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COMPARATIVE ANALYSES OF AMBULATORY
MORBIDITY IN FOUR PATIENT POPULATIONS

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This report represents an analysis of differences in patient ambulatory care visit frequencies within populations representative of the direct and non-direct components of the Military Health Services System (MHSS) as well as the private sector. The organization of this executive summary parallels that of the overall report and includes the following segments: Introduction; Methodology; Results; and Discussion. This report represents the first step in presenting an integrated view of the total morbidity experience of MHSS beneficiaries.

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Reference: Contract Number MDA903-88-C-0071
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                    Final Report On Morbidity Comparisons

Dear Lt. Col. Baker:

I have enclosed under this cover a copy of our final report entitled *Comparative Analyses of Ambulatory Morbidity in Four Patient Populations*. In addition to incorporating your comments and those of Joanna Lion, the report includes analyses of the PRIMUS/NAVCARE study database as well as U.S. and DOD population data.

The changes have strengthened the original report. Joanna remains excited about the report and is interested in its publication in some form. Of course, nothing related to publication will occur without your prior approval.

This report represents the first in a series that we plan to provide to you in the near future. Others include our evaluation of AVGs and the analysis of episodes of illness. As always, please feel free to call me regarding this report or other matters.

Sincerely,

BIRCH & DAVIS ASSOCIATES, INC.

Dave Bodycombe

cc: Paul Mermelstein

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EXECUTIVE SUMMARY

The following report represents an analysis of differences in patient ambulatory care visit frequencies within populations representative of the direct and non-direct components of the Military Health Services System (MHSS) as well as the private sector. The organization of this executive summary parallels that of the overall report and includes the following segments:

- Introduction
- Methodology
- Results
- Discussion

This report represents the first step in presenting an integrated view of the total morbidity experience of MHSS beneficiaries.

1.   INTRODUCTION

At present, no integrated mechanism exists for the collection of ambulatory care patient data in the direct and non-direct components of the MHSS. In Military Treatment Facilities (MTFs), save for demonstration and research projects, data collection is confined to the completion of the patient medical record. Uniformed Services Treatment Facilities (USTFs) have instituted automated data collection for their entire patient population, but this only represents a small segment of the active duty personnel who are the primary mission of the MHSS. The Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) program, representing non-direct care, maintains an extensive patient data system that focuses on health care claims.

The MHSS Coordinated Care Program (CCP) is placing greater responsibility on local MTF commanders to provide for the total health care needs of all MHSS beneficiaries within defined catchment areas. It is critical to the success of the CCP that MTF health planners have accurate information on the case-mix of their patient population so that they can anticipate needs and make informed resource allocation decisions.

2.   METHODOLOGY

Morbidity has been defined to represent counts of ambulatory care visits according to their principal diagnosis. This approach is based solely on patients and reflects characteristics of the users of MHSS services. Consequently, this report does not reflect the incidence and prevalence of disease in the total beneficiary population. Population-based data are important for the planning of preventive services.

Given the time-sensitivity of this study, we have focused on available automated data sources. Four data sources, all associated with patients, were available:

- CHAMPUS
- USTF
- PRIMUS/NAVCARE
- Ambulatory Care Data Base (ACDB)

Due to the small number of observations in the PRIMUS/NAVCARE database (n = 1,294), no age- or sex-specific analyses were conducted in this population.

In addition, to provide a basis for comparisons with the civilian sector, we employed data from the National

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Ambulatory Medical Care Survey (NAMCS).

3. RESULTS

We examined the unique aspects of ambulatory care utilization in the military service population in terms of general visit frequencies and in terms of specific age and sex groups. Some of the more significant findings are as follows:

(1) General

o   **Visit Frequencies in Databases With a Large Active Duty Personnel Contingent Tend To Be Lower Than Those That Are Civilian-Oriented**--Military personnel are selected for their good health and are required to maintain a constant state of good health to be retained on active duty.

o   **CHAMPUS Data Demonstrate Low Visit Frequencies for Physical Exams and Refractions**--Physical examinations are not authorized under CHAMPUS and are required within the direct care system for the periodic assessment of fitness for active duty. Benefits for eyeglasses and lenses are generally excluded from CHAMPUS and offered by the direct care system.

o   **CHAMPUS Data Demonstrate High Visit Frequencies for Mental Disorders**--Outpatient mental health services within the direct care system are limited and more than compensated for by a comprehensive benefit for these services in CHAMPUS.

(2) Age-Specific Differences

For the most part, age moderates the degree of differences in visit frequencies between patient populations but not the general trends in these differences. Thus, for example, while the frequency of physical exams within the USTF database is consistently higher across all age groups, the frequency is at least 50 percent greater in only three out of five age groups.

The importance of age in explaining variations in visit frequencies was demonstrated by controlling for its effects with age-specific visit frequencies applied to a standard population. When the effects of age were controlled, nearly half of the main differences between the NAMCS and three study databases dropped out.

(3) Sex-Specific Differences

Sex does not appear to strongly affect visit frequencies for the 14 general diagnostic categories that were examined. Most of the major differences were consistent across sex groups, i.e., if they were large in one sex they were also large in the other. Even where differences were not viewed as large in both sexes, they were always consistent in the direction of their difference, either greater or lower than the NAMCS.

(4) Age- and Sex-Specific Differences

Differences between the NAMCS and the three study databases are much more dramatic at this level of analysis. However, analyses at this level are also more sensitive to coding problems and small numbers of observations in specific diagnosis-age-sex groups. The results at this level are generally supportive of the higher-level analyses:

4.   CONCLUSIONS

The results suggest that the military does, in fact, have a different ambulatory visit distribution than the civilian sector. While similarities outweigh differences when only major body systems are considered and when the effect of age is taken into consideration, these differences cannot be ignored. Further, data from the three military databases are heterogeneous--they are almost as different from each other as they are from the NAMCS.

The results point out unique attributes of the military patient population that need to be considered in developing and applying case-mix classification schemes. However, these results at best represent an incomplete picture of ambulatory patient morbidity within the military. With currently available data systems it is impossible to develop a complete picture of patterns of ambulatory care use among MHSS beneficiaries. Dependents and retirees are relatively free to move between CHAMPUS and the direct care system. With our fragmented patient data we were unable to consistently pick up all the care provided to a given population and some patient care is liable to have dropped through the cracks. With improved data systems that are capable of tracking individual patients it should be possible to develop a far more accurate picture of ambulatory care utilization.

CHAPTER ONE

INTRODUCTION

I. INTRODUCTION

The Office of the Assistant Secretary of Defense Health Affairs (OASD-HA) is currently embarking on the implementation of a Coordinated Care Program (CCP) for the Military Health Services Systems (MHSS). The CCP represents a major overhaul of the MHSS that places greater responsibility for the management of health care services on local MTF commanders. Although their decisions will be centrally monitored, MTF commanders will be responsible for managing health care delivery, cost, and quality of care in their catchement areas.

In order to manage care effectively, the MTF Commanders will need additional tools to support the allocation of health care resources. The DoD has already developed a resource allocation methodology based upon Diagnosis Related Groups (DRGs) for inpatient care. An analogous tool for outpatients must also be developed. Such a system would have far reaching implications for the MHSS affecting the collection, reporting, and use of ambulatory care data.

For DoD to select among alternative case-mix classification systems will require careful consideration of a number of issues that include how well the classification system encompasses the types of services provided, accommodates case-mix, reflects the use of ancillary care personnel, reflects the actual levels of health resource use, and reflects the unique properties of the MHSS. To facilitate this process, more must be known about the demographics and morbidity status of MHSS patients.

This report presents an analysis of the comparative patient morbidity of the populations described by the available data sources, using the NAMCS (National Ambulatory Medical Care Survey) as a baseline. This comparison will not only aid in highlighting the unique characteristics of the patient population served by the MHSS, but will also emphasize the structural differences of MHSS components.

1. THE MILITARY HEALTH SERVICES SYSTEM (MHSS)

The mission of the MHSS involves several functions of which the top priority is to:

> "plan, train, equip, evaluate, prepare, measure, and resource medical and medical support forces to mobilize, deploy, deliver, and sustain quality health care across the operational continuum to expedite timely returns to duty in support of the Theater Commander."[1]

Although the MHSS primary mission relates to the provision of health services to active duty military, these health benefits also encompass the dependents of active duty military personnel as well as retired service members and their dependents. The MHSS can be generally described as having both direct and non-direct care components. Both the direct and non-direct components play a significant role in providing for the total health care needs of the military beneficiaries.

The direct care components include Medical Treatment Facilities (MTFs) for each military service, the non-service specific Uniformed Services Treatment Facilities (USTFs), and the PRIMUS/NAVCARE program. Medical care for the active duty members of the uniformed services must be provided through the direct care system, or through non-defense providers as required with direct reimbursement by the Department of Defense (DoD). All non-active duty beneficiaries receive care from the DoD direct care components on a "space available" basis. If the medical care is not available or timely at direct care locations for these beneficiaries, these beneficiaries may obtain care through one of the MHSS non-direct care components, described below.

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[1] CIM Medical Subgroups Work Documents, pg. 10, March 27, 1991

The non-direct care component is primarily composed of the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) program. Active duty beneficiaries are excluded from participating in any non-direct care programs. A "non-availability" statement for inpatient services (and soon for selected outpatient conditions) from the direct care components is normally required prior to receiving inpatient services from a non-direct care program. However, eligible beneficiaries may use the non-direct care programs for any acute care needs within the scope of program benefits for ambulatory care. The different non-direct care programs vary in benefit and cost structures.

In the course of the present study, data were obtained that describe both the direct and non-direct components of the MHSS. These components and their associated data sources are as follows:

o **Military Medical Treatment Facilities (MTFs)**--The Army, Navy, and Air Force each maintain their own MTFs. In general, the MTFs provide a full complement of both inpatient and outpatient (clinic-based) services. All providers are "staff" (salaried) providers, and may actually be either military, civilian, or contracted. This study has obtained a portion of data collected for a special project at six U.S. Army MTFs. These data, contained in the Ambulatory Care Data Base (ACDB), represent this study's sole source of information describing patient level ambulatory care at MTFs. The ACDB is a representative sample of the patients documented at the participating Army sites. Patterns of care, however, may not represent current characteristics of care at Navy and Air Force MTFs.

o **Uniformed Services Treatment Facilities (USTFs)**--The Military Construction Act of 1982 authorized 10 former Public Health Service Hospitals and clinics to provide free comprehensive health care services to eligible beneficiaries of the Armed Forces, the Coast Guard, the Commissioned Corps of the Public Health Service, the National Oceanic and Atmospheric Administration (NOAA), and lighthouse keepers. These former Public Health Service Hospitals are now referred to as Uniformed Services Treatment Facilities (USTFs). The USTFs provide a full complement of outpatient (clinic-based) services. All providers are "staff" (salaried) providers, and may be either civilian or contracted. This study employs a USTF database containing patient-level ambulatory care data. This database is used by the USTFs to ensure appropriate reimbursement for "member" beneficiaries, and to document patterns in health services utilization.

o **Civilian Health And Medical Program of The Uniformed Services (CHAMPUS)**--Since the late 1950's, the CHAMPUS program has provided inpatient and ambulatory health services at civilian health care facilities to its non-active duty beneficiaries, as opposed to treatment provided through the direct care system. The CHAMPUS program includes benefits that are similar to the Blue Cross/Blue Shield high option.[2] Beneficiaries participating in this program must pay a yearly deductible and co-payments for services. Older beneficiaries (65 and older) must use the Medicare program rather than the CHAMPUS program. Participation in CHAMPUS does not prevent eligibility for receiving care from any other component of the MHSS. This study has obtained access to the CHAMPUS program's claims database (one quarter) for analysis.

o **PRIMUS/NAVCARE Program**--The PRIMUS (Army & Air Force)/NAVCARE (Navy) program provides care for acute minor illnesses through contracts with privately owned walk-in clinics. These facilities provide care at a single price per visit for the beneficiaries.

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[2] Colonel Douglas A. Braendel, MS, *A Managed Care Model For The Military Departments*, A Senior Service College Fellowship Paper, p. 10, 15 May 1990.

PRIMUS/NAVCARE is an alternative to the direct care system's outpatient clinics and is considered an extension of the direct care system. This study has obtained data representative of this component of the non-direct care system for analysis.

2. BACKGROUND AND PURPOSE OF THE PROJECT

As initially noted, this task is part of a larger effort that seeks to address the global issues associated with developing an ambulatory resourcing strategy. The purpose of the present effort is to present a comparative analysis of differences in case-mix and service utilization between the civilian and military populations. In accomplishing this task, descriptive patient morbidity statistics have been obtained from the NAMCS, some of which have not been previously published. Additionally, three MHSS databases have been obtained for the support of project activities. Each of these databases are descriptive of a specific component of the MHSS. It is important to note that any given beneficiary could receive treatment from several MHSS components during any timeframe. These databases, with a brief description, are:

o   Uniformed Services Treatment Facility (USTF) Database--The USTFs, a part of the direct care system of the MHSS, functions similarly to a capitated health care system. The DoD ambulatory reimbursement to each USTF is based upon the first annual visit of a beneficiary, regardless of visits per patient. Eligible beneficiaries include active-duty personnel, their dependents, retirees and their dependents, and survivors. The purpose of the USTF database is to ensure appropriate reimbursement for "member" beneficiaries, and to document patterns in health services utilization. The USTF data include diagnostic and procedure information, but exclude cost or resource use.

o   Civilian Health And Medical Program of the Uniformed Services (CHAMPUS) Database-- The DoD sponsored CHAMPUS program provides civilian health services to beneficiaries, as opposed to treatment provided through the direct care system. The only beneficiary exclusions from the CHAMPUS program are active duty personnel and Medicare eligible DoD beneficiaries. This program functions as health insurance, representing a non-direct care component of the MHSS. The CHAMPUS database is a product of the automated claims processing procedures of CHAMPUS fiscal intermediaries. As such, the pre-processed records represent insurance claims, not encounters or visits. These data include diagnoses and procedures, and provide a rich environment for calculating costs.

o   U.S. Army Ambulatory Care Data Base (ACDB)--The ACDB was developed under the auspices of the U. S. Army (USA) Medical Department (AMEDD). Envisioned as part of the AMEDD Performance Measurement Study (PMS), this effort was ultimately subsumed under the DOD Tri-Service Performance Measurement Study in 1986. The focus of this effort was on the creation of a decentralized and automated system for collecting ambulatory care data that are relevant to clinical practice, epidemiologic analysis, and performance measurement. Data were collected at six U.S. Army MTFs. Each record represents a patient encounter, and includes diagnosis and procedures, as well as self-recorded values of provider time spent with each patient. Providers in this database include corpsmen, nurses, physicians, and other personnel credentialed to practice.

o   PRIMUS/NAVCARE Evaluation Database--This database was based upon examination of a sample of 1,422 medical records collected over a two day period in July, 1990, at two PRIMUS/NAVCARE clinics and the adult and pediatric primary care clinics of sponsoring MTFs. Demographic, diagnostic, and health care services were extracted for the most recent dated ambulatory care visit entry. The final sample was 1,294 after excluding illegible, incomplete, and out-of-scope records.

3.   DESCRIPTION OF THIS REPORT

This report is organized into four brief chapters that include this introduction. The following section on methodologies covers the technical issues that affect the development of the methodology and the interpretation of the findings as well as the processes required to undertake this effort. The study results follow a stepwise process from the most general to the most specific, in this case to discrete age and sex population subgroups. The report concludes with an assessment of the comparability of morbidity data from the three study databases and a consideration of future required research.

CHAPTER TWO

METHODOLOGY

II. METHODOLOGY

In developing the research methodology, we sought to address a series of important technical issues that relate to the analytic design or that may affect the interpretation of the data.

1. TECHNICAL ISSUES

Technical issues were roughly categorized into four general discussion areas as follows:

- o   Selection of an appropriate comparison population

- o   Comparability

- o   Numbers of observations

- o   Statistical testing

(1) Selection Of An Appropriate Comparison Population

Designed to be representative of the practices of the nation's (48 contiguous States) non-Federal physicians who are primarily engaged in office-based patient-care practice, the National Ambulatory Medical Care Survey (NAMCS) represents the best source of comparison data for the three military-related patient populations used in the study. The NAMCS' data collected on ambulatory office visits include date of birth, sex, race of patient, principal problem(s), diagnoses, and disposition and duration of visit. The last complete data year is 1985 and is based on a sample of 72,000 patient records from 2,879 participating physicians.

(2) Comparability

Comparability issues can be classified into three general areas as follows:

- o   Record structure

- o   Coding phenomena

- o   Demographics

Key elements of each of these issues are:

- o   **Record Structure**--The ACDB was collected as a visit database. In contrast, the CHAMPUS and USTF databases required some preprocessing in order to make them representative of office visits. The steps undertaken to attain "visits" in CHAMPUS are summarized in Appendix A. A comparable discussion for the USTF is provided in Appendix B.

  It should be noted that the NAMCS was intended to represent physician-patient encounters in office-based nonFederal physician practices. Thus, visits to hospital-based physicians as well as anesthesiologists, pathologists, and radiologists were explicitly excluded. The NAMCS setting, thus, differs markedly from the MHSS.

- o   **Coding Phenomenon**--In the NAMCS, physician diagnoses were coded according to the *International Classification of Diseases, Ninth Revision Clinical Modifications (ICD-9-CM)*.

This same coding system was adopted by CHAMPUS and the USTF. In the ACDB, ICD-9-CM codes were supplemented with special codes that were meant to reflect unique aspects of military health care or areas of special interest. For example, subclassifications for normal pregnancy (V22) in ICD-9-CM and in the ACDB are as follows:

ICD-9-CM		ACDB	
CODE	DESCRIPTION	CODE	DESCRIPTION
V22.0	Supervision of normal first pregnancy	V22.1	Prenatal care
V22.1	Supervision of other normal pregnancy	V22.2	Pregnancy, incidental
V22.2	Pregnant state, incidental	V22.6	Pregnancy, teenage

Arguably, the subgroups fall within the general category of normal pregnancy, although teenage pregnancy might be better classified as high-risk pregnancy (V23). At the detailed level, the codes really represent different conditions. The ACDB code V22.1 subsumes both ICD-9-CM codes V22.0 and V22.1. The ACDB code V22.6 is not completely embodied in any of the ICD-9-CM classifications. There are other cases where the ACDB subgroups fall completely outside of the general category described by the ICD-9-CM code. An extensive crosswalk was prepared that reassigned a significant portion of these unique codes to valid ICD-9-CM codes.

Other diagnoses were not comparable because of coding errors. These errors include things such as undefined codes and records that are simply blank and contain no diagnosis. In the ACDB, over 10 percent of the diagnoses were unable to be corrected. These uncorrectable errors were particularly problematic in the USTF, representing over 15 percent of the diagnoses. A complete discussion of data cleaning activities is provided in a prior project report entitled *Report on the Feasibility of Three Data Bases As Sources for the Ambulatory Resource Analysis Project.*

o   **Demographics**--Differences between the demographic characteristics of the three military and the NAMCS patient populations also imposed special considerations in formulating comparisons.

We adopted age groupings for our study populations that were inherent to the NAMCS tabulations. The NAMCS groups are as follows:

- Less than 15 years of age
- 15 to 24 years of age
- 25 to 44 years of age
- 45 to 64 years of age
- 65 plus years of age

Active-duty military populations, such as those represented by the ACDB and the USTF, will be somewhat younger than the general population. Further, the CHAMPUS population is skewed to younger age groups because persons aged 65 years and over are not eligible for care. Data from the study databases were both age-adjusted and distributed by age to control as well as study the impact of this key variable.

Since the active duty military population remains predominantly male, sex also plays a potentially important role and was, thus, employed to describe the distribution of visit diagnoses.

Other inherent differences between military and civilian populations are less susceptible to control. Because of the extensive health screening and the rigorous health standards that are associated with military duty, these populations are likely to be healthier than their age and sex peer groups in the general population. Thus, one would expect to see lower visit frequencies for chronic and debilitating conditions in databases that represent high percentages of active-duty personnel.

Finally, military and civilian health care systems differ in ways that may affect the distribution of ambulatory patient visits. For example, there are different incentives for each component of the military health care system that may affect the frequency of visits to the various facilities. In CHAMPUS, there is an incentive to perform more procedures, since providers are reimbursed at the customary prevailing rate for each procedure performed. Incentives at the USTFs are different, since only the first visit that a patient makes in a given year is the key to reimbursement. At the MTFs, total visit counts are the important figures used for reimbursement purposes. Also, military facilities provide free nonprescription drugs and supplies as required for provider-directed medical care. These free items are made available by prescription and, thus, may represent a valid reason for an ambulatory care visit.

(3) Numbers Of Observations

The need to consider both age and sex simultaneously involves considerable partitioning of the study databases. The number of observations for certain diagnosis-age-sex combinations may be too small for statistical reliability. For NAMCS data, the NCHS considers weighted cell sizes of less than 321,000 visits to be unreliable. This restriction had a direct impact on our analysis, limiting the number of diagnoses cited for comparison of males in the 15 to 24 year-old age group to 13 instead of the 20 diagnoses used for comparison with the other four age groupings.

NAMCS size restrictions were driven by estimates of standard error that reflected the chosen sample design. Of the three study databases, only the ACDB represents a sample--a split half of all valid data records. For the USTF and CHAMPUS, presumably any number of observations, no matter how small, could be considered reliable. Practically, we believe that some minimum limits must be established to help feature the dominant elements of the observed differences. For this analysis, we chose to ignore any diagnosis-age-sex groups whose observation counts were less than 100. The effect of this rule was to exclude approximately 10 percent of all diagnosis-age-sex groups (49 out of 499).

(4) Statistical Testing

Statistical testing is a useful tool if specific hypotheses are to be tested. Given the exploratory nature of the present analysis, hypothesis-testing is premature. At this early stage, the study focused on relationships that appear to make sense, i.e., have high face validity, based upon what is known about the Military Health Services System (MHSS).

While abstaining from the use of statistical tests, an approach was adopted to focus the analysis on the most important differences. As a consequence, we chose to feature those differences that were greater or less than the NAMCS values by 50 percent.

2.   ANALYTICAL APPROACH

Once the technical issues were explicated, the adoption of an analytical approach was straight- forward. A stepwise approach was adopted that proceeded from the most general findings to the most specific in terms of diagnoses, age, and sex. Each successive step was used to validate and expand upon the findings of the prior steps. Thus, the general analysis identified the relative importance of asthma visits while the detailed analyses showed that the visit frequency for asthma was especially high for females in the youngest age group, less than 15 years of age.

The content of the data displays appear somewhat arbitrary because, as discussed in the technical notes, the analyses were constrained by the availability of NAMCS data. The tables feature those diagnoses that are reflected in NAMCS patients. Future analyses that have the opportunity to manipulate the NAMCS data should also consider diagnoses that are of high priority in the MHSS.

CHAPTER THREE

RESULTS

III. RESULTS

This chapter presents data on the frequency of ambulatory visits by diagnosis, age, and sex, among patients reported in the three study military databases and among patients reported in the NAMCS. While there are numerous findings that are unique to specific databases or to particular age and sex groups, there are commonalities to the structure of the MHSS and its benefits packages that need emphasizing as they impact on the interpretation of the findings:

o   Military personnel are selected for their good health and are required to maintain a constant state of good health to be retained on active duty, creating a population that is likely to have less severe morbidity than experienced by the general population.

o   The primary mission of the direct care system is to maintain military readiness for war, and thus, services for dependents such as children and adolescents (and until recently, women) are a second priority. Further, retired service members and their dependents are treated on a space available basis.

o   Provisions for the long-term care of chronic health conditions may be restricted in the direct care system due to availability of services.

o   Physical examinations are not authorized under CHAMPUS and are required within the direct care system for the periodic assessment of fitness for active duty.

o   Benefits for eyeglasses and lenses are generally excluded from CHAMPUS and offered by the direct care system.

o   Outpatient mental health services within the direct care system are limited and more than compensated for by a comprehensive benefit for these services in CHAMPUS.

o   Prenatal care visits in the non-direct care system are typically bundled with the delivery and are thus under-reported in CHAMPUS.

Further, as noted in the methods discussion, there are a lot of reasons that would explain observed differences in the frequency of visits for particular diagnoses including:

o   The demographic characteristics of the patient populations

o   Selection biases in the military towards selecting individuals with better health status

o   The fact that military standards require the maintenance of a high state of health among active duty members of the armed services

o   Benefits packages and provider incentives in direct care versus USTF versus CHAMPUS

o   Treatment practices

o   Systematic differences in coding practices

Of these reasons, differences in the age distribution of active duty military, other MHSS beneficiaries, and civilian populations play a critical role. The age distribution of these groups is shown by sex in Exhibit III-1. Active duty personnel of both sexes are largely confined to the age groups spanning 15 to 44 years. The relative youth of active duty personnel should affect the frequency of visits for chronic health conditions. Beneficiaries show sex-specific differences in their age distributions. Female beneficiaries roughly parallel the national distribution while male beneficiaries are much lower than the national frequency in the 25-44 year age group and much higher than national frequency in the under 15 year and 45-64 year age groups.

Whenever possible, this discussion attempts to use what is known about the MHSS and its beneficiary population to explain observed differences in the frequency of ambulatory visits. Some differences will remain unexplained until further research is conducted and there will also be instances where more than one explanatory variable comes into play. The remainder of the chapter is organized in four sections that subject the morbidity data to increasingly detailed subgroup analyses.

1. GENERAL FINDINGS

The overall characteristics of ambulatory patient visits for the three study databases and the NAMCS were considered both in terms of general diagnostic groups as well as for discrete diagnoses.

Results pertinent to each topic are presented below.

(1) Diagnostic Groups

The distribution of patient visits by 14 major ICD-9-CM diagnostic groupings[1] are displayed in Exhibit III-2. This is the only table that displays PRIMUS/NAVCARE data due to small cell frequencies that make them unreliable. The key items to note from Exhibit III-2 include the following:

- o Patients from the USTF and the ACDB databases show higher percentages of physical examinations and lower percentages of mental disorders.

- o CHAMPUS data show lower percentages of physical exams and mental disorder visits. As noted in the introduction, physicals are not, in fact, authorized under CHAMPUS. Mental health benefits are authorized by CHAMPUS and are not readily available in the direct care system.

- o CHAMPUS and the ACDB show higher percentages of patients with diagnoses falling in the vague "symptoms, signs, and ill-defined conditions" category.

- o USTF patients show a lower percentage of visits for injuries and poisoning. Typical users of USTF services appear to make use of other sources for emergent care.

- o The ACDB shows a higher percentage of musculoskeletal visits--reflecting an extensive physical therapy program in MTFs. Conversely, the ACDB demonstrates much lower percentages of circulatory and endocrine problems--likely a function of the relative youth and overall good health of this group.

- o PRIMUS/NAVCARE morbidity shares characteristics of both the CHAMPUS and active

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[1] The four other major diagnostic groupings have been combined into one category, "all other diagnoses," because they account for less than 2 percent of all visits when combined.

duty military data. Physical exams appear to have a higher frequency, reflecting the USTF and ACDB. For other conditions there are modest shifts towards CHAMPUS. Visits associated with mental disorder are very low, reflecting a change in the benefits structure.

Overall, no consistent patterns emerge between the four study databases and the NAMCS and most percentages do not differ from the NAMCS by more than 50 percent in either direction.

(2)   **Discrete Diagnoses**

The percent distribution of visits for the top 21 diagnoses encountered in the NAMCS database are shown in Exhibit III-3. Major findings include the following:

o   Visit frequency rankings for all three study databases differ markedly from the NAMCS ranking. Where frequency differences are most marked, the study databases tend to have much lower frequencies than the NAMCS.

o   A lower percentage of influenza visits in the DoD databases was the only consistent trend.

o   The much higher frequencies for refractive disorders in the USTF and ACDB reflect the comprehensive eyeglass benefits that are available in the direct care system.

o   The good mental health benefits package in CHAMPUS is associated with a high frequency of visits for neurotic disorders.

o   The effects of benefits packages are less clear with respect to prenatal care, where frequencies are much lower in the USTF and CHAMPUS. Prenatal care is a covered benefit in CHAMPUS but copayments and deductibles may make this a less attractive alternative than the free services available from the direct care system. Prenatal care in the ACDB is used at levels comparable to the NAMCS.

o   The USTF and CHAMPUS show much higher percentages of allergic rhinitis.

o   In terms of the unique properties of specific databases, CHAMPUS showed a higher percentage of visits for asthma.

o   The ACDB showed higher percentages associated with strains and sprains. This finding may reflect training injuries.

o   The fact that the ACDB demonstrates low visit frequencies with respect to a number of chronic conditions (essential hypertension, diabetes mellitus, and chronic ischemic heart disease) that are associated with aging is due to the fact that this database represents younger individuals.

2.   **AGE-SPECIFIC FINDINGS**

Age is of critical importance in explaining observed differences in morbidity between the various patient populations. Visit frequencies for diagnoses in each of the 14 major diagnostic groups and for each of the five age groups are shown in Exhibits III-4 through III-8. While age trends with respect to diagnostic groups appear to be consistent, i.e., do not change in the direction of the relationship from age group to age group, the degree of differences from the NAMCS does vary. Thus while the frequency of physical exams within the USTF database is consistently higher across all age groups, the frequency is at least 50 percent greater in only three out of five age groups.

The following are explanations of visit frequencies that have a strong age-specific element:

o   While the frequency of visits for mental disorders in the USTF and the ACDB is typically lower than the NAMCS, it is higher in the youngest (less than 15 years) age group

o   Symptoms and signs are a more frequent diagnosis in the USTF in all age categories save for the oldest patients (65 plus years old)

o   Infectious and parasitic disease are typically of lower frequency in the USTF save for the youngest age group (less than 15 years old) v here they are nearly identical to the NAMCS

o   High ACDB visit frequencies for diseases of the musculoskeletal system and connective tissue only occur in the 15 to 24 and 25 to 44 year-old age groups, those years most commonly associated with active duty and ongoing military readiness and training activities

o   Visits for endocrine/nutritional disorders among ACDB patients are only less frequent in age groups of 15 and older

o   While the frequency of ACDB visits for neoplasms is lower in the 15 to 24 and 25 to 44 year-old age groups, this frequency is higher than NAMCS in the older age groups

o   While the frequency of ACDB visits for genitourinary problems is lower in the age groups covering 15 to 64 years, this frequency is somewhat higher than NAMCS in the oldest age group

o   The frequency of physical exams is higher in all ACDB patient groups except those aged 15 to 24 years, reflecting periodic examinations to determine fitness for duty

Areas where important differences do exist between the study databases and the NAMCS, but where age does not appear to be a factor, include the following:

o   The absence of visits for physical exams (not authorized), and the much reduced frequency of visits for skin disease and infectious disorders among CHAMPUS patients

o   The higher frequency of mental disorder and "symptoms" visits among CHAMPUS patients

o   The higher frequency of physical exams among USTF patients

o   The lower frequency of visits for circulatory, digestive problems among ACDB patients

o   The higher frequency of "symptoms" visits among ACDB patients

The importance of age can be more clearly seen when we revisit the distribution of patient visits by the 14 major ICD-9-CM diagnostic groupings (see Exhibit III-2). When these percentages are adjusted to reflect the age characteristics of a standard population (1980 U.S. Census population), as was done in Exhibit III-9, five out of the original 12 diagnoses that met the "50 percent" test for a particular comparison dropped out and one new diagnosis was added. Thus, by controlling for the effects of age, differences between the study databases and the NAMCS became less dramatic.

3. SEX-SPECIFIC FINDINGS

As shown in Exhibit III-10 and III-11, sex-specific results appear to confirm what has already been generally observed. These findings include the following:

o   Physical examinations are high in the USTF and ACDB while low in CHAMPUS

o   Symptoms and signs are high in CHAMPUS and the ACDB

o   Mental disorders are high in CHAMPUS and low in the USTF and ACDB, with low values exceeding NAMCS by 50 percent only for males

o   Injuries/poisoning and infections are lower in the USTF and the differences exceed 50 percent only for males

o   Musculoskeletal disorders are high in the ACDB while diseases of the circulatory and endocrine systems are low

Sex does not appear to strongly affect visit frequencies for the 14 general diagnostic categories. Most of the major differences were consistent across sex groups--if they were large in one sex they were also large in the other. Even where differences were not viewed as large in both sexes, they were always consistent in the direction of their difference, either greater or lower than the NAMCS.

4. AGE- AND SEX-SPECIFIC FINDINGS

The simultaneous effects of age and sex are the subject of Exhibits III-12 through III-21. Differences between the NAMCS and the three study databases are much more apparent at this level of analysis. Prior analyses dealt largely with grouped diagnoses. The current analysis focuses on the top 20 most frequent diagnoses recorded in the NAMCS for each of the 10 age-sex groups under examination. Differences in coding practices are both more important and more apparent at this level. For example, apparent relatively low levels of acute upper respiratory infections for multiple unspecified sites, coded as 465 in the ICD-9-CM, may be due to the fact that these conditions are being assigned to other related coding categories such as acute nasopharyngitis (460), acute sinusitis (461), and acute pharyngitis (462) in the study databases.

The remainder of this discussion is organized into five sections that address each of the age groupings, and within these, the two sex groups. Each section begins with general observations, followed by specific discussions pertinent to each of the three study patient populations in the following order: (1) the USTF, (2) CHAMPUS, and (3) the ACDB.

(1)   Less Than 15 Years Of Age

Visits for "health supervision of an infant or child" (V020) were lower in all three study databases (for females see Exhibit III-12 and for males see Exhibit III-13). Such regular visits are viewed as important to child development. Well-baby care is, in fact, covered by CHAMPUS from birth to the age of two years. The reduced frequency of these visits was somewhat offset by high percentages of general medical examinations (V070) that could serve a similar function. However, general medical examinations are only more frequent in the ACDB, and for males in the USTF. Otherwise, the frequency of general medical examinations is also low for this age group.

Physical examinations, a reason for a visit that is prominent in the ACDB in all age groups, is much less significant when general physical examinations alone are considered. General physical exams yield a high

visit frequency only for males and females in this youngest age category.

As previously noted, the demand for obtaining glasses (367), principally from the direct care system, is supported by these data, but represents a high percentage of visits only for males.

In terms of specific databases, the results were as follows:

o USTF--Visits for allergic rhinitis (477) and nonsuppurative otitis media (381) were higher among both sexes. As indicated above, refractive disorders (367) were high for males but did not place within the top twenty diagnoses for females. Both sexes showed lower visit frequencies for bronchitis (490), observation and evaluation (V071), and certain adverse effects (995). This latter category includes anaphylactic and anesthetic shock, unspecified allergies, and child and spouse abuse. The lower frequency of health supervision visits (V020) was most marked for males. General physical exams (V070) were more frequent for males and less frequent for females. Females show relatively more visits for viral infections (079).

o CHAMPUS--In terms of common findings across both sexes, there were more visits for allergic rhinitis (477) and fewer visits for general medical examinations (V070), acute tonsillitis (463), and observation and evaluation (V071). There were also more frequent visits for asthma (493), a difference that was most pronounced for females.

Females alone showed lower visit frequencies for acute upper respiratory infections (465) and other diseases due to viruses and chlamydiae (078). The latter condition did not fall among the top 20 diagnoses for males. While males showed a lower frequency of visits for refractive disorders (367), this diagnosis was not of equivalent priority for females.

o ACDB--Males and females show much higher visit frequencies for general medical examinations (V070), nonsuppurative otitis media (381), and streptococcal sore throat (034). Conversely, both sexes show much lower visit frequencies for health supervision (V020), bronchitis (490), acute pharyngitis (462), and contact dermatitis (692). For the latter two diagnoses, the differences were most pronounced for females.

Females exhibited a much lower frequency of visits for other noninfectious gastroenteritis (558) while males show higher frequencies for viral infections in conditions classified elsewhere (079), acute nasopharyngitis (460), and refractive disorders (367). The latter two diagnoses were not an equivalent priority for females. Males also showed relatively low visit frequencies for certain adverse effects (995) and acute bronchitis (466).

(2)   15 To 24 Years Of Age

Data for females are shown in Exhibit III-14 and for males in Exhibit III-15. Among the three study databases, pregnancy-related care seems to be mostly handled by MTFs (represented by the ACDB), but this finding is most noteworthy for how relatively little of this type of care is handled in the other two databases. Mental disorders, represented by neurosis (300), are an important visit type in CHAMPUS, but only for females. Special examinations (V072), which include mammograms, display high visit frequencies for women in the USTF. Mammograms are explicity not covered in CHAMPUS save for instances where a breast mass is actually found or there is symptomatic evidence of a possible malignancy. Contraceptive management (V025) is comparable to NAMCS only in the ACDB and low elsewhere. While covered by CHAMPUS, the costs associated with regular purchases of birth control pills may bring patients into the direct care system where they are free. Visits associated with glasses (367) are largely confined to the military direct care system.

In terms of specific databases, the results were as follows:

o   USTF--Both males and females show more frequent visits for refractive disorders (367) and allergic rhinitis (477)--the latter most marked for females.

As noted above, females had relatively more visits for special investigations (V072). They also showed proportionately far fewer visits for normal pregnancy (V022), postpartum care (V024), contraception (V025), neurotic disorders (300), candidiasis (112), and follow-up examinations (V067). Males show much lower visit frequencies for certain adverse effects (995), sprains and strains of other and unspecified parts of the back (847), and sprains and strains of the knee and leg (844).

o   CHAMPUS--Both sexes show relatively higher visit frequencies for allergic rhinitis (477). Conversely, much lower frequencies were reported for general medical examinations (V070), acute upper respiratory infections (465), other diseases due to viruses (078), refractive disorders (367), diseases of the sebaceous glands (706), contact dermatitis (692), and suppurative and unspecified otitis media (382). Differences for the latter two conditions were most pronounced among males.

Females show a much higher visit frequency for neurotic disorders (300)--this was not a priority for males. Similar to findings in the USTF, females showed much lower visit frequencies for normal pregnancy (V022), postpartum care (V024), contraception (V025), candidiasis (112), and follow-up examinations (V067). Females also showed lower frequencies for special investigations (V072). Males show lower visit frequencies for open wounds (879), a finding that suggests that USTFs may not be fully utilized as sources for emergency care.

o   ACDB--Both sexes show a relatively high frequency of visits for refractive disorders (367), but especially so for females. Much lower visit frequencies among both sexes occurred for diseases of the sebaceous glands (706), allergic rhinitis (477), suppurative otitis media (382), and general medical exams (V070).

Females alone show a higher visit frequency for special exams (V072). Most visit diagnoses that were unusually low for females were not reported in sufficient numbers for males in the NAMCS (below the NCHS-specified threshold). These diagnoses were: other disorders of the urethra (599), neurotic disorders (300), acute tonsillitis (463), and candidiasis (112). Males showed lower visit frequencies for acute upper respiratory infections (465), certain adverse effects (995), and sprains and strains of the back (847) and knees and legs (844). These latter findings are unexpected given prior findings that suggest a high frequency of musculoskeletal visits among ACDB patients and may reflect .coding inconsistencies.

(3)   **25 To 44 Years Of Age**

Overall findings are consistent with those obtained for the 15- to 24-year-old patients. Exhibits III-16 and III-17 display the data for females and males, respectively. Among the three study databases, visits for normal pregnancy (V022) are most frequent in the ACDB patients, and for the USTF and CHAMPUS, much lower. Visits associated with neuroses (300) continue to be high in CHAMPUS, but in this case for both sexes. Special exams (V072) continue high for females, and are so in both the USTF and ACDB. Disorders of refraction (367) continue high in both the USTF and ACDB as well. Where allergic rhinitis (477) is high, this effect is most pronounced for females. Males in all study databases showed lower visit frequencies for sprains and strains of the sacroiliac (846) and inflammatory diseases of the prostate (601).

In terms of specific databases, the results were as follows:

o   USTF--High visit frequencies for refractive disorders (367), general medical examinations (V070), and allergic rhinitis (477) were experienced by both males and females. For the latter two diagnoses, the effect was especially large for females. There were numerous instances where visits for both sexes were much lower than NAMCS, including: follow-up exams (V067), diseases of the sebaceous glands (706), sprains and strains of the back (847), acute pharyngitis (462), chronic sinusitis (473), and neuroses (300).

Females experienced a high frequency of visits for special exams (V072) and a low frequency of visits for normal pregnancy (V022), contraception (V025), certain adverse effects (995), and obesity (278). Males experienced much lower visit frequencies for other viral disorders (078), contact dermatitis (692), sprains and strains of the sacroiliac (846), bronchitis (490), intervertebral disc disorders (722), and inflammatory diseases of the prostate (601).

o   CHAMPUS--Both sexes experienced high visit frequencies for neuroses (300). Both sexes also had low visit frequencies for a range of respiratory problems that included acute pharyngitis (462), acute upper respiratory infection (465), and chronic sinusitis (473).

Males had high visit frequencies for other back disorders (724) while females had high visit frequencies for allergic rhinitis (477). Relatively low frequencies predominated, especially among females. For females, these diagnoses included normal pregnancy (V022), postpartum care (V024), general medical exams (V070), special investigations (V072), contraception (V025), follow-up exams (V067), sebaceous gland disorders (706), refractive disorders (367), and obesity (278). Similar to the USTF, males experienced lower visit frequencies for contact dermatitis (692), sprains and strains of the sacroiliac (846), and inflammatory diseases of the prostate (601).

o   ACDB--As has been experienced in other age groups, refractive disorders (367) are high in both sexes. Both sexes demonstrated low visit frequencies for neuroses (300), hypertension (401), sprains and strains of the back (847), allergic rhinitis (477), diseases of the sebaceous glands (706), and general medical exams (V070).

In terms of sex-specific properties of the data, females had higher frequencies of special examinations (V072) and much lower frequencies of certain adverse effects (995). Males had high frequencies of other back disorders (724) and lower frequencies of intervertebral disc disorders (722), sprains and strains of the sacroiliac (846), and inflammatory diseases of the prostate (601).

(4)   45 To 64 Years Of Age

Data for this age group are shown for females in Exhibit III-18 and for males in Exhibit III-19. Consistency with findings from the other age groups is still apparent. While visits associated with childbearing are no longer a priority, females continue to receive high frequencies of special investigations (V072) in the direct care system. Refractive disorders (367) also continue to be heavily treated in the direct care system. Visits for neuroses continue to be high in CHAMPUS for both sexes.

In terms of specific databases, the results were as follows:

o   USTF--Repeating experiences in other age groups, refractive disorders (367) and general medical exams (V070) were prominently high for both sexes. Low visit frequencies

common to both sexes included neuroses (300), follow-up exams (V067), and sprains and strains of the back (847).

Females showed high visit frequencies for allergic rhinitis (477) and special investigations (V072). Females experienced unusually low frequencies for malignancies of the breast (174) and bronchitis not specified as acute or chronic (490). Males demonstrated low visit frequencies for a range of problems, including chronic sinusitis (473), asthma (493), inflammatory disease of the prostate (601), intervertebral disc disorder (722), and contact dermatitis (692).

o   CHAMPUS--Both males and females showed higher visit frequencies for neuroses (300), peripheral enthesopathies (726), and other unspecified disorders of the back (724). The two sexes also showed lower visit frequencies for refractive disorders (367) and follow-up exams (V067).

Males exhibited higher visit frequencies for general symptoms (780) and lower frequencies for chronic sinusitis (473) and other dermatoses (702). Females had high visit frequencies for allergic rhinitis (477) and low frequencies for general medical exams (V070) and special investigations (V072).

o   ACDB--High visit frequencies were experienced for refractive disorders (367), osteoarthritis (715), and other and unspecified disorders of the back (724), regardless of sex; lower visit frequencies occurred for neuroses (300) and peripheral enthesopathies (726).

Females showed higher visit frequencies for special investigations (V072) and other disorders of the soft tissues (729). Males, on the other hand, demonstrated lower visit frequencies for asthma (493), other dermatoses (702), and intervertebral disc disorders (722).

(5)   65 Plus Years Of Age

Data for females and males are shown in Exhibit III-20 and III-21, respectively. We have limited this discussion to exclude CHAMPUS since persons aged 65 years and older are no longer eligible. In this age group, cell frequencies are also small, limiting analyses with respect to certain diagnoses. Overall, there is a general tendency for visit frequencies to be lower among all three study databases. This is probably due at least in part to the wider access to other (nonmilitary) health care providers and services due to Medicare eligibility. The VA also siphons off an important segment of the male patient population. As a potential example of this effect, diabetes mellitus (250) and cataract (366), which are common problems among the elderly, generate low visit frequencies in the military direct care system. Prostate problems, reflected in hyperplasia of the prostate (600) and malignant neoplasms of the prostate (185) are unique in this age group for their relatively high visit frequencies in the ACDB. Malignant neoplasms of the skin also generated a relatively high visit frequency in the ACDB among both sexes. It may well be that the catastrophic nature of these problems and the necessity for cost-sharing in Medicare forces elderly patients to make use of either the MHSS or the VA in these instances, producing the observed increase in visit frequencies.

In terms of specific databases, the results were as follows:

o   USTF--As noted above, instances where reported visit frequencies were relatively low far outpaced those that were the opposite. Both males and females had low visit frequencies for diabetes mellitus (250), cataract (366), follow-up exams (V067), other disorders of the

III-9

eye (379), heart failure (428), cardiac dysrhythmia (427), and other malignant neoplasms of the skin (173).

Males showed a high visit frequency for other dermatoses (702). Males also had low visit frequencies for chronic airway obstruction (496), malignant neoplasms of the prostate (185), and bronchitis not specified as acute or chronic (490). Females evidenced low visit frequencies for other arthropathies (716), acute upper respiratory infections of multiple or unspecified sites (465), and rheumatoid arthritis (714).

o   ACDB--Both sexes show relatively high visit frequencies for other malignant neoplasms of the skin (173). Lower visit frequencies for diabetes mellitus (250) and cataract (366) also occurred in both sexes.

As noted above and unique to the ACDB, patients showed higher visit frequencies for both hyperplasia of the prostate (600) and malignant neoplasms of the prostate (185). Males also exhibited relatively fewer visits for other forms of ischemic heart disease (414) and other dermatoses (702).

U.S. AND DOD POPULATION DISTRIBUTION BY AGE AND SEX

MALES

FEMALES
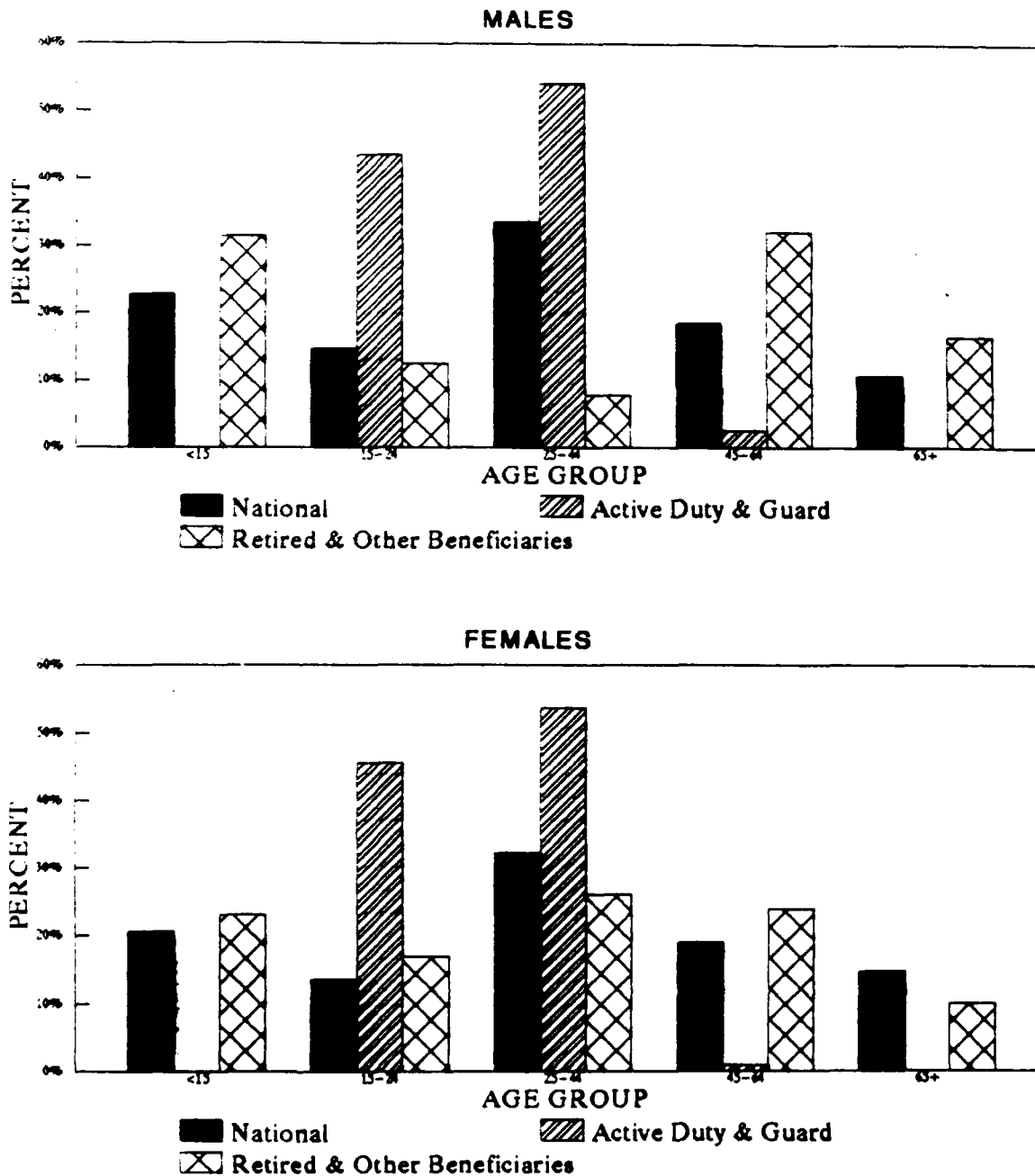
Source: National population data are from U.S. Department of Commerce, Bureau of the Census. Census data represent projections for July, 1991.
Active duty military and beneficiary data are from the Department of Defense, DMIS Database. DoD data are for FY1989.

Percent Distribution of Visits by Body System[1]
to Physicians in Private Office-Based Practice (NAMCS)
Compared to Visits in Military Settings (USTF, CHAMPUS, ACDB, and PRIMUS/NAVCARE)

EXHIBIT III-2

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS				
		NAMCS	USTF	CHAMPUS	ACDB	PRIMUS/NAVCARE
TOTAL VISITS[2]		626,831	659,865	2,488,897	504,288	1,294
TOTAL PERCENTAGE[3]		100.0	100.2	100.0	100.1	100.1
Physical examinations, screening and surveillance	V01-V82	15.6	31.8	3.5	23.9	24.9
Diseases of the respiratory system	460-519	12.3	7.6	13.4	9.3	15.2
Diseases of the nervous system and sense organs	320-389	11.1	10.8	9.3	9.5	12.4
Diseases of the circulatory system	390-459	8.9	8.7	6.7	3.6	2.6
Injury and poisoning	800-999	8.4	4.0	9.0	11.0	6.1
Diseases of the musculoskeletal system and connective tissue	710-739	7.2	7.1	8.5	11.6	5.0
Genitourinary system diseases	580-629	6.2	5.4	6.1	4.6	6.2
Diseases of the skin and subcutaneous tissue	680-709	5.8	4.3	3.3	5.0	5.9
Diseases of the digestive system	520-579	4.3	3.7	2.9	2.5	3.2
Mental disorders[4]	290-319	4.1	2.2	21.1	2.1	0.5
Infections and parasitic diseases	001-139	4.0	2.2	2.3	5.6	8.8
Endocrine, nutritional, and metabolic disease, and immunity disorders[4]	240-279	3.6	3.8	2.8	1.8	0.7
Symptoms, signs, and ill-defined conditions	780-799	3.6	4.8	6.4	6.2	7.9
Neoplasms[4]	140-239	3.2	2.8	3.3	2.2	0.2
Specific diagnosis total		98.3	99.2	98.6	98.9	99.6
All other diagnoses[5]		1.7	1.0	1.4	1.2	0.5

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, NHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2] These data exclude unknown and blank diagnoses.

[3] The total percentage may not equal 100.0 % due to rounding.

[4] The PRIMUS/NAVCARE figures for these visits are based on fewer than 20 observations.

[5] These comprise 280-289, 630-678, 740-759, 760-779.

Percent Distribution of Visits for Selected Diagnoses[1]
to Physicians in Private Office-Based Practice (NAMCS)
Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		626,831	659,865	,88,897	504,288
TOTAL PERCENTAGE[3]		100.0%	99.6%	99.6%	100.0%
Acute respiratory infections	460-466	5.5	2.6	5.2	6.6
Essential hypertension	401	4.1	4.6	3.0	2.0
Prenatal care	V22, V23	3.8	.5	.0	4.2
Suppurative and other otitis media	381, 382	2.9	1.7	3.9	2.4
Arthropathies and related disorders	710-719	2.5	2.7	2.7	2.1
Sprains and strains of joints and adjacent muscles	840-848	2.3	1.3	2.4	3.9
Diabetes mellitus	250	1.9	1.7	1.2	.6
Neurotic disorders	300	1.5	.7	6.9	.3
Disorders of refraction and accomodation	367	1.3	3.2	.3	2.2
Disease of sebaceous glands	706	1.3	.6	.6	.8
Bronchitis	490	1.2	.3	1.0	.1
Allergic rhinitis	477	1.2	1.8	3.1	.7
Chronic ischemic heart disease	412, 414	1.1	1.3	.8	.1
Cataract	366	1.0	.6	.3	.1
Asthma	493	1.0	.8	1.5	.6
Contact dermatitis and other eczema	692	0.9	.5	.7	.9
Glaucoma	365	0.7	.9	.4	.3

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, NHS, Hyattsville, MD, June, 1988. Table 5, p16.

[2] These data exclude unknown and blank diagnoses.

[3] The total percentage may not equal 100.0% due to rounding.

EXHIBIT III-3 (..tinued)

**Percent Distribution of Visits for Selected Diagnoses[1]
to Physicians in Private Office-Based Practice (NAMCS)
Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)**

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
Obesity	278	0.5	.2	.0	.5
Angina	413	0.4	.3	.3	.2
Influenza	487	0.4	.1	.2	.0
Benign neoplasm of the skin	216	0.3	.3	.1	.0
Total specific diagnoses		35.8	26.7	34.6	28.6
All other diagnoses[4]		64.2	73.1	65.2	71.4

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, HHS, Hyattsville, MD, June, 1988. Table 5, p16.

[4] Includes all non-numeric diagnoses except V22 and V23.

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**Patient Age < 15, Percent Distribution of Visits
by Body System[1] to Physicians in Private Office-Based Practice (NAMCS)
Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)**

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		116,836	69,832	657,993	73,440
TOTAL PERCENTAGE[3]		100.0	100.1	99.8	100.2
Physical examinations, screening and surveillance	V01-V82	22.2	27.4	10.6	23.7
Diseases of the respiratory system	460-519	23.7	19.7	21.8	17.0
Diseases of the nervous system and sense organs	320-389	18.2	18.2	17.4	20.3
Diseases of the circulatory system	390-459	0.6	0.6	0.6	0.3
Injury and poisoning	800-999	8.4	6.4	9.7	8.4
Diseases of the musculoskeletal system and connective tissue	710-739	2.1	2.3	1.5	1.8
Genitourinary system diseases	580-629	1.6	2.2	1.3	1.6
Diseases of the skin and subcutaneous tissue	680-709	4.9	4.3	3.2	4.1
Diseases of the digestive system	520-579	3.	2.9	2.5	1.5
Mental disorders	290-319	1.2	2.1	18.3	2.2
Infections and parasitic diseases	001-139	7.0	6.5	4.2	9.9
Endocrine, nutritional, and metabolic disease, and immunity disorders	240-279	0.5	0.7	0.5	0.7
Symptoms, signs, and ill-defined conditions	780-799	3.0	4.4	4.8	6.5
Neoplasms	140-239	0.6	0.6	0.7	0.6
All other diagnoses[4]		2.2	1.8	2.7	1.6

[1]Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, HHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2]These data exclude unknown and blank diagnoses.

[3]The total percentage may not equal 100.0 % due to rounding.

[4]These comprise 280-289, 630-678, 740-759, 760-779.

Patient Age 15 to 24, Percent Distribution of Visits
by Body System[1] to Physicians in Private Office-Based Practice (NAMCS)
Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		72,735	55,739	314,363	174,347
TOTAL PERCENTAGE[3]		100.0	100.0	99.9	99.9
Physical examinations, screening and surveillance	V01-V82	25.5	31.4	1.5	24.2
Diseases of the respiratory system	460-519	11.8	10.1	11.7	9.6
Diseases of the nervous system and sense organs	320-389	6.8	8.8	4.7	5.8
Diseases of the circulatory system	390-459	1.1	1.4	1.0	0.6
Injury and poisoning	800-999	13.3	8.7	15.1	14.8
Diseases of the musculoskeletal system and connective tissue	710-739	4.4	5.5	5.6	16.0
Genitourinary system diseases	580-629	7.5	8.0	8.5	3.9
Diseases of the skin and subcutaneous tissue	680-709	9.1	6.7	4.6	5.6
Diseases of the digestive system	520-579	3.4	3.7	2.3	2.2
Mental disorders	290-319	3.5	2.3	32.7	1.7
Infections and parasitic diseases	001-139	6.4	4.2	2.9	6.7
Endocrine, nutritional, and metabolic disease, and immunity disorders	240-279	1.4	1.4	1.0	0.6
Symptoms, signs, and ill-defined conditions	780-799	3.0	5.4	6.2	6.2
Neoplasms	140-239	0.8	1.0	1.0	0.4
All other diagnoses[4]		2.0	1.4	1.1	1.6

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, MHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2] These data exclude unknown and blank diagnoses.

[3] The total percentage may not equal 100.0 % due to rounding.

[4] These comprise 280-289, 630-678, 740-759, 760-779.

EXHIBIT 6

Patient Age 25 to 44, Percent Distribution of Visits by Body System[1] to Physicians in Private Office-Based Practice (NAMCS) Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		172,827	118,461	534,020	155,657
TOTAL PERCENTAGE[3]		100.0	100.0	100.1	100.0
Physical examinations, screening and surveillance	V01-V82	20.4	30.8	1.1	29.0
Diseases of the respiratory system	460-519	10.3	7.6	9.7	7.4
Diseases of the nervous system and sense organs	320-389	6.5	8.5	5.8	7.1
Diseases of the circulatory system	390-459	4.1	3.6	3.2	2.4
Injury and poisoning	800-999	10.0	5.9	7.6	11.6
Diseases of the musculoskeletal system and connective tissue	710-739	7.3	8.3	8.3	12.6
Genitourinary system diseases	580-629	8.7	7.9	9.6	5.4
Diseases of the skin and subcutaneous tissue	680-709	5.7	4.0	2.8	4.6
Diseases of the digestive system	520-579	4.4	5.5	2.4	2.7
Mental disorders	290-319	7.4	4.0	36.2	2.7
Infections and parasitic diseases	001-139	4.1	2.6	1.7	4.6
Endocrine, nutritional, and metabolic disease, and immunity disorders	240-279	2.8	2.6	2.2	1.7
Symptoms, signs, and ill-defined conditions	780-799	3.7	5.8	6.7	5.8
Neoplasms	140-239	2.4	1.8	2.0	1.3
All other diagnoses[4]		2.2	1.1	0.8	1.1

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, HHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2] These data exclude unknown and blank diagnoses.

[3] The total percentage may not equal 100.0 % due to rounding.

[4] These comprise 280-289, 630-678, 740-759, 760-779.

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Patient Age 45 to 64, Percent Distribution of Visits
by Body System[1] to Physicians in Private Office-Based Practice (NAMCS)
Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		135,606	252,924	963,948	72,963
TOTAL PERCENTAGE[3]		100.0	100.1	100.0	100.1
Physical examinations, screening and surveillance	V01-V82	7.1	29.3	0.7	16.7
Diseases of the respiratory system	460-519	9.3	6.2	10.5	6.2
Diseases of the nervous system and sense organs	320-389	9.8	10.3	7.0	11.2
Diseases of the circulatory system	390-459	15.0	11.9	14.4	12.7
Injury and poisoning	800-999	7.5	2.?	7.3	5.7
Diseases of the musculoskeletal system and connective tissue	710-739	10.6	8.5	14.4	10.0
Genitourinary system diseases	580-629	7.2	5.4	6.7	6.4
Diseases of the skin and subcutaneous tissue	680-709	5.5	4.1	3.2	5.2
Diseases of the digestive system	520-579	5.0	3.7	3.5	3.4
Mental disorders	290-319	4.9	2.1	11.2	2.3
Infections and parasitic diseases	001-139	2.3	1.2	1.2	2.0
Endocrine, nutritional, and metabolic disease, and immunity disorders	240-279	6.1	5.6	5.2	4.9
Symptoms, signs, and ill-defined conditions	780-799	3.8	4.8	7.~	6.6
Neoplasms	140-239	5.1	3.4	6.4	6.3
All other diagnoses[4]		0.8	0.7	0.9	0.5

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, HHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2] These data exclude unknown and blank diagnoses.

[3] The total percentage may not equal 100.0 % due to rounding.

[4] These comprise 280-289, 630-678, 740-759, 760-779.

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Patient Age 65 Plus, Percent Distribution of Visits by Body System[1] to Physicians in Private Office-Based Practice (NAMCS) Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		128,827	162,909		27,681
TOTAL PERCENTAGE[3]		100.0	100.0		99.9
Physical examinations, screening and surveillance	V01-V82	6.5	38.5		13.
Diseases of the respiratory system	460-519	7.9	3.7		5.4
Diseases of the nervous system and sense organs	320-389	14.8	10.8		14.1
Diseases of the circulatory system	390-459	20.9	13.5		14.1
Injury and poisoning	800-999	4.5	1.9		3.8
Diseases of the musculoskeletal system and connective tissue	710-739	9.7	6.6		8.0
Genitourinary system diseases	580-629	5.3	3.9		6.5
Diseases of the skin and subcutaneous tissue	680-709	5.1	4.2		5.8
Diseases of the digestive system	520-579	4.6	2.7		3.1
Mental disorders	290-319	2.1	1.0		1.1
Infections and parasitic diseases	001-139	1.3	0.8		1.7
Endocrine, nutritional, and metabolic disease, and immunity disorders	240-279	6.0	3.9		4.2
Symptoms, signs, and ill-defined conditions	780-799	4.0	3.8		6.0
Neoplasms	140-239	6.0	3.9		12.4
All other diseases[4]		1.3	0.8		0.6

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, NHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2] These data exclude unknown and blank diagnoses.

[3] The total percentage may not equal 100.0 % due to rounding.

[4] These comprise 280-289, 630-678, 740-759, 760-779.

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EXHIBIT -9

Age Adjusted Percent Distribution of Visits by Body System[1] to Physicians in Private Office-Based Practice (NAMCS) Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		626,831	659,865	2,488,897	504,288
TOTAL PERCENTAGE[3]		100.0	100.1	100.0	99.9
Physical examinations, screening and surveillance	V01-V82	17.6	30.7	3.2	22.7
Diseases of the respiratory system	460-519	13.2	10.1	12.8	9.5
Diseases of the nervous system and sense organs	320-389	10.8	11.4	9.3	11.4
Diseases of the circulatory system	390-459	6.8	5.3	6.8	4.9
Injury and poisoning	800-999	9.1	5.5	9.1	9.4
Diseases of the musculoskeletal system and connective tissue	710-739	6.5	6.3	7.7	9.8
Genitourinary system diseases	580-629	6.2	5.7	6.4	4.6
Diseases of the skin and subcutaneous tissue	680-709	6.0	4.6	3.4	4.9
Diseases of the digestive system	520-579	4.2	3.9	2.8	2.5
Mental disorders	290-319	4.2	2.5	22.9	2.1
Infections and parasitic diseases	001-139	4.5	3.3	2.3	5.4
Endocrine, nutritional, and metabolic disease, and immunity disorders	240-279	3.0	2.7	2.4	2.2
Symptoms, signs, and ill-defined conditions	780-799	3.5	5.0	6.3	6.2
Neoplasms	140-239	2.6	1.9	3.2	3.2
Specific diagnosis total		98.2	98.9	98.6	98.8
All other diagnoses[4]		1.8	1.2	1.4	1.1

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, MHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2] These data exclude unknown and blank diagnosis.

[3] The total percentage may not equal 100.0% due to rounding.

[4] These comprise 280-289, 630-678, 740-759, 760-779.

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EXHIBIT III-10

Percent Distribution of Female Visits by Body System[1]
to Physicians in Private Office–Based Practice (NAMCS)
Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		381,133	352,781	1,601,220	217,029
TOTAL PERCENTAGE[3]		99.9	99.9	100.0	100.0
Physical examinations, screening and surveillance	V01-V82	18.4	34.2	3.0	25.0
Diseases of the respiratory system	460-519	11.4	7.5	13.0	9.2
Diseases of the nervous system and sense organs	320-389	10.7	9.7	8.6	9.8
Diseases of the circulatory system	390-459	8.1	7.1	5.8	3.3
Injury and poisoning	800-999	6.6	3.4	5.7	7.8
Diseases of the musculoskeletal system and connective tissue	710-739	7.1	7.3	9.7	10.8
Genitourinary system diseases	580-629	7.9	6.8	8.3	7.4
Diseases of the skin and subcutaneous tissue	680-709	5.3	4.0	3.2	4.6
Diseases of the digestive system	520-579	3.9	3.1	2.9	2.3
Mental disorders	290-319	4.1	2.2	22.9	2.3
Infections and parasitic diseases	001-139	3.7	2.2	2.3	5.1
Endocrine, nutritional, and metabolic disease, and immunity disorders	240-279	3.9	4.0	3.1	2.0
Symptoms, signs, and ill-defined conditions	780-799	3.6	5.0	6.8	6.5
Neoplasms	140-239	3.2	2.4	3.4	2.2
All other diagnoses[4]		2.0	1.0	1.3	1.7

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, NHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2] These data exclude unknown and blank diagnoses.

[3] The total percentage may not equal 100.0 % due to rounding.

[4] These comprise 280-289, 630-678, 740-759, 760-779.

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Percent Distribution of Male Visits by Body System[1]
to Physicians in Private Office–Based Practice (NAMCS)
Compared to Visits in Military Settings (USTF, CHAMPUS, and ACDB)

PRINCIPAL DIAGNOSIS OF VISIT	ICD-9-CM CODES	PERCENT OF VISITS			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS[2]		245,698	307,015	887,676	287,259
TOTAL PERCENTAGE[3]		100.0	99.8	100.0	100.1
Physical examinations, screening and surveillance	V01-V82	11.1	29.0	4.5	23.1
Diseases of the respiratory system	460-519	13.6	7.7	14.2	9.3
Diseases of the nervous system and sense organs	320-389	11.9	12.1	10.4	9.4
Diseases of the circulatory system	390-459	10.2	10.6	8.3	3.8
Injury and poisoning	800-999	11.2	4.8	14.8	13.3
Diseases of the musculoskeletal system and connective tissue	710-739	7.3	6.8	6.4	12.1
Genitourinary system diseases	580-629	3.6	3.6	2.2	2.4
Diseases of the skin and subcutaneous tissue	680-709	6.5	4.7	3.5	5.4
Diseases of the digestive system	520-579	5.0	4.3	2.8	2.7
Mental disorders	290-319	4.2	2.1	18.0	2.0
Infections and parasitic diseases	001-139	4.4	2.2	2.4	5.9
Endocrine, nutritional, and metabolic disease, and immunity disorders	240-279	3.1	3.5	2.2	1.6
Symptoms, signs, and ill-defined conditions	780-799	3.6	4.4	5.7	6.0
Neoplasms	140-239	3.1	3.1	3.1	2.2
All other diagnoses[4]		1.2	0.9	1.5	0.9

[1] Adapted form NCHS, Series 13, Number 93, The National Ambulatory Medical Survey: 1975-1981, 1985 Trends, DHHS Publication No. (PHS) 88-1754, NHS, Hyattsville, MD, June 1988. Table 6, p. 17.

[2] These data exclude unknown and blank diagnoses.

[3] The total percentage may not equal 100.0 % due to rounding.

[4] These comprise 280-289, 630-678, 740-759, 760-779.

EXHIBIT III-12

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES FEMALES < 15 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		58,174,540	32,825	294,029	34,534
PERCENTAGE OF TOTAL VISITS		62.8	45.5	44.3	37.5
Health Supervision Of Infant Or Child	V020	15.3	8.0	10.0	4.2
Suppurative And Unspec Otitis Media	382	10.9	8.7	10.7	9.7
Acute Upper Resp Infct Mult Unspec Site	465	6.3	4.3	1.0	0.0
Acute Pharyngitis	462	4.0	2.8	3.4	2.1
General Medical Examination	V070	3.4	1.4	0.1	7.3
Acute Tonsillitis	463	2.6	1.7	1.4	0.2
Bronchitis, Not Spec Acute Or Chronic	490	2.1	0.5	1.4	0.5
Nonspp Otts Mdia & Eustchn Tube Disorder	381	1.8	2.8	2.2	2.8
Contact Dermatitis And Other Eczema	692	1.6	1.0	1.0	0.5
Other Noninf Gastroenteritis And Colitis	558	1.6	1.4	1.3	0.3
Streptococcal Sore Thrt & Scarlet Fever	034	1.5	1.2	1.1	2.6
Viral Infection In Cond Class Elsewhere	079	1.4	2.3	1.5	0.0
Disorders Of The Conjunctiva	372	1.4	1.3	0.8	1.4
Asthma	493	1.3	1.5	2.0	1.4
Other Dis Due To Viruses And Chlamydiae	078	1.3	1.0	0.4	1.1
Other Disorders Urethra & Urinary Tract	599	1.1	1.3	1.0	1.0
Obs & Eval For Suspected Conditions	V071	1.0	0.5	0.1	0.1
Allergic Rhinitis	477	1.0	2.5	3.1	1.1
Disorders Of External Ear	380	1.0	0.9	0.7	1.0
Certain Adverse Effects NEC	995	0.9	0.5	1.0	0.2

Note: Zeroes represent percentages less than 0.1

BIRCH & DAVIS ASSOCIATES, INC., 1991

EXHIBIT III-13

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES MALES < 15 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		60,593,507	37,029	363,964	38,863
PERCENTAGE OF TOTAL VISITS		59.8	49.9	45.9	44.8
Health Supervision Of Infant Or Child	V020	12.8	6.9	8.6	3.7
Suppurative And Unspec Otitis Media	382	11.0	8.4	10.5	9.5
Acute Upper Resp Infct Mult Unspec Site	465	5.8	3.6	4.1	0.0
General Medical Examination	V070	3.2	4.8	0.1	6.8
Acute Pharyngitis	462	3.0	2.4	2.6	1.7
Bronchitis, Not Spec Acute Or Chronic	490	2.3	0.6	1.5	0.5
Asthma	493	2.2	2.3	2.9	2.1
Acute Tonsillitis	463	2.1	1.3	1.1	0.1
Certain Adverse Effects NEC	995	2.1	0.7	1.2	0.3
Allergic Rhinitis	477	1.9	5.0	3.7	1.2
Other Noninf Gastroenteritis And Colitis	558	1.7	1.4	1.3	0.2
Nonspp Otts Mdia & Eustchn Tube Disorder	381	1.7	3.0	2.3	2.7
Viral Infection In Cond Class Elsewhere	079	1.4	2.0	1.3	2.2
Streptococcal Sore Thrt & Scarlet Fever	034	1.4	1.0	0.9	2.4
Obs & Eval For Suspected Conditions	V071	1.3	0.7	0.1	0.1
Contact Dermatitis And Other Eczema	692	1.0	0.9	0.9	0.7
Acute Nasopharyngitis (Common Cold)	460	1.0	1.0	0.6	7.8
Disorders Of The Conjunctiva	372	1.0	0.9	0.8	1.2
Acute Bronchitis And Bronchiolitis	466	0.9	0.7	1.0	0.3
Disorder Of Refraction & Accommodation	367	0.9	2.3	0.3	1.3

Note: Zeroes represent percentages less than 0.1

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EXHIBIT III-14

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES FEMALES 15-24 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		48,883,425	34,200	209,733	73,517
PERCENTAGE OF TOTAL VISITS		52.1	43.4	29.6	34.1
Normal Pregnancy	V022	18.3	5.3	0.2	13.7
Diseases Of Sebaceous Glands	706	3.6	2.1	1.5	0.9
General Medical Examination	V070	3.4	4.0	0.1	0.8
Contraceptive Management	V025	2.6	0.4	0.8	2.7
Acute Upper Resp Infct Mult Unspec Site	465	2.5	1.6	1.3	0.0
Special Investigations And Exams	V072	2.2	11.6	0.3	4.7
Acute Pharyngitis	462	2.1	1.4	2.0	1.2
Postpartum Care And Examination	V024	2.0	0.3	0.0	1.2
Inflam Disease Cervix, Vagina, & Vulva	616	1.8	2.4	2.4	1.1
Other Disorders Urethra & Urinary Tract	599	1.6	1.7	1.9	0.8
Other Dis Due To Viruses And Chlamydiae	078	1.5	1.1	0.6	0.9
Disrdr Menstrtn & Other Abnormal Bleeding	626	1.5	1.9	2.1	1.1
Disorder Of Refraction & Accommodation	367	1.4	3.6	0.4	2.1
Allergic Rhinitis	477	1.3	2.3	2.6	0.6
Neurotic Disorders	300	1.2	0.6	10.3	0.2
Acute Tonsillitis	463	1.1	0.7	0.8	0.3
Candidiasis	112	1.1	0.5	0.5	0.6
Suppurative And Unspec Otitis Media	382	1.0	0.7	0.9	0.5
Follow-up Examination	V067	1.0	0.5	0.1	0.0
Contact Dermatitis And Other Eczema	692	0.9	0.8	0.7	0.7

Note: Zeroes represent percentages less than 0.1

BIRCH & DAVIS ASSOCIATES, INC., 1991

EXHIBIT III-15

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES MALES 15-24 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		25,080,508	21,626	104,630	100,701
PERCENTAGE OF TOTAL VISITS		32.8	25.0	16.1	13.9
Diseases Of Sebaceous Glands	706	6.4	3.7	3.1	1.4
General Medical Examination	V070	5.2	5.4	0.2	2.1
Allergic Rhinitis	477	2.6	3.2	4.0	0.5
Other Dis Due To Viruses And Chlamydiae	078	2.5	1.5	0.6	1.6
Acute Upper Resp Infct Mult Unspec Site	465	2.3	1.4	0.9	0.0
Disorder Of Refraction & Accommodation	367	2.1	4.3	0.3	2.3
Acute Pharyngitis	462	2.0	1.6	1.7	1.8
Certain Adverse Effects NEC	995	1.9	0.5	1.3	0.1
Sprns And Strns Othr/Unspc Parts Of Back	847	1.7	0.6	1.1	0.6
Contact Dermatitis And Other Eczema	692	1.6	0.9	0.7	1.3
Open Wound Othr & Unspc Site, Excpt Limb	879	1.6	0.4	0.1	1.3
Suppurative And Unspec Otitis Media	382	1.5	0.9	0.7	0.6
Sprains And Strains Of Knee And Leg	844	1.4	0.7	1.3	0.2

Note: Zeroes represent percentages less than 0.1

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EXHIBIT III-16

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY
VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES
FEMALES 25-44 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		118,556,954	69,802	485,448	73,938
PERCENTAGE OF TOTAL VISITS		43.4	36.2	31.0	31.2
Normal Pregnancy	V022	12.8	1.9	0.1	10.7
Neurotic Disorders	300	2.5	1.6	15.5	0.6
General Medical Examination	V070	2.5	3.8	0.0	1.1
Special Investigations And Exams	V072	2.2	12.4	0.3	6.0
Inflam Disease Cervix, Vagina, & Vulva	616	1.9	1.7	1.7	1.4
Follow-up Examination	V067	1.9	0.6	0.1	0.0
Disrdr Menstrtn & Other Abnormal Bleeding	626	1.6	1.2	1.3	1.2
Essential Hypertension	401	1.6	1.7	1.3	1.1
Diseases Of Sebaceous Glands	706	1.6	0.8	0.6	0.8
Acute Upper Resp Infct Mult Unspec Site	465	1.6	1.2	0.8	0.0
Contraceptive Management	V025	1.5	0.2	0.3	1.5
Allergic Rhinitis	477	1.5	2.4	3.3	1.0
Disorder Of Refraction & Accommodation	367	1.3	2.7	0.4	2.1
Sprns And Strns Othr/Unspc Parts Of Back	847	1.2	0.7	1.7	0.3
Postpartum Care And Examination	V024	1.2	0.1	0.0	1.0
Chronic Sinusitis	473	1.2	1.0	0.8	0.1
Certain Adverse Effects NEC	995	1.1	0.5	0.8	0.2
Acute Pharyngitis	462	1.1	0.7	0.9	0.7
Obesity And Other Hyperalimentation	278	1.0	0.3	0.1	0.6
Asthma	493	1.0	0.7	1.0	0.8

Note: Zeroes represent percentages less than 0.1

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EXHIBIT III-17

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY
VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES
MALES 25-44 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		57,167,341	48,903	48,572	81,732
PERCENTAGE OF TOTAL VISITS		36.2	26.0	30.6	17.8
General Medical Examination	V070	3.9	5.7	0.0	3.4
Neurotic Disorders	300	3.2	1.4	12.4	0.4
Essential Hypertension	401	3.2	2.1	3.1	1.2
Sprns And Strns Othr/Unspc Parts Of Back	847	2.3	0.6	1.5	0.7
Allergic Rhinitis	477	1.9	2.1	1.9	0.7
Follow-up Examination	V067	1.8	1.2	0.1	0.0
Acute Pharyngitis	462	1.7	0.6	0.7	0.9
Personality Disorders	301	1.7	0.2	2.2	0.0
Other Dis Due To Viruses And Chlamydiae	078	1.6	0.7	0.2	1.0
Disorder Of Refraction & Accommodation	367	1.5	3.8	0.1	2.1
Contact Dermatitis And Other Eczema	692	1.5	0.6	0.6	0.9
Diseases Of Sebaceous Glands	706	1.5	0.8	0.2	0.7
Sprains & Strains Of Sacroiliac Region	846	1.5	0.4	0.6	0.2
Other And Unspecified Disorders Of Back	724	1.4	1.7	2.5	3.9
Acute Upper Resp Infct Mult Unspec Site	465	1.4	0.8	0.7	0.0
Bronchitis, Not Spec Acute Or Chronic	490	1.3	0.4	0.7	0.0
Chronic Sinusitis	473	1.3	0.7	0.6	0.0
Intervertebral Disc Disorders	722	1.2	0.5	0.8	0.3
Periph Enthesopathies & Allied Syndromes	726	1.2	1.3	1.2	0.7
Inflammatory Diseases Of Prostate	601	1.1	0.3	0.5	0.4

Note: Zeroes represent percentages less than 0.1

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EXHIBIT III-18

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES FEMALES 45-64 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		82,331,236	140,156	641,268	35,683
PERCENTAGE OF TOTAL VISITS		36.0	39.2	35.4.	30.5
Essential Hypertension	401	7.8	6.1	6.1	7.2
Diabetes Mellitus	250	3.5	2.3	2.4	2.2
Menopausal And Postmenopausal Disorders	627	2.4	1.5	2.2	1.2
Neurotic Disorders	300	2.1	1.0	5.2	0.8
Disorder Of Refraction & Accommodation	367	2.0	3.1	0.1	2.8
Follow-up Examination	V067	1.6	0.5	0.1	-
Malig Neoplasm Of The Female Breast	174	1.6	0.8	2.3	1.1
General Medical Examination	V070	1.5	2.4	0.0	1.0
Acute Upper Resp Infct Mult Unspec Site	465	1.4	0.8	0.8	0.0
Osteoarthritis And Allied Disorders	715	1.3	1.4	1.4	1.9
Periph Enthesopathies & Allied Syndromes	726	1.2	1.0	1.9	0.6
Bronchitis, Not Spec Acute Or Chronic	490	1.2	0.3	1.0	0.0
Allergic Rhinitis	477	1.2	2.0	3.4	1.2
Other And Unspecified Arthropathies	716	1.1	0.8	1.0	0.1
Other And Unspecified Disorders Of Back	724	1.1	1.0	2.3	1.9
Other Disorders Urethra & Urinary Tract	599	1.0	1.2	1.1	1.0
Special Investigations And Exams	V072	1.0	11.1	0.1	5.3
Other Disorders Of Soft Tissues	729	1.0	0.6	1.5	1.8
Sprns And Strns Othr/Unspc Parts Of Back	847	1.0	0.4	1.4	0.2
Other Forms Of Ischemic Heart Disease	414	1.0	0.9	0.9	0.2

Note: Zeroes represent percentages less than 0.1. Dash (-) represents no data reported.

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EXHIBIT III-19

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES MALES 45-64 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		55,059,674	113,005	322,680	37,235
PERCENTAGE OF TOTAL VISITS		36.8	31.8	32.1	25.8
Essential Hypertension	401	8.6	8.1	7.7	8.4
Diabetes Mellitus	250	3.5	3.1	2.9	2.8
Other Forms Of Ischemic Heart Disease	414	3.4	2.4	3.9	0.7
Follow-up Examination	V067	1.8	0.5	0.1	-
Disorder Of Refraction & Accommodation	367	1.7	4.6	0.1	3.6
General Medical Examination	V070	1.5	2.8	0.0	1.7
Periph Enthesopathies & Allied Syndromes	726	1.5	1.4	1.9	0.6
Other And Unspecified Disorders Of Back	724	1.5	1.1	2.1	1.9
Osteoarthritis And Allied Disorders	715	1.4	1.1	1.2	1.5
Chronic Sinusitis	473	1.2	0.5	0.6	0.1
Asthma	493	1.2	0.6	1.0	0.4
Other Dermatoses	702	1.2	1.1	0.5	0.4
Neurotic Disorders	300	1.1	0.5	3.4	0.3
Inflammatory Diseases Of Prostate	601	1.1	0.3	0.9	0.8
Intervertebral Disc Disorders	722	1.1	0.4	0.8	0.3
Contact Dermatitis And Other Eczema	692	1.1	0.5	0.8	0.8
Sprns And Strns Othr/Unspc Parts Of Back	847	1.0	0.4	1.2	0.2
General Symptoms	780	1.0	0.6	1.5	0.6
Glaucoma	365	1.0	1.2	0.9	0.7
Acute Upper Resp Infct Mult Unspec Site	465	0.9	0.6	0.6	0.0

Note: Zeroes represent percentages less than 0.1. Dash (-) represents no data reported.

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EXHIBIT III-20

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES FEMALES > 64 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		79,534,708	76,285		11,445
PERCENTAGE OF TOTAL VISITS		44.0	23.6		25.5
Essential Hypertension	401	9.2	6.4		7.2
Diabetes Mellitus	250	4.6	2.0		2.0
Cataract	366	4.4	1.5		1.4
Osteoarthritis And Allied Disorders	715	2.8	1.7		2.7
Other Forms Of Ischemic Heart Disease	414	2.4	1.6		0.4
Glaucoma	365	2.2	1.5		2.0
Organ Or Tissue Replaced By Other Means	V043	1.7	0.9		0.3
Follow-up Examination	V067	1.6	0.5		0.0
Other And Unspecified Arthropathies	716	1.5	0.7		0.0
Other Disorders Of Eye	379	1.4	0.4		1.4
Other Disorders Urethra & Urinary Tract	599	1.3	1.0		0.9
Malig Neoplasm Of The Female Breast	174	1.3	0.9		1.2
Heart Failure	428	1.3	0.4		0.3
Other Dermatoses	702	1.1	1.0		1.3
Acute Upper Resp Infct Mult Unspec Site	465	1.1	0.5		0.0
Other Retinal Disorders	362	1.1	0.6		0.9
General Symptoms	780	1.1	0.7		1.0
Cardiac Dysrhythmias	427	1.0	0.4		0.6
Rheum Arthrts & Other Inflamm Polyarth	714	1.0	0.4		0.4
Other Malignant Neoplasms Of Skin	173	0.9	0.3		1.5

Note: Zeroes represent percentages less than 0.1

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EXHIBIT III-21

NUMBER AND PERCENT DISTRIBUTION OF AMBULATORY VISITS FOR SELECTED DIAGNOSES; FOUR DATA BASES MALES > 64 YEARS OF AGE

DIAGNOSES	DX CODE	DATA BASE			
		NAMCS	USTF	CHAMPUS	ACDB
TOTAL VISITS		51,003,731	86,941		16,223
PERCENTAGE OF TOTAL VISITS		42.6	28.0		32.8
Essential Hypertension	401	6.8	6.2		7.2
Diabetes Mellitus	250	4.4	2.3		2.4
Other Forms Of Ischemic Heart Disease	414	3.7	3.3		0.9
Cataract	366	3.1	1.4		1.1
Hyperplasia Of Prostate	600	2.2	1.8		3.6
Chronic Airway Obstruction, NEC	496	2.1	1.0		1.5
Glaucoma	365	2.0	1.9		1.6
Follow-up Examination	V067	1.9	0.4		-
Osteoarthritis And Allied Disorders	715	1.8	1.1		1.7
Heart Failure	428	1.7	0.5		0.5
Cardiac Dysrhythmias	427	1.7	1.1		0.8
Other Malignant Neoplasms Of Skin	173	1.4	0.7		4.5
Organ Or Tissue Replaced By Other Means	V043	1.3	0.7		0.1
Malignant Neoplasm Of Prostate	185	1.3	0.7		2.1
Other Dermatoses	702	1.3	1.9		0.6
Angina Pectoris	413	1.3	0.7		1.3
Other Disorders Urethra & Urinary Tract	599	1.3	1.1		0.8
Other Disorders Of Eye	379	1.2	0.4		1.4
Bronchitis, Not Spec Acute Or Chronic	490	1.1	0.2		-
General Symptoms	780	1.0	0.7		0.6

Note: Zeroes represent percentages less than 0.1. Dash (-) represents no data reported.

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CHAPTER FOUR

DISCUSSION

IV. DISCUSSION

The results suggest that the military does, in fact, have a different ambulatory visit distribution than the civilian sector. While similarities outweigh differences when only major body systems are considered and when the effect of age is taken into consideration, differences cannot be ignored. Further, data from the military databases are heterogeneous--they are almost as different from each other as they are from the NAMCS.

As noted in the introduction to Chapter III, it is important to keep in mind the mission of the MHSS while interpreting visit frequency patterns. This mission, as mandated by Federal law, is to support the combat readiness of our armed forces. Thus, the spectrum of services available under the direct care system is tailored to the active-duty military population--a population that is predominantly young and male. Some of the important consequences of this mission on visit frequencies are that the direct care system will show more service-related health examinations and fewer services associated with the care of serious and debilitating chronic conditions. Further, pediatric and gynecological visits are also liable to occur at lower frequencies than in the general public since they are not associated with the prime target population. This status with respect to health services for women is changing as more women become part of the active duty military.

Several instances were observed where differences between study patient data and the NAMCS are clearly a function of benefits coverage, e.g., eye glasses and mental disorders. Visits for eye glasses have higher frequencies in the direct care system because they are readily available and covered at no cost. The psychologic and psychiatric services associated with mental disorders are not readily obtainable from the direct care system. CHAMPUS, which has a very high visit rate for mental disorders, offers coverage that is superior to that available in the civilian sector in many instances.

Other differences may relate to access issues, e.g., the relatively lower visit frequency for injuries and poisoning in the USTF probably means that these patients are seeking care from the nearest source, which may not be one of the 10 former U.S. Public Health Service hospitals.

The age of the different patient populations also appears to affect visit patterns. By controlling for the effects of age, differences between the study databases and the NAMCS were diminished with respect to several disease categories. For example, the frequency of visits for circulatory problems, which were unusually low for the ACDB, shifted closer to the NAMCS upon age-adjustment. This would be expected given the relative youth of the ACDB population. Although shifted, ACDB circulatory problem visits were still less frequent than the NAMCS. Since we did not have access to simultaneous age- and sex-specific NAMCS tabulations for diagnoses at this level of aggregation, it was not possible to further explore the dynamics of circulatory disorders.

Sex, typically another key variable for distinguishing patterns in case-mix and health care utilization, was not found to exhibit much discriminatory potential in the present effort.

Some differences may relate to inherent differences between populations that are not necessarily associated with age or sex. For example, relatively high visit frequencies for diseases of the musculoskeletal system persisted within the ACDB population after the effects of age were controlled. These differences may pertain to the active lifestyles of many of the patients seen at MTFs participating in the ACDB. As noted previously, they may also be due to an aggressive physical therapy program in MTFs. Detailed examination of musculoskeletal problems by both age and sex is inconclusive since only a few of these problems were consistently reported as a high priority in the NAMCS. For problems related to sprains and strains and to intervertebral disc disorders, visit frequencies were found to be low in the ACDB. On the other hand, other back disorders that include spinal stenosis and sciatica, were found to have relatively high visit

frequencies especially for males. Since dependents and retirees are also eligible for health care services at MTFs, there will be more confidence in the validity of this "lifestyle" hypothesis when the data are reexamined by beneficiary status.

The results point out unique attributes of the military patient population that need to be considered in developing and applying grouping strategies. It may be said with reasonable certainty that case-mix methods that rely on the utilization patterns of Medicare beneficiaries are inappropriate in military settings. It also appears that military ambulatory patient morbidity patterns differ from the ambulatory care mainstream as defined by the NAMCS. Any resource allocation method that fails to consider the unique case-mix patterns of military populations is likely to be of limited use. Further, there are sufficient differences between each of the DoD databases to suggest that they represent distinct patient populations. Ambulatory visit frequencies in the ACDB, for example, may not be useful predictors of USTF visit frequencies. Thus, resource allocation would benefit from some degree of customization to the particular military population.

With currently available. data systems it is impossible to develop a complete picture of patterns of ambulatory care use among beneficiaries. Dependents and retirees are relatively free to move between CHAMPUS and the direct care system. Chronic conditions among retirees are considered the domain of the Department of Veterans Affairs. This latter fact is particularly relevant to the present study since it moves some visits entirely outside of the health care providers covered by the study databases. A similar effect may also exist for the Medicare eligible segment of the study population. While such older patients are less of a concern in resource allocation, changes in benefits structures could bring them back into the MHSS.

Up until now the provision of ambulatory care services to DoD dependents, retirees, and other beneficiaries has been considered on a space available basis. This approach will change dramatically with the advent of the MHSS Coordinated Care Program (CCP). Under the aegis of the CCP, local MTF commanders will be responsible for the total health care needs of all MHSS beneficiaries within their catchment area. These commanders will decide whether it is cost-effective to provide care within their MTF or to purchase it elsewhere. It will be critical to the success of the CCP that MTF health planners have accurate information on the case-mix of their patient population so that they can anticipate needs and make informed resource allocation decisions. This study represents a first effort to integrate a wide range of disparate data sources on ambulatory care to MHSS beneficiary population. Our fragmented patient data did not permit us to consistently pick up all the care provided to a given population. Future efforts should focus on the creation of true catchment area databases that integrate both inpatient and ambulatory care data. Such efforts would be population- rather than patient-based, providing a better estimator of the true health status of the service population.

APPENDIX A

CHAMPUS RECORD CONVERSION PROCESS

GENERAL DATA DESCRIPTION

The claim ID, claim-level financial data, diagnosis, and sponsor and patient demographic variables occur once per record, and are referred to collectively as the "header". The procedure-level billing and payment variables, the hospital/clinic encounter variables, and the health care provider variables may occur from zero to 32 times per claim record, and include the health service procedure codes. These variables are referred to as the "detail records" of the claim record. All diagnostic codes are ICD-9 codes, and all procedure codes are either CPT-4 codes or special CHAMPUS codes. Each procedure has a visit count, which will be zero if the procedure was an ancillary procedure of an encounter. Each ancillary procedure also has a "services" count.

The claims data cover professional services claims submitted during 1987 (90 percent) and 1988 (10 percent), representing the first quarter of FY88. These claims may contain either inpatient, outpatient, or drug services for a detail record. A given visit and its ancillary procedures may be submitted on the same claim, or on different claims.

BACKGROUND

One of the chief missions of the present project is to assess the utility of several of the prevailing ambulatory case-mix grouping strategies, notably Ambulatory Visit Groups (AVGs) and Ambulatory Patient Groups (APGs), in military settings. These strategies are based on patient encounters and, thus, may represent care that spans several CHAMPUS claims. Thus, a key issue associated with analyzing data from the CHAMPUS database was the conversion of these data from individual claims to a record that represents an individual encounter. We consider an encounter as representing a single visit, designated by a single diagnosis and a primary procedure, and all identifiable ancillary procedures associated with the encounter.

One potential problem that we have addressed in the CHAMPUS data is the poorly specified dates of care. The procedures often have different beginning and ending of care dates listed rather than a single actual date of service. This care period is then considered the window of time during which the care was provided. The remainder of this narrative describes the discrete steps required to process the data from claims to encounters. The five steps are as follows:

1. Process partial claims and modifications in complete claims

2. Exclude claims which cannot be processed through to completion

3. Exclude procedures and claims which are determined not to be the fiscal responsibility of the DoD, or non-ambulatory in nature

4. Separate visit procedures, as defined by CHAMPUS, into records representing single occurrences

5. Attach associated ancillary procedures to the main visit procedure

DETAIL OF STEPS

1. **Process partial claims and modifications in complete claims**

Several CHAMPUS Professional Services records could represent a single claim if an FI submitted corrections or cancellations of claims previously submitted. These multiple record claims are processed into a single consolidated record for the claim.

2.   **Exclude claims which cannot be processed through to completion**

Since we have one fiscal quarter worth of data, some claim records are corrections or cancellations of claims submitted in a previous period. These claims are excluded.

3.   **Exclude procedures and claims which are determined not to be the fiscal responsibility of the DoD, or non-ambulatory in nature**

Exclusion criteria were instituted to solve the problem of claims in the database that have been fully or partially denied. Additionally, those claims whose sponsoring branch of service was NOAA were excluded due to their nonapplicability to the DoD. These records accounted for less than 0.10 percent of the records. Procedures that are non-ambulatory (inpatient or drugs) will be excluded as this study is only concerned with ambulatory resources. These non-ambulatory procedures accounted for approximately fifteen percent of the total procedures. Claims that have been fully denied are screened out by the "claim exclusion criteria," and the denied procedures of partially denied claims are screened out with the "procedure exclusion criteria." Both of these criteria are discussed below.

- **CLAIM EXCLUSION CRITERIA** -- The claim is excluded when the data indicate that the claim was rejected for payment by the CHAMPUS system. These claims are considered invalid, and have no medical basis. Less than two percent of the ambulatory claim records were excluded for these reasons. These records are identified as follows:

    - Claim records identified as an FI denied claim

    - CHAMPUS denied claims

    - Fraudulent claims

    - Duplicate claim or erroneous claims due to an FI error

- **PROCEDURE EXCLUSION CRITERIA** -- Valid claims records that have procedures that have been denied will have these procedures deleted. The deleted procedures accounted for approximately five percent of the total procedures present. Reasons for these denials included duplicate billings (excluded for coordination of benefits), the claimant was not eligible, the service was not a covered benefit, other insurance paid in full, the filing limitation was exceeded, the DEERS reply was negative, and other reasons (coded as "other" denial but not clearly defined by the available CHAMPUS manuals). The effect of these deletions will be the exclusion of procedures which, upon evaluation, have been designated as not being the fiscal responsibility of the DoD.

4.   **Separate visit procedures, as defined by CHAMPUS, into records representing single occurrences**

Each procedure has a CHAMPUS visit count. Procedures with a visit count greater than zero represent the primary procedure for a visit(s) and ostensibly represent the reason for the encounter(s). A visit count of zero means that the procedure was an ancillary procedure. Each procedure has a "services" count, which for an ancillary procedure represents the number of times that the service was provided.

If a procedure record has a visit count greater than one, we then duplicate this procedure and its associated data once for every visit that it represents, and change their resulting visit count to one.

5.   **Attach associated ancillary procedures to the main visit procedure**

This final step includes what are termed the "Ancillary Procedure Assignment Decision Rules." A given claim record may contain a primary procedure, which has a visit count of one, or an ancillary procedure that needs to be associated with the appropriate primary procedure. Additionally, each procedure has a "period of care"

associated with it that is not necessarily the actual date of care. Our goal is to convert to a system where each record represents one visit (primary procedure) and all of its associated ancillary procedures. The appr ᷾ to convert to an encounter record is as follows:

- Distribute the ancillary procedures to a primary procedure for a *specific patient, provider, and diagnosis combination*. Assign the ancillary procedure to the primary procedure that first occurs where the beginning date of care of the ancillary procedure is the same or after the primary procedure's beginning date of care. An ancillary procedure may represent single or multiple occurrences, as may happen during a single encounter. A primary procedure may only represent a *single* encounter/occurrence.

- If an ancillary procedure cannot be associated with a primary procedure, it will be stored in another database as an unmatched ancillary procedure. The correct associated primary procedure was not discernable due to the incorrect reported service dates, the wrong provider code or capacity may have been entered, or the associated primary procedure may not have been submitted during the fiscal quarter's data represented.

APPENDIX B

USTF RECORD CONVERSION PROCESS

GENERAL DATA DESCRIPTION

Each patient record on the USTF database contains a segment of patient demographic information, up to six outpatient service segments, and an inpatient service segment. The outpatient service segment data are of special importance to the current study and contain the following data:

- o   A "from" and "to" date of service
- o   Location of service
- o   A diagnosis and procedure code

All diagnostic codes are ICD-9 codes, and all procedure codes are either CPT-4 codes or special USTF codes. As many of the records contain outpatient service segments for more than one service date, the USTF database is not an encounter database.

BACKGROUND

One of the chief missions of the present project is to assess the utility of several of the prevailing ambulatory case-mix grouping strategies, notably Ambulatory Visit Groups (AVGs) and Ambulatory Patient Groups (APGs), in military settings. These strategies are based on patient encounters and, thus, may represent care that spans several USTF service segments. Thus, a key issue associated with analyzing data from the USTF database was the conversion of these data from multiple encounter records to a record that represents an individual encounter. We consider an encounter as representing a single visit, designated by a single diagnosis on a given date, and all procedures associated with the encounter.

There were several difficulties that we have addressed in the USTF record conversion process. These include the lack of unique patient identifier, and ambulatory service dates that were missing or incorrect (e.g. the 'to' and 'from' dates were not identical). The narrative below describes the discrete steps required to process the data to encounter records, while addressing the problematic data.

1.   Identify A Unique Patient By Service Date

2.   Compare and Resolve Differences Between Service Dates

3.   Check All Segments For A Service Date, And If It Is Missing Insert A Date

4.   Output An Encounter Record For Each Service Date

2

DETAIL OF STEPS

1. Identify A Unique Patient By Service Date

In the past, USTF statistical reports defined[1] a unique USTF patient based on the following six fields:

- Sponsor's social security number (SSN)
- First five characters of the sponsor's last name
- Patient's date of birth (DOB)
- Deers dependent suffix
- Patient's SSN
- Patient's first name.

However, since our database has only three of these fields (sponsor's SSN, patient's DOB, and Deers dependent suffix), we cannot use the same criteria. Instead, we identify a unique patient for a given date of service, by using their account number (a 12 digit unique patient identifier field), the patient's sex, and their year of birth. In the small number of records that do not have a patient account number, the sponsor's SSN is used.

According to Vector Research, Inc. (VRI), some facilities may assign a different patient account number each day that they attend that facility. Since we are separating all visits for a particular patient for a particular date, this is not an hinderance. If a different account number was assigned each day, we can then differentiate between a patient's visits on different days. However, it should be noted that these properties make the account number unsuitable for analysis of episodic care.

2. Compare and Resolve Differences Between Service Dates

We then verify that all of the "from" and "to" service dates within each outpatient segment are equal. For an ambulatory encounter, the service dates should be equal. Therefore, if the dates are not equal but the service segment is clearly for outpatient care, we then inplement a standard date assignment rule to resolve differences between these dates.

3. Insert A Service Date, If Missing

If the service date is missing on a segment that has diagnostic or procedural data, then we use the date from the previous outpatient segment on that record. If there is no previous segment, the date from the next outpatient segment would be used.

4. Output An Ambulatory Encounter Record For Each Service Date

We exclude all inpatient data, and then sort each patients' outpatient service segments by their service dates. All outpatient segments for a particular date are appended to the patient's demographic information, creating a encounter database. One encounter record exists for date a patient for received outpatient services.

1. Vector Research, Inc (VRI).

3