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Analysis of Active Duty Claims at U.S. Army Medical Activity in
Wuerzburg, Germany: Descriptive Statistics and Discussion

A Graduate Management Project

by

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ABSTRACT

Health care continued to be a major quality of life issue for Army service members and their families stationed in Europe. Distance, staffing, deployments, and budgets often limit access to military health care. Military treatment facilities (MTFs) often had to refer patients to German health care providers due to access shortages. Active duty (AD) patient care was paid for through MTF budgets and cost over \$5 million in fiscal year 1999 (FY99). This study provides a retrospective, descriptive analysis of the FY99 AD claims data for the United States Army Medical Department Activity in Wuerzburg, Germany (USAMW).

A total of 8775 claims from Fiscal Year 1999 were analyzed, with 862 different ICD-9 codes, and a total cost of \$3,084,369. The clinic and region data on frequency of claims, cost of claims, variations in mean costs per ICD-9 code, and the claims process were included.

Analysis of this data was the first comprehensive review of costs by clinic and established a baseline to plan and conduct future analyses.

Discussion on usage of the data showed the information was critical for future planning of clinic locations, services offered, staffing, and budget. However, further and more detailed analysis was required to examine the initial findings.

Data quality and format, as well as, the need for more detailed coding were also addressed.

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Introduction

Health care continued to be a major quality of life issue for Army service members and their families stationed in Europe during FY99. Access to the military health care was mostly through small health clinics in each community. These clinics focused on primary health care needs, although some specialists did periodically provide care on a rotational basis. Many of these military treatment facilities (MTFs) were located over an hour away from one of the three Army military hospitals and the associated specialty care clinics.

Access to military health care was further complicated by clinic staffing models and budgets that did not support 24-hour care in the MTFs. Multiple deployments also took local military physicians away from these community clinics and decreased the availability of appointments.

Each MTF referred patients to German civilian health facilities in its local area to meet the access shortfalls. TRICARE preferred provider networks, similar to those in the United States, were established throughout Europe. These were managed locally and comprised of physician and therapy specialties most needed for each unique MTF (TRICARE, 1999). In this manner, beneficiaries were ensured access to a full range of medical care that met TRICARE access standards.

The Department of Defense (DoD) and TRICARE did recognize the challenges facing the military health system (MHS) in Europe. The Department of Defense has traditionally exempted European facilities from many of the cost containment and

management policies applied to MHS facilities within the United States. Such policies included enrollment based capitation and the strict requirement to use waiver application for non-emergent care or care outside the MTF (TRICARE, 1999). In addition, German providers were paid on a fee-for-service basis, and fees were not capped by CHAMPUS Maximum Allowable Charges (CMAC).

However, military treatment facilities (MTFs) in Europe still had to cope with decreasing budgets and were required to implement cost saving measures to continue providing appropriate care to their beneficiaries. With the projected fiscal year (FY) 2000 Defense Health Program request of \$16.2 billion, six percent of the entire Defense Budget request, all areas of the MHS were expected to contain costs while maintaining access and quality (ASD(HA), 1999).

The challenges MTF leaders faced were to plan how to continue providing the full range of health care expected, meet TRICARE standards for both primary and specialty care, and maintain or decrease the overall cost of claims to meet their budget requirements.

The researcher has found from working in the TRICARE and managed care arena the past for years, that these and most of the other conditions documented in this study remain valid in 2003.

Conditions Which Prompted the Study

Three primary conditions prompted this study. First, the European Regional Medical Command (ERMC), the US Army Medical

Activity in Wuerzburg, Germany (USAMW) and other MTFs in Europe were required by Army Regulation 40-400 and TRICARE policies to pay German providers for care given to active duty service members. This funding was allocated in the ERMC and MTF budgets based on historical usage. As overall budgets decreased, there was strong emphasis on commanders to ensure that AD claims were kept in line also. Even though there was no loss of AD beneficiaries within the region between FY 1997 - FY 1999, USAMW was expected to maintain and preferably decrease its authorized budget of approximately \$3.4 million for AD claims, based on FY 1997 usage. No extra funds were available to offset increases due to inflation or other military operations affecting the availability of military health care. Failure to meet this standard would ultimately result in the loss of core hospital funds or require the use of discretionary funds from the European Regional Medical Command to pay for any costs that exceeded budgeted amount.

Second, USAMW had the most outlying clinics and the largest area of responsibility of all MTFs in Europe (Myers, 1999). This gave it the greatest exposure to incur German claims. USAMW was responsible for over 23,500 AD soldiers, 10 geographically distinct clinics and an area of responsibility over 60,000 square miles (see Figure 1). Each of the outlying clinics was responsible for its unique region and population, but is subject to the U.S. Medical Activity Commander at Wuerzburg. Budget and personnel resources were provided from central USAAW allocations. The Wuerzburg hospital acted as the primary



Figure 1. The Wuerzburg Area of Responsibility in the Bavarian State of Germany. It is approximately 60,000 Square Miles.

military referral center for the clinics, however only four of the clinics were within a 50-mile radius or one hour drive of the hospital. This was the TRICARE access-to-care standard for mandating patients use the hospital for after hours or specialty care. Four of the clinics were over 100 miles away, while Bad Aibling was over 200 miles from the hospital. Figure 2 shows the approximate footprint and distance to each clinic from the Wuerzburg hospital. Because Wisconsin Physician Services (WPS), the TRICARE fiscal intermediary, still assigned some claims against the Augsburg community, it was also represented as a community cost center for USAMW. However, the community was in the final stages of closing and there was no longer an MTF still open there.

Because of the distances these clinics were from a military hospital or 24-hour MTF, USAMW accounted for over half of the AD claims filed with ERMC in FY99 (J. Newman, ERMC Resource Management Division, personal communication, March 7-8, 2000).

Finally, the ERMC Commander gave an incentive to all MTFs, in March 1999. All the cost savings realized on AD claims, compared to FY 97, were redistributed to the MTFs at the end of each Quarter in FY99 (December, March, June and September) for use as local commanders deemed appropriate (ERMC, Program Budget Advisory Committee Minutes, March 18, 1999).

With this incentive, MTF decision-makers began investigating the costs associated with AD usage of German medical facilities. At the end of the 2d Quarter, USAMW was approximately \$60,000 over the straight line AD claims budget. Through simple

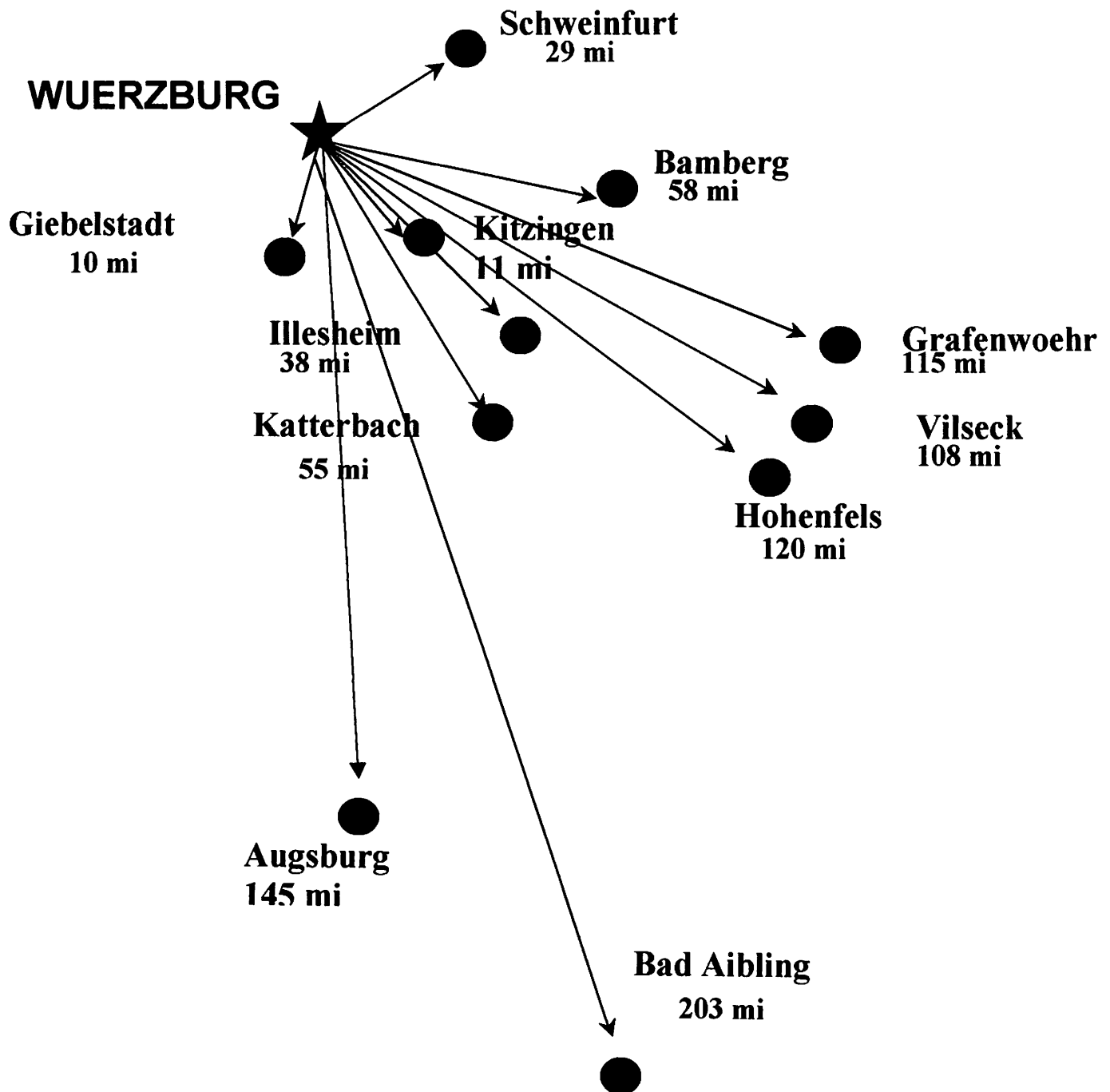


Figure 2. Driving Distances to Outlying Clinics from the US Army MEDDAC Wuerzburg. Distances determined through "Find a Map" program at www.msn.com.

management methods, such as daily reporting and active management of AD soldiers currently in German hospitals, educating clinic staff on the cost of care, and using peer pressure by publishing monthly cost reports, USAMW was able to reduce costs in FY99 (see Figure 3). The hospital ended the year approximately \$59,000 under budget - a \$119,000 savings in AD claims over the second six-month period (D.K. Dunning, personal communication, January 11, 2000).

Statement of the Problem

USAMW leadership recognized the need to gain a better understanding of the claims data before it could plan or implement further managed care practices. Analyses of the claims data for services used, cost of care, and patient demand for each individual clinic were needed to provide the information to make knowledgeable decisions concerning staffing, patient/provider education needs, demand for specific services, policy development and future budgeting at both hospital and clinic levels.

Literature Review

Due to the rapidly rising cost of health care, purchasers of health care services - to include the government - have continued to seek effective methods to measure quality, appropriateness, and cost of these services (American Academy of Pediatrics, 1999). These methods have evolved into managed care as it is practiced today.

Managed care principles were designed to both cut the costs of health care to a specific population, as well as develop an

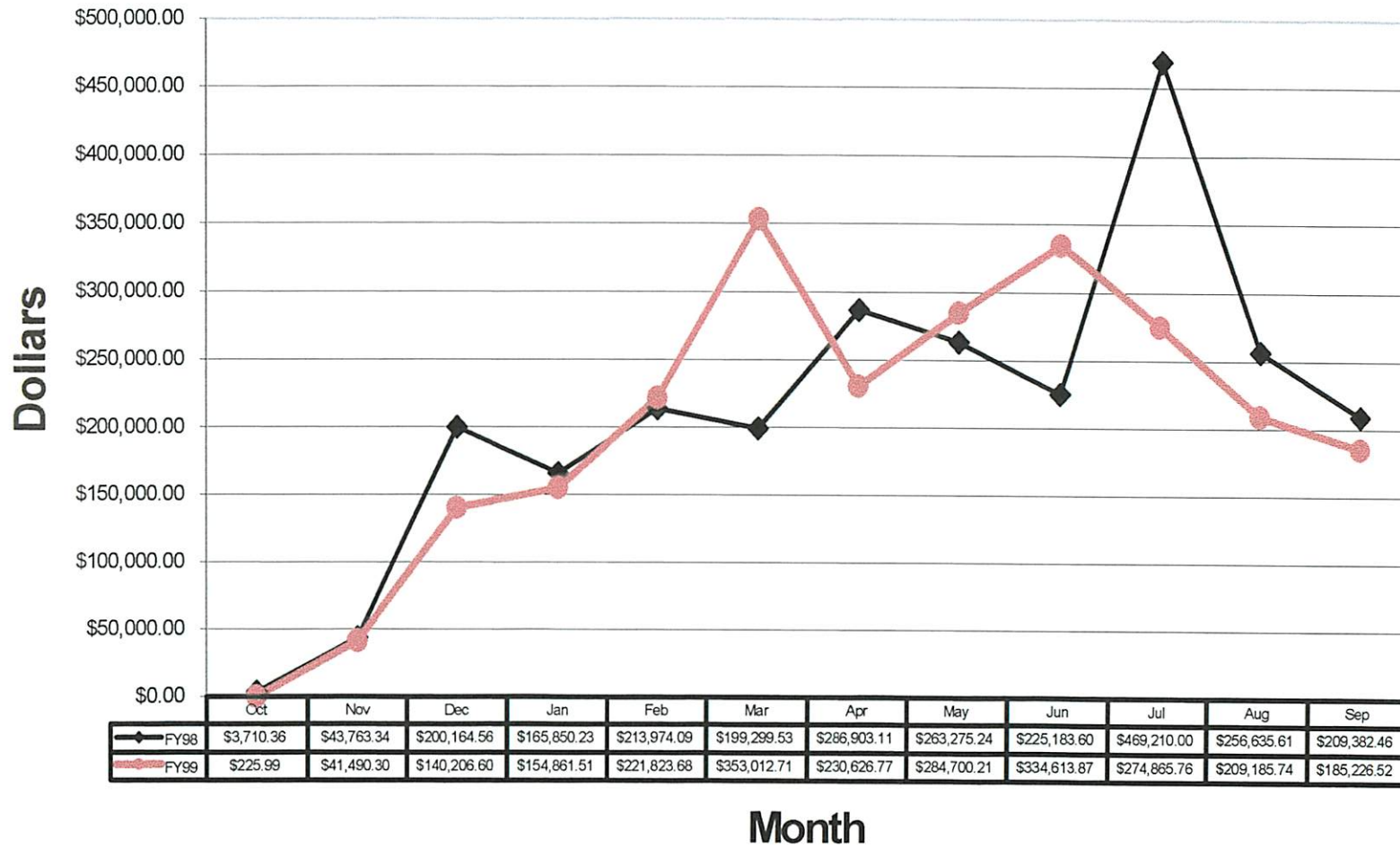


Figure 3: FY98 VS FY99 AD Claims for the Wuerzburg AOR showing the impact of monitoring AD patients receiving non-emergency inpatient care on the German economy.

awareness and understanding of the multiple issues involved in the total cost. There were several variations of managed care noted, but all attempts to influence and modify the behavior of physicians and other health care professionals to provide the most cost-effective, quality care (Fairfield, Hunter, Mechanic, & Rosleff, 1997).

No literature that specifically addressed the usage of German medical facilities by AD personnel was found. However, basic managed care/utilization review management principles developed for civilian health care were still applicable.

Managed Care in the Military Health System

After two important changes were made to MHS funding in 1988, the Department of Defense developed several initial managed care demonstration projects in the late 1980's. First, Congress changed the method of how payments were made to civilian hospitals. Instead of paying full amount of claims under the "fee-for-service" methodology, the military only paid up to a set amount as established by the patients diagnostic related group. Additionally, Congress began to hold each service accountable for its medical expenditures under the Civilian Health and Medical Program for the Uniformed Services (CHAMPUS) (Goodman, 2000).

Goodman notes that two of the demonstration projects did not result in cost savings or improved management of beneficiaries, although other projects became the base of the current TRICARE program. The first MHS managed care project involved combining the control of Brooke Army Medical Center and

the US Air Force Wilford Hall Medical Center. The goal was to place the resources of both large facilities under one command to maximize the development of cost saving measures within the San Antonio, Texas area. However, after three years of service rivalry, no cost saving or slowing of rising health care costs could be shown and the project was disbanded.

A second MHS managed care initiative was called the Catchment Area Management project. Catchment areas were established in several areas within the continental United States and local MTF commanders were given the responsibility to develop and manage the health care delivery for beneficiaries within a 40-mile radius of the hospitals. The MTF commander was authorized to build preferred provider networks and establish contractor-owned clinics in large beneficiary population areas to offset shortages in the MTF primary care capabilities. While access to care often improved, the overall management of care did not. Providers were often paid based on the number of patients treated and these expenditures were not tied to MTF budgets. Therefore, commanders had little incentive to better manage health care.

The use of a fiscal intermediary was begun in July 1990 and proved to be a successful initiative. Instead of the MHS simply paying CHAMPUS claims, the fiscal intermediary implemented managed care concepts. These included reviewing claims for appropriate care and integrating utilization management throughout the process by collecting data, conducting analysis, and reporting back to the MHS on usage, services consumed and

the resulting saving achieved. Wisconsin Physicians Service was the first fiscal intermediary contracted by the MHS in July 1990 (Goodman, 2000).

In a 1999 report to Congress, the Office of the Assistant Secretary of Defense for Health Affairs (ASD (HA)) stated the incorporation of managed care principles into the MHS was a required step to improving its performance to become a more efficient system. However, the first successful, large-scale military managed care program actually began 11 years before in 1988 with the CHAMPUS Reform Initiative in California and Hawaii. The program offered military beneficiaries a choice on how they wanted to utilize their military health care benefits based on their personal situations. Goodman also notes the program was managed by Foundation Health Corporation and promised increased access and waived deductibles if beneficiaries limited themselves to a network of approved providers.

Financial lessons learned during these initiatives included the inappropriateness of using the existing Medical Care Composite Unit (MCCU) for reimbursement and budgeting within the MHS and the lack of health care delivery coordination. The MCCU was based on patient care workload and acted as a disincentive to implementation of cost saving measures. Facilities that enacted these measures found little reward and less money in their next budgets. In addition, there was no incentive to improve the access and coordination of primary care/preventive programs. MTFs were able to cover any shortfalls by cost

shifting - sending work to CHAMPUS or to Medicare at no cost to the MTF (Goodman, 2000).

The U.S. Army Health Services Command designed a capitation model that was proposed and accepted in FY 1992 to address the financial lessons learned during early initiatives. MTF budgets based on catchment area beneficiaries also included CHAMPUS budgets to limit cost shifting and increase the management of health care. A facility could recapture CHAMPUS dollars by bringing workload back into the hospital and using the financial gain to improve hospital patient care (Goodman, 2000).

Faced with continually rising health care costs and the additional burden caused by base and hospital closures, the Department of Defense used the lessons learned with the CHAMPUS Reform Initiative and other programs to develop a new nationwide program called TRICARE in 1993. In its 1999 report to Congress, the Office of the Assistant Secretary of Defense (Health Affairs) stated the full implementation of TRICARE was achieved in the continental U.S. and overseas by June 1998 - although some remote areas remained uncovered.

In April 1998, the Office of the Assistant Secretary of Defense (Health Affairs) also published a revised Utilization Management Policy (HA 98-031) that outlined specific goals and responsibilities for Lead Agents and MTFs. This policy identified seven elements that would provide the "basic foundation for evaluation of care and services and the development of best practices." These elements included: education, utilization review, demand/referral management, case

management, discharge planning, health promotion, and prevention. All of these elements are now implemented at MTFs around the world, including those located in Europe.

This completed the first full generation of military managed care. Regional Lead Agents, utilizing civilian TRICARE contract representatives and military medical personnel, have implemented managed care principles within their regions to optimize the medical care provided, while minimizing the cost. However, not all MHS facilities were equally affected under this system. Lead Agents and MTFs within the U.S. had to manage both the care that was provided in the MTFs and on the economy.

Capitation funding, bid price adjustments, and other programs that encourage maximizing care within MTFs while financially penalizing excess civilian care provided incentives to develop and monitor this data. In Europe, without this overt encouragement, the emphasis was still primarily focused on care provided inside MTFs. Consequently, expenditures on AD claims in Europe were not monitored as closely.

Active Duty Medical Claims in Europe

A total of over \$7.4 million was spent on US Army AD claims in Europe in FY99. This amount included both claims for medical services incurred in FY99 and claims from earlier fiscal years that were submitted and paid in FY99. Of this amount, over \$5.8 million (see Table 1) was spent on claims that specifically occurred in FY99. Yet, there was little evidence of utilization review techniques being used to collect and analyze AD claims

data to ensure optimal health care is being provided while minimizing cost - at any level.

A study was initiated at the US Army MEDDAC in Heidelberg, Germany that addressed demand and referral management to German preferred provider networks (PPN). The study's stated goal was to decrease overall cost of AD claims, while meeting access and quality standards (Ledlow, 1998). Unfortunately, no final report or data analysis is available and the managed care program is no longer being conducted in the same manner.

Table 1

FY99 AD Claims in ERMC by Parent MTF Area

Medical Treatment Facility	Total FY99 Claims
Heidelberg MEDDAC	\$1,337,625
Landstuhl MEDCEN	\$1,096,554
Wuerzburg MEDDAC	\$3,084,369
*Other	\$ 283,653
Total Claims	\$5,802,201

*Those paid claims without data to assign it to an MTF, or which occurred within Europe, but outside the each defined MTF area of responsibility.

From ERMC Final Profit/Loss Statement, FY99 AD Claims Summary

Further queries to staff members at the TRICARE Europe Office (TRICARE Europe) (J.Foley, personal communication, 18 November 1999) and at ASD (HA)/TRICARE Management Agency (TMA) (A. Lonigro, personal communication, 7 December 1999) failed to identify any articles or studies that addressed the AD usage of German or other local national medical facilities.

Resources, policy, and the foreign medical culture all appear to account for most of the lack of analysis on AD claims in Europe.

In the 1999 report to Congress, "Strategy for Implementing the High Performance MHS Plan," the ASD (HA) stated that one of the critical components of the overall MHS optimization plan was "providing improved information management . . . to assess, manage, and measure health care delivery performance" (p. 3).

Military treatment facilities within the U.S. benefited from the fielding of the Corporate Executive Information Systems, automation claims systems implemented by the TRICARE contractors, business object programs, and other improved automated information processes that allowed the sharing of information and process improvements. These automation systems combined data from several sources and ensured that decision-makers had the most complete set of information possible for their analysis.

However, European based MTFs still had to rely on stand-alone data systems such as the Composite Healthcare Computer System (CHCS), KG-Ambulatory Data System, and other independent legacy systems that were not integrated to provide data. During the September 1999 TRICARE Europe Conference, the TRICARE Europe

Director of Health Plans Evaluation noted that CHCS data quality and coding on claims data were limitations to effectively using health care metrics in Europe (DiLorenzo, 1999). This was further complicated with AD claims, as there were no simple methods for inputting information on care received outside the MHS into CHCS or KG-ADS. There was also no extra staff to do it at the local MTFs.

In addition, a review of past conference presentations found on the TRICARE Europe web page at this time (<http://www.europe.tricare.osd.mil/>) showed the focus of U.S. military medical managers in Europe is still primarily on inpatient and outpatient care provided at military treatment facilities. Instruction was available on setting up and managing a PPN network in Europe, but no presentations addressed effective use or management of these host nation providers.

The TRICARE Overseas Program was included in Chapter 12 of the TRICARE Management Agency's TRICARE/CHAMPUS Policy Manual. The manual specifically states that allowances must be made for "significant cultural differences unique to foreign countries and their health care practices." To accomplish this it did not mandate the use of capitation-based budgets or other CONUS-like managed care policies, such as mandated pre-approval for health care provided outside the MHS, in Europe. Strict guidelines for billing beneficiaries who seek care without approval are waived and there is currently no limit on family member claims overseas.

The policy on beneficiaries residing in remote sites was

further clarified by TRICARE Europe in 1999. In part, the TRICARE Europe Prime Remote policy letter states:

Preauthorization for host-nation care will not be required for remote site enrollees to access primary or specialty care services in any foreign country.

Further, a remote site is defined as:

A U.S. military unit in Europe that is located a significant distance (usually considered more than 30 minutes driving time) from a U.S. military base and which has no resident U.S. medical providers (physician, physician's assistant (PA), or nurse practitioner (NP)) to serve as primary care managers.

In effect, the AD claims billing procedures in Europe were almost totally administrative. No control or other approval measures were required for emergency and after-hour care claims to be processed. No policy required any analysis of care provided on the economy. The only management done on AD claims was monitoring of the total claims processed. Each MTF region was required to keep the total within a capped amount to avoid any chance of incurring a budgetary penalty. This left the claims data sent to ERMC by Wisconsin Physician Services primarily in resource management channels and not subject to utilization management or review by a managed care office.

Active Duty Medical Claims Process in Europe

Active duty claims data from Wisconsin Physician Services, did not include supplemental care and other claims ordered by the MTF. These were funded directly through the MTF core funds

and processed through the Defense Finance Office. The AD claims in this study were processed and paid by Wisconsin Physician Services and include after-hours and emergency care treatment, ambulance transportation not specifically ordered by the MTF (i.e. from accident to local German hospital or between German facilities), and care not available through the military health system in Europe or the United States.

While these AD claims were capped at FY 1998 levels, the process still resembled an open-allotment system or what is now referred to as a centrally managed allotment. More emphasis was placed on the administrative process of filing the claim than on the management of the actual medical care provided. No review criteria were placed or mandated at any command level to review claims for medical necessity, actual urgency of the complaint, or tracking of continued usage.

Government regulations addressing the centrally managed allotments and AD claims processing included Chapter 1, TRICARE Operations Manual (OPM) and Army Regulation 40-3 (later updated and included as part of Army Regulation 40-400). These were further clarified by ERMC command policy. However, no specific guidance was provided in the method of receiving, validating, or processing AD claims. This was left to the individual MTFs and TRICARE personnel who received the bills (A. Puterbaugh and J. Newman, personal communication 7-8 March 2000).

Medical bills for care provided at German medical facilities were received by local TRICARE or MTF employees designated by TRICARE Europe. These were usually patient

liaisons, health benefit advisors, or another TRICARE representative at the clinic or MTF, who can speak German. These personnel simply ensured that a bill contained enough beneficiary and health care information to create a valid claim showing an eligible beneficiary was treated. These employees were not required to be medically trained and did not conduct any review of care provided. The minimum administrative information required to create a valid claim is shown in Table 2.

After the DD Form 2642 was fully completed, the bills were collected at the parent MTF. A TRICARE voucher examiner reviewed all bills for completeness and completed a Standard Table 2

DD Form 2642 (Patient's Request for Medical Payment) Minimum Information Required for Valid AD Claim

Full Name

Military Address

Date of Birth

Description of Medical Condition and Treatment

Inpatient or Outpatient Designation

Form (SF) 1034 (Public Payment Voucher). The SF 1034 authorized the fiscal intermediary to utilize federal money to pay the medical bills. The claims were then sent to Wisconsin Physician Services for processing and payment.

The claim was coded with an ICD-9 code based on the medical information provided and payments were sent to the provider. According to TRICARE Overseas Policy, Wisconsin Physician Services was not required to conduct a medical review or utilization management procedures. No bill from a European provider was denied unless there was an administrative error or insufficient medical information. When this occurred, the bill was returned to the servicing MTF for correction and later resubmitted for payment.

A summarized record of these payments was sent back to ERMC and the MTFs for their records each month. Wisconsin Physician Services also maintained a record of the information and provided it to TRICARE as required by their contract.

The combination of these administrative and management shortfalls in the processing of AD claims fostered the situation where MTFs acted independently, or not at all, in analyzing AD claims data. There was no sharing of lessons learned or other ideas on methods to improve the system. Furthermore, there was no mandate to analyze and oversee AD claims at the TRICARE Europe, ERMC, or MTF level.

Consequently, AD claims data was primarily kept by resource managers and not by utilization review personnel who would conduct analyses to find ways to improve delivery and efficiency of medical care.

To paraphrase Hunter (1999), the European MTFs were faced with an accumulated information on AD claims that could be characterized as data untouched by human thought.

Purpose of the Study

The primary objective for this study was to conduct a retrospective descriptive analysis of the AD claims submitted from the USAMW area for FY99. Management of AD claims provides one avenue to assist in overcoming core budget decreases and capped CMA budgets, while continuing to provide access to quality medical care.

The study established a base, retrospective, and descriptive analyses on the type of care, by clinic and overall region, provided to AD soldiers during this time frame.

Objectives of this study included:

1. Consolidating of FY 1999 AD claims data into a usable, complete format for WMEDDAC resource and medical care managers.
2. Conducting a descriptive analysis of FY 1999 AD claims for each individual clinic by month and ICD-9 code.
3. Identifying the top 3 ICD-9 codes by number of services provided and total cost of care for each clinic.
4. Consolidating the clinic analysis to provide an overall WMEDDAC regional analysis.
5. Recommending possible actions to improve the AD claims process within the USAMW region, to include use of demand management.

Information on what type of medical care soldiers are seeking at German medical facilities, USAMW, and other facilities was needed to develop strategies that addressed ensuring appropriate level of care, recapturing of lost patient work load, and maximizing savings for both the military facility

as well as the overall military health system.

The information was also required for further decisions on allocation of specialty care services, access to MHS after-hour services, and on clinic personnel and finance allocations throughout Europe. The process could be replicated using MTF or region specific claims data to accomplish the reviews at any level to assist with future planning.

Methods and Procedures

The research method utilized in this study was a retrospective, descriptive study, involving data analysis of AD claims data received by WPS for FY 1999 (October 1998 through September 1999).

The data utilized was provided from the record of claims paid by the fiscal intermediary for all TRICARE Europe beneficiaries. A monthly data set was submitted each month to TRICARE Europe, whose employees separated the data according to service MTF (Army, Air Force, Navy). The Army data was forwarded to the ERMC Resource Management Division. The data sets received by ERMC were in a text format and then converted to an EXCEL document.

All 12 data sets had the same type of information, but the layouts were not identical. The researcher made simple cut-and-paste administrative changes to ensure sets could be properly combined into a master data set. The master data set was further inspected, and the researcher removed all non-AD claims and all non-European claims. The final data set (n=8775) was limited to medical services provided to AD personal at German medical

facilities within the USAMW area of responsibility (see Figures 1 and 2) during FY99. Finally, it was noted during the data inspection, that Wisconsin Physician Services did not use decimal points when listing the ICD-9 codes. For example, V22.2 and 799.8 would be listed as V222 and 7998 in the claims files. Corrections were made to the codes after the analysis was completed so they are reflected properly in the results and discussion.

The AD claims data contain several elements that were used in the study (see Table 3). They included the MTF the AD beneficiary is assigned to, the amount paid for services in U.S. dollars, the beginning date (BEGDOS) and end date (END DOS) for the episode of care at a German facility, a brief text description of diagnosis (DX), and a principle ICD-9 diagnosis code (Prin DX) for the diagnosis. The actual dates of service were further modified by the researcher to reflect only the month, without dates, of care as shown in the last column of Table 3.

Table 3

WPS Format for AD Claims Reporting

FY	MTF	Cost Allowed	BEGDOS	END DOS	DX	Prin DX	Month
99	clinic	US \$\$	19981001	19990930	PRG, Incidental	V222	98 Oct

Using both EXCEL and SPSS, descriptive statistics were compiled for cost, top three codes reported, and cost per month for each clinic. Analysis was also conducted to check for significant variations between the clinics.

Through the course of this study, efforts were made to maintain a standard of ethics when handling raw data. The complete claims data set contained patient names, social security numbers and patient addresses. However, these elements were deleted after compiling the final database and were not included in the analysis or in the final results of the study. Furthermore, by using retrospective data collection (paid claims) no direct contact with patients was required. Collectively, these steps eliminated any potential ethical or confidentiality issues (Gamerl, 1996).

Concerns of data validity, reliability, and practicality were also addressed in choosing the claims data for analysis. By using data already collected and utilized by WPS to pay AD claims, the content validity of the data was accepted.

Reliability of the data was accepted, even though no actual checks are required or could be found. Only one data source was utilized and there were no crosschecks possible with other information such as actual claims or personal contact with patients. Reliability was addressed in the study by having only the researcher conduct analysis and by the development of a limited, broad analysis process.

Practicality is the last measurement of consideration for the data set. Gamerl also noted that the data to be analyzed

should be evaluated in practical terms of convenience, economy, and interpretability. The AD claims data, like Gamerl's emergency room data, "are readily available, free, and understandable" (Gamerl, 1996, p.22).

Results

A total of 8775 claims, with 862 ICD-9 codes, were analyzed for the Wuerzburg region. The clinics at Katterbach, Grafenwoehr, and Bad Aibling had the highest frequency of AD claims submitted as seen in Table 4. The three clinics accounted for 52% of all claims filed during FY99.

The top three ICD-9 codes/principle diagnosis by frequency and by cost was also determined using SPSS. This identified high volume and high cost services AD beneficiaries used on the German economy for each MTF and the Wuerzburg region. The results are displayed in Table 5 and Table 7.

Table 5 displays the three highest codes by frequency for each MTF and the region. ICD-9 code 799.8, "Other Ill-Defined Conditions" was the highest reported code in the region and accounted for 16 percent of the 8775 claims reviewed. It was listed in the top three codes by frequency for all 12 MTFs in the region. "Pregnant State, Incidental" (V22.2) is the second most reported code for the footprint. It accounted for over 12 percent of the total claims, and ranks in the top three claims for nine of the twelve MTFs. Overall, the top three reported ICD-9 codes in the region accounted for 31 percent of the total claims in FY99.

Table 4

Frequency of Claims per Clinic for FY99

	Frequency	Percent
AUGSBURG (Aug)	31	.4
BAD AIBLING (Bad Aib)	1262	14.4
BAMBERG (Bam)	1067	12.2
GIEBELSTADT (Gieb)	14	.2
GRAFENWOEHR (Graf)	1345	15.3
HOHENFELS (Hohn)	955	10.9
ILLESHEIM (Ill)	194	2.2
KATTERBACH (Kat)	1953	22.3
KITZINGEN (Kitz)	109	1.2
SCHWEINFURT (Schw)	836	9.5
VILSECK (Vils)	730	8.3
WUERZBURG (Wurz)	279	3.2
Total	8775	100.0

Table 5

Top 3 AD Claims by Frequency in FY99

Clinic	FY99 Claims	Principle Description	ICD-9 Code
Aug	15	Pregnant State, Incidental	V22.2
	3	Other Ill-Defined Conditions	799.8
	2	Unspecified Complications of Pregnancy, Abortive Outcome	646.9
Bad Aib	481	Other Ill-Defined Conditions	799.8
	86	Pregnant State, Incidental	V22.2
	85	Other and Unspecified Injury to Unspecified Site	959.9
Bam	99	Pregnant State, Incidental	V22.2
	92	Other Ill-Defined Conditions	799.8
	35	Other and Unspecified Injury to Knee, Leg, Ankle and Foot	959.7
Gieb	3	Other Ill-Defined Conditions	799.8
	2	Conjunctivitis, unspecified	372.3
	1	*Nine other codes were listed on one claim during FY99	NA
Graf	322	Pregnant State, Incidental	V22.2
	222	Other Ill-Defined Conditions	799.8
	32	Abdominal Pain, Unspecified Site	789.0
Hohn	234	Other Ill-Defined Conditions	799.8
	121	Pregnant State, Incidental	V22.2
	26	Other and Unspecified Injury to Unspecified Site	959.9

(table continues)

Table 5 (continued)

Clinic	FY99 Claims	Principle Description	ICD-9 Code
Ill	23	Pregnant State, Incidental	V22.2
	21	Other Ill-Defined Conditions	799.8
	11	Gastroenteritis and Colitis, Other/Unspecified Noninfectious	558.9
Kat	205	Pregnant State, Incidental	V22.2
	187	Other Ill-Defined Conditions	799.8
	66	Normal Delivery	650
Kitz	14	Other Ill-Defined Conditions	799.8
	5	Abdominal Pain, Unspecified Site	789.0
	4	*Three other Codes had four claims during FY99	***
Schwn	55	Other Ill-Defined Conditions	799.8
	27	Contusion of Face, Scalp and Neck (Except the Eyes)	920
	25	Abdominal Pain, Unspecified Site	789.0
Vils	166	Pregnant State, Incidental	V22.2
	65	Normal Delivery	650
	48	Other Ill-Defined Conditions	799.8
Wurz Hospital	47	Other Ill-Defined Conditions	799.8
	22	Pregnant State, Incidental	V22.2
	16	Other and Unspecified Injury to Unspecified Site	959.9
Wurz MEDDAC	1407	Other Ill-Defined Conditions	799.8
	1084	Pregnant State, Incidental	V22.2
	232	Other and Unspecified Injury to Unspecified Site	959.9

Frequency of claims by month was determined and is shown in Table 6. While there is some variation in the usage per month, the overall rates are relatively equal. The number of claims for care provided in March 1999, May 1999, and November 1998 were the highest and accounted for 30 percent of claims. Active Duty soldiers used German providers the least in September 1999, causing only 5.6 percent of the claims.

Table 6

Claims Frequency and Cost by Month for FY99

<u>FY Month</u>	<u>Frequency</u>	<u>Percent</u>	<u>Cost</u>	<u>Percent</u>
98 Oct	724	8.3	\$284,845	9.2
98 Nov	855	9.7	\$311,370	10.1
98 Dec	634	7.2	\$230,734	7.5
99 Jan	811	9.2	\$303,222	9.8
99 Feb	699	8.0	\$264,375	8.6
99 Mar	892	10.2	\$341,840	11.1
99 Apr	790	9.0	\$231,571	7.5
99 May	890	10.1	\$304,707	9.9
99 Jun	616	7.0	\$208,109	6.7
99 Jul	761	8.7	\$248,058	8.0
99 Aug	611	7.0	\$180,181	5.8
99 Sep	492	5.6	\$175,351	5.7
Total	8775	100.0	\$3,084,369	100.0

Table 7 shows the top three claims by cost for each MTF and the Wuerzburg region. "Other Ill-Defined Conditions" accounted for the greatest overall cost in FY99 and was found in the top three lists for total cost at eight clinics. Total claims for this diagnosis equaled \$367,697 and accounted for 12 percent of the overall \$3,084,369 paid during the year for AD care in German facilities. "Pregnant State, Incidental" was the second highest code for claims as it was for frequency. It accounted for 8.8 percent of the total claims, and was listed in the top three most expensive claims for eight clinics also. "Normal Delivery" was the third most expensive claim, accounting for approximately six percent of the total cost. Overall, the top 3 codes accounted for 27 percent of the overall claims for FY99.

Table 7

Top 3 ICD-9 Codes by Cost for FY99

Clinic	FY99 Claims	Principle Description	Cost in US Dollars
Aug	15	Pregnant State, Incidental	\$1,136.62
	1	Normal Delivery	\$540.07
	1	Other Threatened Labor, Abortive Outcome	\$467.15
Bad Aib	481	Other Ill-Defined Conditions	\$174,093.23
	85	Other and Unspecified Injury to Unspecified Site	\$41,415.11
	86	Pregnant State, Incidental	\$39,531.11
Bam	99	Pregnant State, Incidental	\$41,668.85
	92	Other Ill-Defined Conditions	\$20,945.66
	11	Normal Delivery	\$17,235.13
Gieb	3	Other Ill-Defined Conditions	\$ 1,011.36
	1	Abdominal Pain, Unspecified	\$ 272.25
	1	Site Backache, Unspecified	\$ 211.83
Graf	222	Other Ill-Defined Conditions	\$49,815.93
	322	Pregnant State, Incidental	\$43,918.19
	26	Normal Delivery	\$21,487.52
Hohn	234	Other Ill-Defined Conditions	\$64,835.55
	121	Pregnant State, Incidental	\$38,605.46
	18	Acute Appendicitis Without Mention of Peritonitis	\$22,133.23

(table continues)

Table 7 (continued)

Clinic	FY99 Claims	Principle Description	Cost in US Dollars
Ill	2	Caesarian Delivery, Abortive Outcome	\$4,147.19
	23	Pregnant State, Incidental	\$3,252.00
	10	Abdominal Pain, Unspecified Site	\$2,596.08
Kat	66	Normal Delivery	\$64,113.06
	205	Pregnant State, Incidental	\$53,210.40
	187	Other Ill-Defined Conditions	\$25,379.35
Kitz	14	Other Ill-Defined Conditions	\$3,717.65
	1	Open Fracture of Phalanx or Phalanges of Hand,	\$3,223.85
	1	Unspecified Contusion of Multiple Sites, Not Elsewhere Classified	\$2,216.29
Schwn	2	Benign Neoplasm of Cerebral Meneges	\$12,810.00
	55	Other Ill-Defined Conditions	\$10,758.84
	23	Gastroenteritis and Colitis, Other/Unspecified Noninfectious	\$9,393.03
Vils	65	Normal Delivery	\$49,951.21
	166	Pregnant State, Incidental	\$40,329.36
	12	Acute Appendicitis Without Mention of Peritonitis	\$15,151.93

(table continues)

Table 7 (continued)

Clinic	FY99 Claims	Principle Description	Cost in US Dollars
Wurz Hospital	1	Other and Unspecified Injury to Other/Multiple Specified Sites	\$7,211.23
	2	Closed Fracture of Lateral Maleolus	\$6,993.69
	16	Other Unspecified Injury to Unspecified Site	\$5,400.91
Wurz MEDDAC	1407	Other Ill-Defined Conditions	\$367,697.44
	1084	Pregnant State, Incidental	\$271,937.73
	211	Normal Delivery	\$192,095.43

Comparing the cost data against the number of claims per month in Table 6 shows there is a similar ranking. March 1999, May 1999, and November 1998 were again the top three highest months, although November was greater than May for cost of claims. September 1999 was the lowest month for cost of claims, as it was for frequency of claims.

Variation between the MTFs was also examined. A review of the frequency of claims per MTF has already shown that there is wide variation in the actual numbers of claims submitted from each MTF area. In addition, a general linear model univariate test was run with SPSS to examine the possibility of variance for one dependent variable by one or more factors and/or variables (SPSS, 2003). Specifically, "Cost" was used as the dependent variable, while the clinic ("MTF") and ICD-9 code ("Dx") were the fixed factors. With the level of significance at 0.05, the test shows there is significant difference in the cost per diagnosis when compared among the MTFs (see Table 8).

Further review was done by specifically looking at the mean cost per claim for the ICD-9 codes with highest frequency and total cost - "Other Ill-Defined Condition" and "Pregnant State Incidental." Large variations in mean cost and standard deviations in cost among the MTF shown in Table 9 and Table 10 are apparent and support the general linear model univariate test findings.

Table 8

GLM Univariate Test of Cost by DX and MTF

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1762783959.666	2098	840221.144	3.691	.000**
Intercept	154324139.839	1	154324139.839	678.020	.000**
DX	1103881927.699	857	1288076.928	5.659	.000**
MTF	6797845.117	11	617985.920	2.715	.002*
DX * MTF	422709281.677	1230	343666.083	1.510	.000**
Error	1519523349.853	6676	227609.849		
Total	4366448292.407	8775			
Corrected Total	3282307309.519	8774			

* $p < .05$. ** $p < .01$

Table 9

Mean Cost for "Other Ill-Defined Condition" by MTF in FY99

MTF	Mean	Std. Deviation	N
Aug	\$24.49	\$29.37	3
Bad Aib	\$361.94	\$211.47	481
Bam	\$227.67	\$493.17	92
Gieb	\$337.12	\$1.57	3
Graf	\$224.39	\$449.27	222
Hohn	\$277.07	\$554.31	234
Ill	\$93.97	\$106.37	21
Kat	\$135.71	\$217.28	187
Kitz	\$265.54	\$198.57	14
Schw	\$195.6	\$372.56	55
Vils	\$213.80	\$319.36	48
Wurz	\$102.77	\$98.90	47
Total	\$261.33	\$370.16	1407

Table 10

Mean Cost for "Pregnant State, Incidental" by MTF in FY99

MTF	Mean	Std. Deviation	N
Aug	\$75.77	\$108.88	15
Bad Aib	\$459.66	\$523.48	86
Bam	\$420.89	\$474.76	99
Graf	\$136.39	\$187.85	322
Hohn	\$319.05	\$495.80	121
Ill	\$141.39	\$131.41	23
Kat	\$259.56	\$291.23	205
Kitz	\$141.28	\$34.13	4
Schw	\$233.99	\$260.92	21
Vils	\$242.94	\$245.64	166
Wurz	\$218.48	\$314.40	22
Total	\$250.86	\$346.04	1084

Discussion

This study provided the USAMW leadership its first comprehensive descriptive analysis of AD claims in their area of responsibility. Previous information had only come from ad hoc sources and the personal impressions from others within the hospital and outlying clinic.

While only done on a broad scale, the descriptive analysis of the claims data does provide a focal area to determine if any significant impact or cost saving can be accomplished. This study only identifies broad types of care provided by local German providers. However, it can support their future analysis and requests for resources with this information.

Identifying the high frequency and high cost codes gives USAMW and individual clinic leadership their first step to conduct further analysis on potential cost savings through recapture care. Even at this initial stage, many of the initial impressions held by clinic staff were supported.

Due to the lack of obstetricians and support equipment in the outlying clinics, pregnancy and delivery related visits were significant. Several outlying clinic commanders had requested obstetricians on a permanent or rotating basis, but this request had been met with resistance due to lack of equipment and surgical capabilities. This study shows that there is significant cost saving possible if these obstacles can be overcome.

One possible method that was being considered before this study was combining a group of outlying clinics into an

obstetrics hub. Grafenwoehr, Vilseck, and Hohenfels are all within a 25-mile radius that was projected to be able to support one or more obstetricians.

While it is not possible to establish a labor and delivery service in the clinics, it could be possible to recapture at least part of the care currently being seen on the German economy and coded as "Pregnant State, Incidental." An obstetrician could provide daily or rotating outpatient appointments for this hub, while maintaining surgical and delivery competency at the military hospital. Further review of the care through patient interviews or their claims review could provide an estimate of how much of the \$122,852 spent in FY99 could be recaptured.

Another position supported by this study involved the staffing of outlying clinics. For several years, the clinics that were further away from the military hospitals had lobbied for bigger budgets. The commanders argued against existing staffing models that were built solely on population and historical workload. However, until this study, the clinic commanders did not have access to any consolidated claims data, and it was not possible for them to show even the general overview of the situation they faced in their areas. As shown graphically in Figure 4, the five clinics with the greatest total cost for claims are the MTFs located furthest away from the Wuerzburg hospital. Of these five, Bad Aibling, Grafenwoehr, and Katterbach are also the highest for number of claims. Pregnancy related care was among each of the clinics'

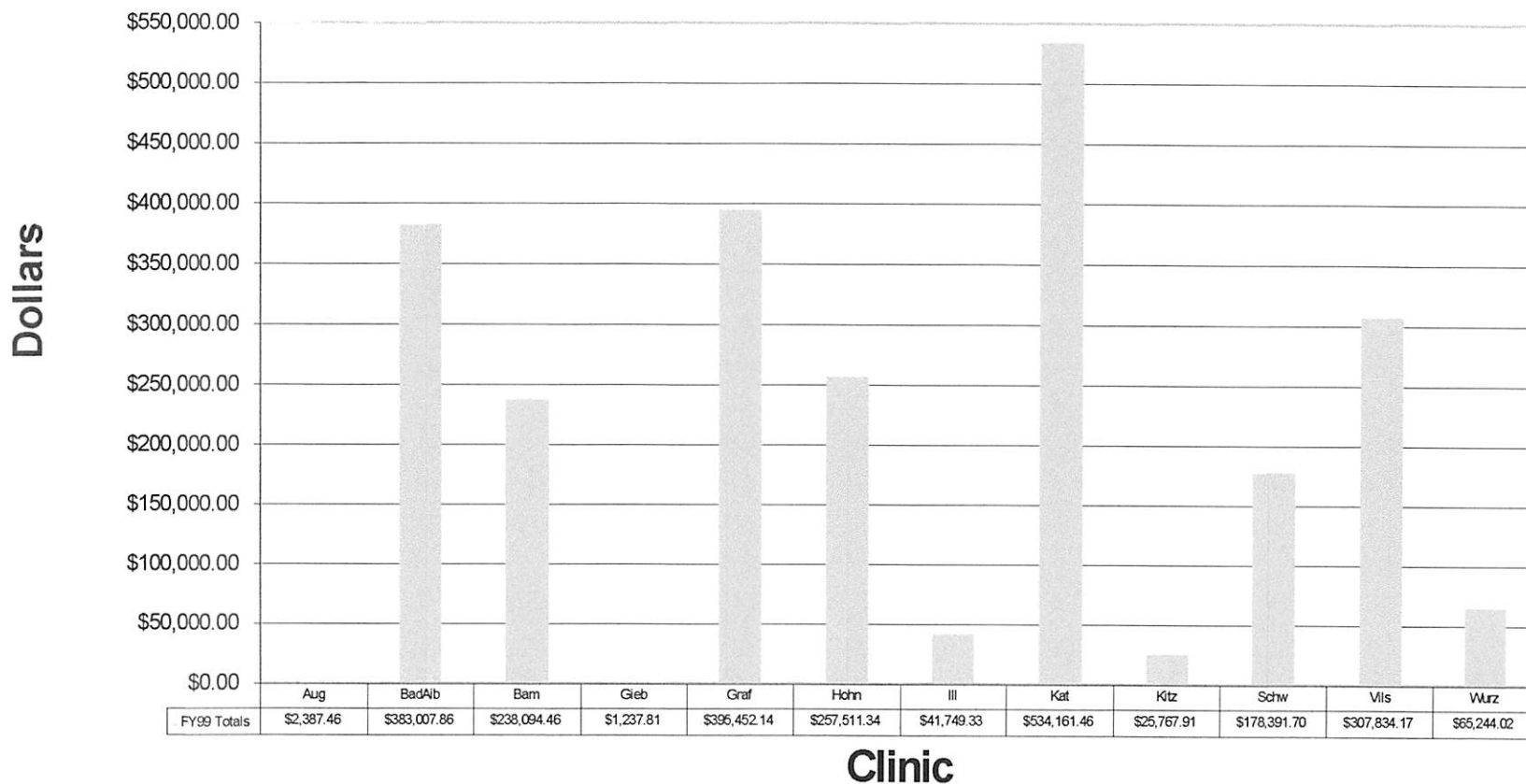


Figure 4. Total FY99 AD Claims By Clinic. The figure shows that the five clinics located farther away from the parent military hospital at Wuerzburg had the highest total claims cost for their areas.

top three codes for claims.

Much more work will need to be done to determine the exact factors that impact claims, before patient demand and potential cost savings that can be estimated. This, this study appears to show that distance from a military hospital has an impact on frequency and cost of claims. However, the population surrounding these clinics must also be considered as a factor in frequency of claims. Clinics supporting high troop concentrations and family members will see a greater need for services. In this specific study, Army brigades with over 5,000 soldiers and an equal number of family members are located at Katterbach, Schweinfurt, and Bamberg.

Military training is another factor that can impact the frequency of claims. While not having large military units, Grafenwoehr and Hohenfels support central maneuver and live fire training areas. This raises the risk of illness and injury for the soldiers served.

The study also identified variations in the mean cost of care for the same diagnosis at different clinics. Table 9 reflects a variation of over \$259 for ICD-9 Code 799.8, "Other Ill-Defined Condition" between the highest and lowest mean cost.

The large and diverse area covered in this study could account for much of the variations seen. Location, civilian medical infrastructure, and the size of troop concentrations could all impact on the cost of care provided at German facilities. However, large variations were evident, even when analyses were confined to a few MTFs located closely together.

Hohenfels, Grafenwoehr, and Vilseck are all located within a 20-mile radius of each other, in rural settings with large troop concentrations. Even with the similarities, there is a variation of over \$60 for the 799.8 code between the highest and lowest mean cost. A variation of \$93 was found when looking at Schweinfurt and Wuerzburg claims. Both of these areas are medium sized cities with several civilian hospitals, large troop concentrations, and only 40 miles apart.

Similar variations were also found when the focus was ICD-9 supplemental code, V22.2 (Pregnant State, Incidental). Table 10 shows that overall, a variation of \$384 existed between the highest and lowest mean cost through the area. A \$183 variation was seen between the Grafenwoehr-Hohenfels-Vilseck hub. However, the variation between Wuerzburg and Schweinfurt was only \$15 for this code and may not be significant.

One idea held by many senior staff was disproved. Most of the senior leadership and clinic commanders felt the months with the highest claims overall would be June - August. This is the period often called the "summer under lap" which occurs when staff departs for their next duty assignment, and the replacement staff has not arrived or is not ready to begin their duties. However, as shown in Table 6 and Figure 5, none of the three traditional "summer under lap" months ranked in the overall top rankings for claims per month or cost per month. The same is found when looking at each individual MTF in Figure 6. More analysis is needed to see if FY99 was unique or if other factors such as lower demand, Reserve Component staff influx,

and increased productivity negate the staff losses. Using the dates of service, claim frequency and type can be compared against a standard for specific periods of deployments or field exercises. Any variation found would then be used for future planning and to justify any request for extra resources.

Several limitations were also identified in the study. The most encompassing and perhaps the most disappointing limitation of the study was the lack of specificity in the coding. This will greatly limit the usefulness of claims data in any future, "drill-down" analysis.

According to the TRICARE Overseas Program manual, the fiscal intermediary, and not the military MTFs or German doctors, was responsible for any translation required and for coding the claims. Unfortunately, it appears this was not done at the same specificity standards found in the United States. The highest three ICD-9 codes based on frequency are general, non-specific codes, yet they make up 31 percent of the total claims. The top two ICD-9 codes based on total cost of claims are also non-specific codes that totaled 21 percent of all claims in FY99. Any attempt to conduct further analysis on these codes to determine the need or feasibility of shifting personnel would require the USAMW to collect individual bills, translate them, and then recode them to get the needed specificity.

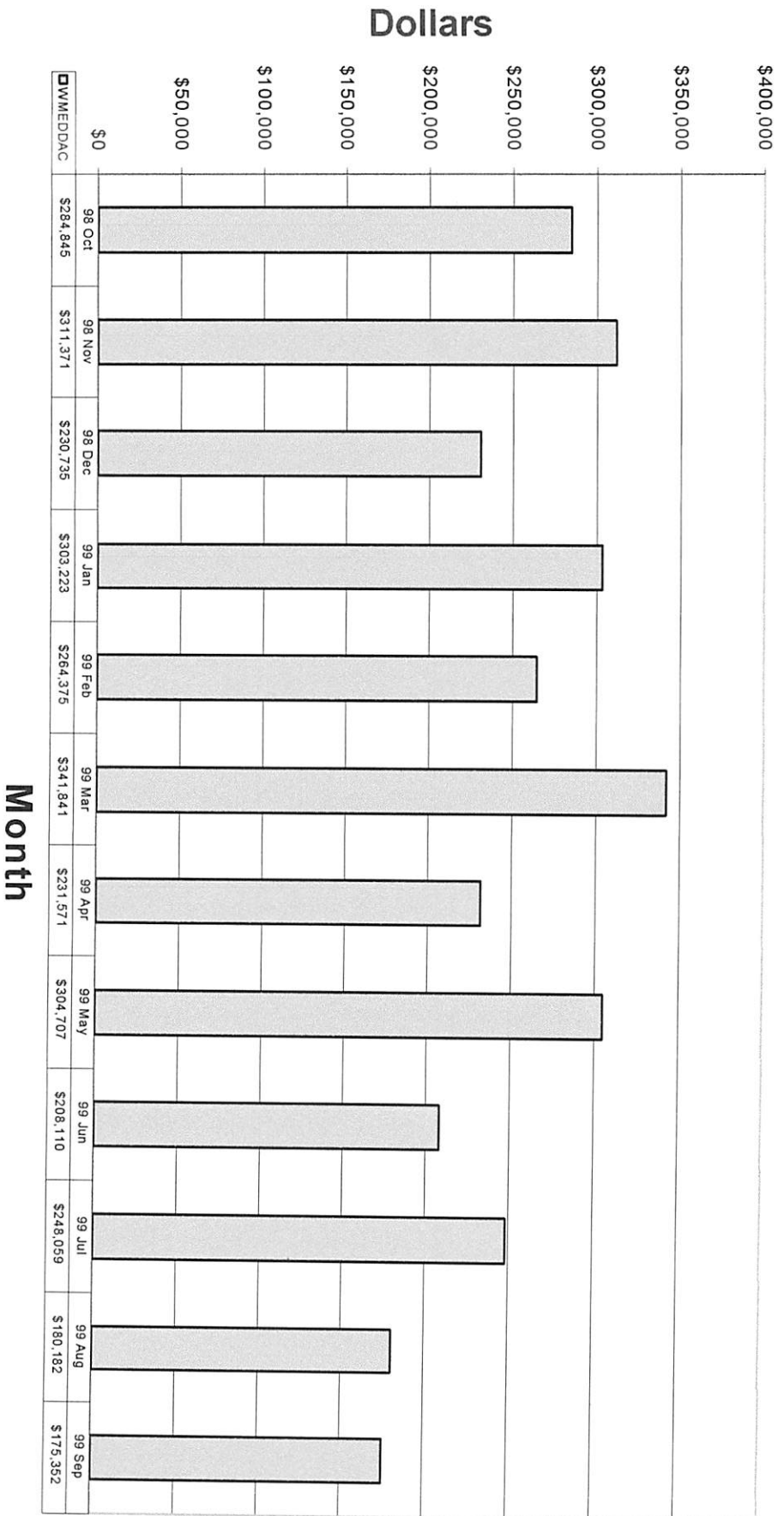


Figure 5. Total FY99 AD Claims Cost for the Wuerzburg AOR by Month

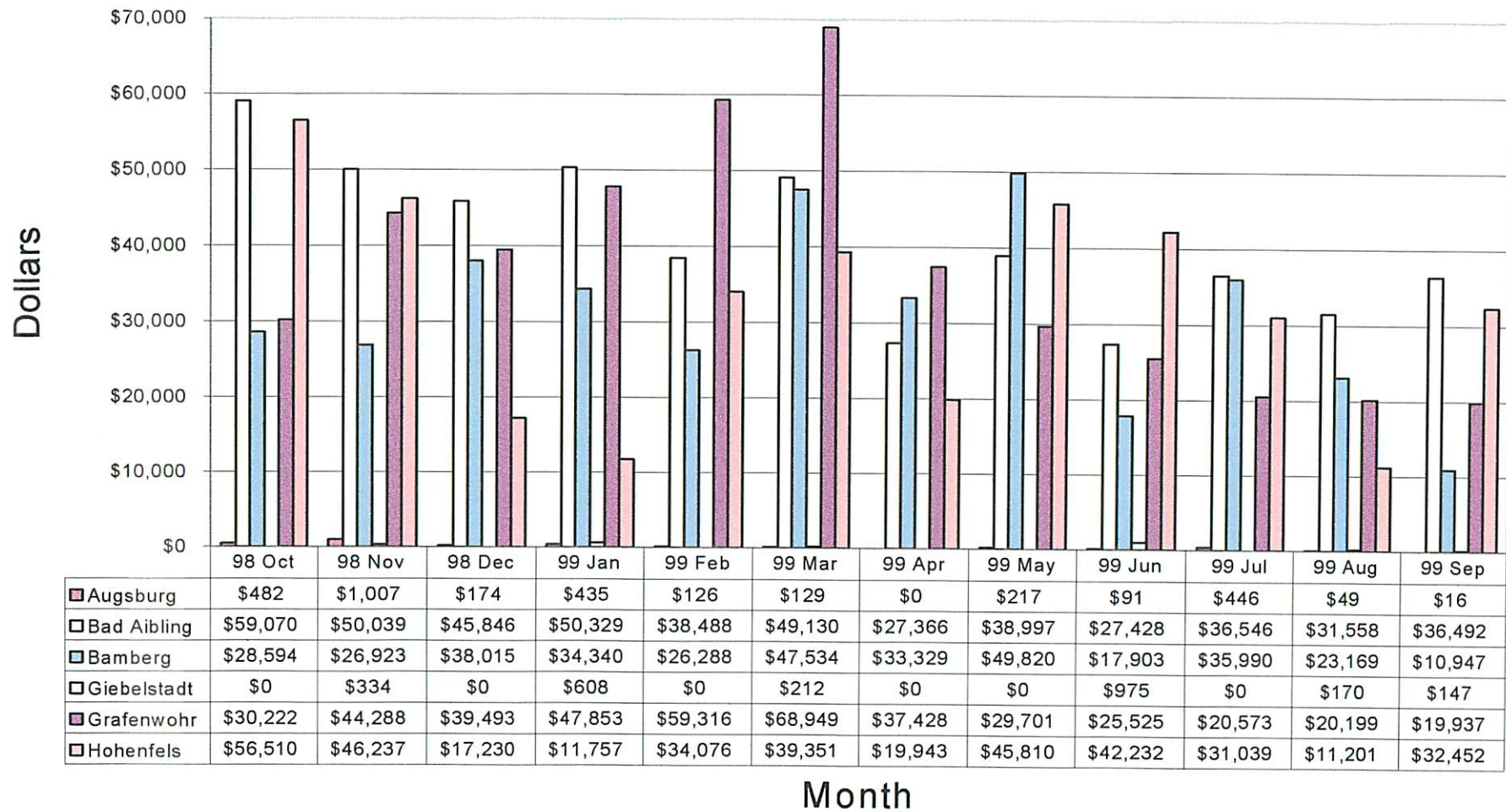


Figure 6. FY99 AD Claims by MTF by Month. The individual MTF trends generally mirror the overall claims trend represented in Figure 5. Figure 6 is continued on next page.

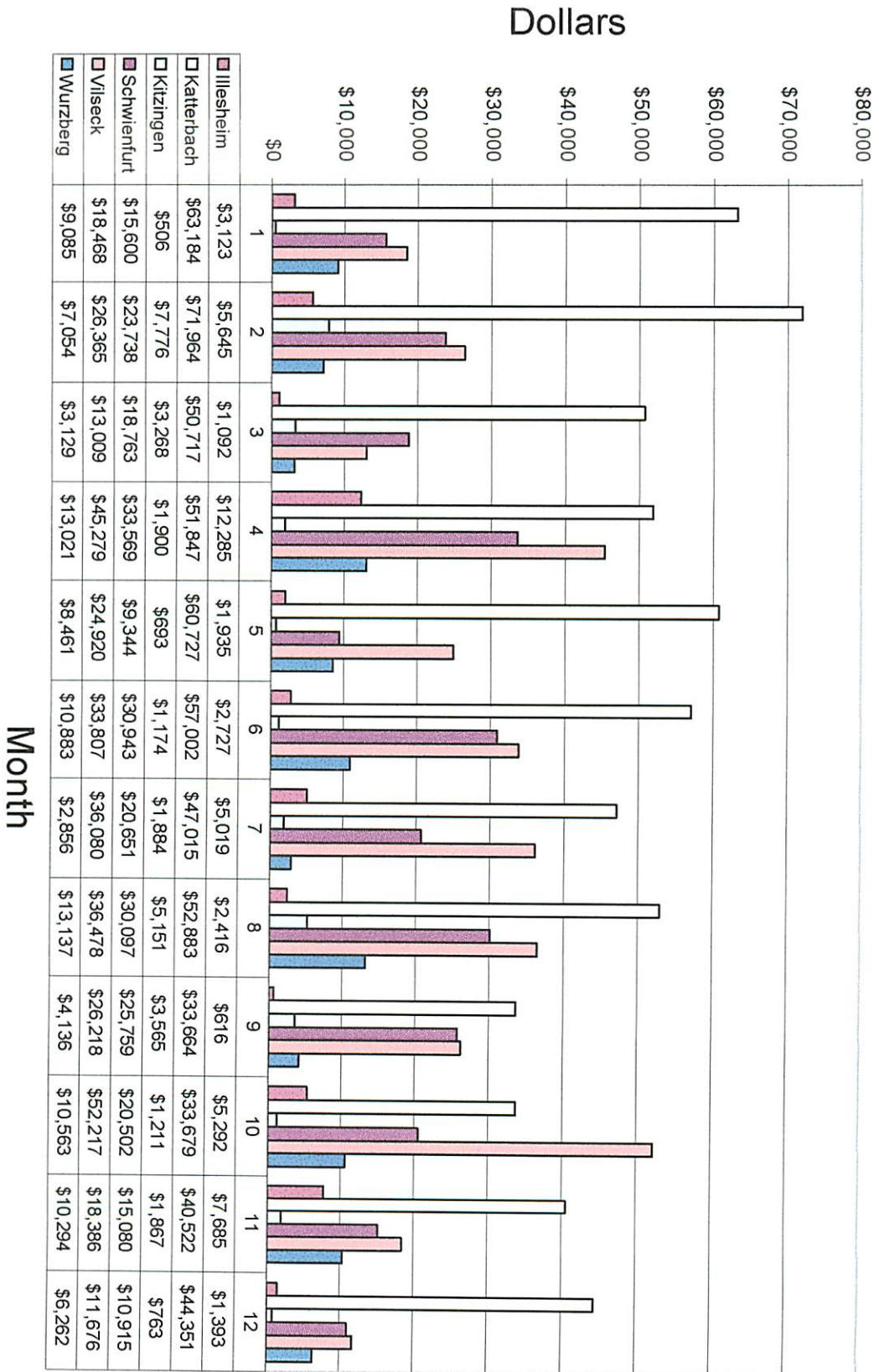


Figure 6 (continued) . FY99 AD Claims by MTF by Month. The individual MTF trends generally mirror the overall claims trend represented in Figure 5.

This issue had been previously identified by the military hospital in Heidelberg and addressed to TRICARE Europe staff. The response indicated that the fiscal intermediary was coding to the appropriate level specified by the TRICARE Overseas Program manual and their contract. TRICARE also indicated there would be no request for future modifications until the contract was rebid (A. Puterbaugh and J. Newman, personal communication 7-8 March 2000).

A second limitation found during this study involved data access and its ease of use. As explained earlier, the claims data was transmitted through TRICARE Europe to ERMC in a text format. It was only at ERMC that it was converted to Excel format, so it can be broken down by MTF region and factored into the budget process. Also, while the content was the same for each monthly data set, the column format varied which further hindered the general usefulness. This issue had also been addressed by Heidelberg and ERMC to TRICARE Europe. However, it appears that neither the applicable TRICARE manual nor the fiscal intermediary contract specified the format for reports. No further changes would be expected until after TRICARE established a set format for claims data. (A. Puterbaugh and J. Newman, personal communication 7-8 March 2000).

CONCLUSIONS

The information provided a more definitive picture of AD patient demand within the USAMW region during FY 1999. Even with the limitations noted, the claims data was useful in identifying high frequency and high cost diagnosis, variation in costs and

usage, and other starting points for utilization and demand management. While these provide the start for future analyses, more in depth work must be done. As noted, several different factors could impact the frequency, type and cost of these claims. Identifying these factors will greatly assist medical planners involved with resource management and any future troop relocation in Europe.

The information was also useful in supporting or disproving some of the common beliefs about AD use of the German medical system. This will assist in focusing future analysis of cost benefits due to staff allocation or the provision specialty care in the outlying clinic areas.

Data integrity and coding limitations were identified that hinder the usefulness of this analyses. Reliability and validity had to be assumed as neither Wisconsin Physician Services nor any other organization had addressed these issues. Improvements in the actual coding of the claims are also required to provide more specificity to the database.

The lack of any utilization management review of care provided on the economy was a surprising failure found for all military medical organizations in Europe. None of the three hospitals under ERMC currently does this. Active duty claims for FY98 and FY99 both exceeded \$5 million dollars that came directly from the overall ERMC budget. However, this expense appears to be viewed as a sunk cost for being in Europe. Even though basic, common sense management techniques have been shown to decrease claims and recapture money for the MTF, the command

focus continues to be on analyzing care provided within the MTF. Little or no analysis is done on care provided by German providers.

RECOMMENDATIONS

The USAMW and ERMC should join with the other MTFs in Europe and request a change to claims data immediately. More specific and useful data at the individual MTF level would have an immediate impact on allocating resources. With shrinking budgets, specific claims data will be required to justify staff, services, and facilities in the future.

In addition, all European-based facilities must develop and foster a stronger utilization management staff. This staff can not just look internally, but must actively analyze claims data and report their finding to the leadership. TRICARE Europe and ERMC must develop their utilization management process to coordinate efforts and ensure all MTFs benefit from the findings. This will require shifting staff or bringing on new staff, but the MTFs must have trained utilization management and analysis staff to meet the future demands. Only these experts can provide the MTF leadership with information to provide the best care, at the best location, to maximize the limited resources.

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APPENDIX

Acronyms

AD	Active Duty
ASD(HA)	Assistant Secretary for Defense (Health Affairs)
CHCS	Composite Healthcare Computer System
ERMC	US Army European Regional Medical Command
FY	Fiscal Year (October through September)
MHS	Military Health System
MTF	Military Treatment Facility (clinic or hospital)
PPN	Preferred Provider Network
TRICARE	Tri-Service Health Care System
U.S.	United States
USAMW	United States Army MEDDAC - Wuerzburg
USAMH	United States Army MEDDAC - Heidelberg