.edu/catalog/10027.html

Ireland Army Community Hospital. (n.d.) Ireland Army Community Hospital mission statement. Retrieved September 21, 2004 from http://wwwiach.knox.amedd.army.mil/iach/

Jaen, C. R., Stange, K. C., & Nutting, P. A. (1994). Competing demands of primary care: A model for the delivery of preventative services. *The Journal of Family Practice, 28(2),* 166-171.

Johnson, G. P. (2002). Primary care enrollment levels in staff- and group-model health maintenance organizations: A standard to compare military enrollment with civilian organizations. *Military Medicine, 167(5),* 370-373.

Kongstvedt, P. R. (Ed.). (2001). *The managed health care handbook* (4th Ed.). Gaithersburg, MD: Aspen.

Koperski, M. (2000). The state of primary care in the United States of America and lessons for primary care groups in the United Kingdom. *British Journal of General Practice, 50(453),* 319-322.

Lee, A. (2003). The need for integrated primary health care to enhance the effectiveness of health services. *Asia-Pacific Journal of Public Health, 15(1),* 62-67.

LeVee, L. N. (2005, January 26). MHS population health portal. Military Medical Technology, 9(1), Article 785. Retrieved February 2, 2005, from http://www.military-medical-technology.com/archive_article.cfm?DocID=785

Levy, R. A., Almendarez, M. R., Christensen, E. W., & Ziegler, S. L. (2003). *Clinic management, productivity, and cost: Results from selected Navy clinics.* Alexandria, VA: The CNA Corporation.

Lillie, S., & Sobel, L. (2001). CHAMPUS and the Department of Defense managed care programs. In Kongstvedt, P. R. (Ed.) *The managed care handbook* (4th ed.) (pp. 1124-1132). Gaithersburg, MD: Aspen.

Martin, J. C., Avant, R. F., Bowman, M. A., Bucholtz, J. R., Dickinson, J. C., Evans, K. L., et al. (2004). The future of family medicine: A collaborative project of the family medicine community. *Annals of Family Medicine, 2*, 3-32.

McConnell, S., & Conyea, A. (2004). Member-centered disease management yields measurable results. *The Case Manager, 15(2),* 48-51.

McMenamin, S. B., Schmittdiel, J., Halpin, H. A., Gillies, R., Rundall, T. G., & Shortell, S. M. (2004). Health promotion in physician organizations: Results from a national study. *American Journal of Preventive Medicine, 26(4),* 259-264.

Morgan, E. D., Pasquarella, M., & Homan, J. R. (2004). Continuity of care and patient satisfaction in a family practice clinic. *Journal of American Board of Family Practitioners, 1,* 341-346.

National Committee for Quality Assurance. (2004). The *state of health care quality: Industry trends and analysis.* Washington, DC: Author.

Nutting, P. A., Goodwin, M. A., Flocke, S. A., Zyzanski, S. J., & Stange, K. C. (2003). Continuity of primary: To whom does it matter and when? *Annals of Family Medicine, 1(3),* 149-155.

Oster, A., & Bindman, A. B. (2003). Emergency department visits for ambulatory care sensitive

conditions. *Medical Care, 41(2)*, 198-207.

Parchman, M. L., & Burge, S. K. (2004). The patient-physician relationship, primary care attributes, and preventive services. *Family Medicine, 36(1),* 22-27.

Ringel, J. S., Hosek, S. D., Vollaard, B. A., & Mahnovski, S. (2002). *A review of the literature and its application to the military health system.* (ISBN 0-9330-3109-0). Arlington, VA: National Defense Research Institute & Rand.

Rothman, A. A., & Wagner, E. H. (2003). Chronic illness management: What is the role of primary care? *Annals of Internal Medicine, 138(3),* 256-262.

Safran, D. G. (2003). Defining the future of primary care: What can we learn from patients? *Annals of Internal Medicine, 138(3),* 248-255.

Safran, D. G., Taira, D. A., Rogers, W. H., Kosinski, M., Ware, J. E., & Tarlov, A. R. (1998). Linking primary care performance outcomes to care. *The Journal of Family Practice, 47(3),* 213-220.

Safran, D. G., Montgomery, J. E., Chang, H., Murphy, J., and Rogers, W. H. (2001). Switching doctors: Predictors of voluntary disenrollment from a primary physician's practice. *The Journal of Family Practice, 50(2),* 130-136.

Saultz, J. W. (2003). Defining and measuring interpersonal continuity of care. *Annals of Family Medicine, 1(3),* 134-143.

Shi, L., & Singh, D. A. (2001). *Delivering health care in America* (2nd ed.). Gaithersburg, MD: Aspen.

Smith, M. M., Meyer, B., Goodson, P., Gottlieb, N. H., & Huang, P. (1999). Chart documentation of clinical preventative services at 9 Texas clinics. *Texas Medicine, 95(8),* 56-62.

Smith, R. I., Thornton, D., & Sollom, T. (2001). Examining common assertions about managed care. In Kongstvedt, P. R. (Ed.) The managed care handbook (4th ed.) (pp. 81-90). Gaithersburg, MD: Aspen.

Snyderman, R., & Williams, R. S. (2003). Prospective medicine: The next health care transformation. *Academic Medicine, 78(11),* 1079-1084.

Solberg, L. I. (2001). Primary prevention in managed health care. In Kongstvedt, P. R. (Ed.) *The managed care handbook* (4th ed.) (pp. 284-293). Gaithersburg, MD: Aspen.

Tefft, R. J. (1999). Ensuring force readiness and beneficiary health through health promotion and preventive medicine in the military health system: A position paper. *Military Medicine,164(12),* 857-862.

TRICARE Management Activity. (n.d.). Clinical Information Technology Program Office (CITPO) projects. Retrieved February 2, 2005, from http://www.tricare.osd.mil/peop/citpo/projects.htm

TRICARE Management Activity. (2001). DoD: Population health improvement plan and guide. Washington, DC: U.S. Government Printing Office.

United States General Accounting Office. (2000). *Defense health care: Observations on proposed benefit expansion and overcoming TRICARE obstacles.* Retrieved September 29, 2004, from http://www.gao.gov/new.items/h400129t.pdf

United States General Accounting Office. (2003a). *Military treatment facilities: Improvements needed to increase DOD third-party collections.* Retrieved September 29, 2004, from http://www.gao.gov/atext/d04322.txt

United States General Accounting Office. (2003b). *Defense health care: Oversight of the TRICARE civilian provider network should be improved.* Retrieved September 29,

2004, from http://www.gao.gov/atext/d03928.txt

Wagner, E. W., Austin, B. T., Davis, C., Hindmarsh, M., Schaefer, J., & Bonomi, A. (2001). Improving chronic illness care: Translating evidence into action. *Health Affairs, 20(6),* 64-78. .

Zhan, C., Miller, M. R., Wong, H., & Meyer, G. S. (2004). The effects of HMO penetration on preventable hospitalizations. *Health Services Research, 38(2), 345-361.*