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Child and adolescent psychiatry services are virtually unavailable in house at the treatment facilities of the Joint Military Medical Command (JMMC), San Antonio, Texas. The cost for this service under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) is exorbitant and growing steadily. The JMMC has begun a managed care project to bring the treatment in house with outpatient care at Brooke Army Medical Center (BAMC). Although plans have been made to implement the services in 1991, a detailed catchment area needs assessment has not been conducted.

The author used a CHAMPUS billing database known as the Quick Response Detail Files (QRDF) which was collected by the Fiscal Intermediary and archived to tape by CHAMPUS. The QRDF files were formatted and uploaded into the Statistical Application System (SAS) software to facilitate manipulation and analysis. The data was used to determine the patient needs for the catchment area and to attempt to construct a patient profile for child and adolescent

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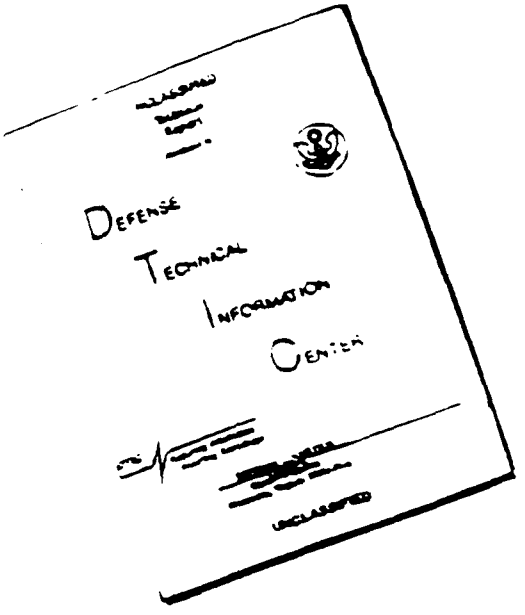

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psychiatric
/services. The methods and procedures used in the study involved descriptive statistical analysis of several patient related variables. The results indicated that the highest cost areas included 20 zip codes concentrated in five clusters around four major military installations. The top 10 high-cost diagnoses were identified for each of the clusters. A patient profile was then constructed for each of the clusters based on the demographic variables of Patient Age, Patient Sex, Sponsor Branch of Service, Sponsor Pay Grade, and Sponsor Status.

The results made it possible to begin formulation of a marketing plan for the BAMC outpatient psychiatric clinic. Recommendations were also proposed which would help to ensure success in recapturing CHAMPUS dollars.

A FISCAL INTERMEDIARY BASED NEEDS ASSESSMENT TO SUPPORT A MANAGED CARE APPROACH TO OUTPATIENT CHILD AND ADOLESCENT PSYCHIATRIC CARE AT BROOKE ARMY MEDICAL CENTER

A Graduate Management Project

Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the

Requirement for the Degree

of

Master of Health Administration

by

Captain Thomas C. Smith III, MS

May, 1991

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Child and adolescent psychiatry services are virtually unavailable in house at the treatment facilities of the Joint Military Medical Command (JMMC), San Antonio, Texas. The cost for this service under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS)is exorbitant and growing steadily. The JMMC has begun a managed care project to bring the treatment in house with outpatient care at Brooke Army Medical Center (BAMC). Although plans have been made to implement the services in 1991, a detailed catchment area needs assessment has not been conducted.

The author used a CHAMPUS billing database known as the Quick Response Detail Files (QRDF) which was collected by the Fiscal Intermediary and archived to tape by CHAMPUS. The QRDF files were formatted and uploaded into the Statistical Application System (SAS) software to facilitate manipulation and analysis. The data was used to determine the patient needs for the catchment area and to attempt to construct a patient profile for child and adolescent psychiatric services. The methods and procedures used in the study involved

descriptive statistical analysis of several patient related variables. The results indicated that the highest cost areas included 20 zip codes concentrated in 5 clusters around 4 major military installations. The top ten high cost diagnoses were identified for each of the clusters. A patient profile was then constructed for each of the clusters based on the demographic variables of Patient Age, Patient Sex, Sponsor Branch of Service, Sponsor Pay Grade, and Sponsor Status.

The results made it possible to begin formulation of a marketing plan for the BAMC outpatient psychiatric clinic. Recommendations were also proposed which would help to ensure success in recapturing CHAMPUS dollars.

A Fiscal Intermediary Based Needs Assessment To Support A Managed Care Approach To Outpatient Child And Adolescent Psychiatric Care At Brooke Army Medical Center

Conditions Which Prompted The Study

Catchment Area Services

Child and adolescent psychiatry services are currently unavailable in house at Brooke Army Medical Center (BAMC). In fact, both outpatient and inpatient services of this kind are virtually unavailable in all the facilities of the Joint Military Medical Command (JMMC), San Antonio, Texas. Services of this type are provided primarily in civilian facilities through the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). CHAMPUS costs in the San Antonio area doubled from the period July 86 - June 87 to July 87 - June 88 (Joint Military Medical Command (JMMC), October, 1989). More recently, testimony before a special Senate panel revealed that the 1989 CHAMPUS bill in San Antonio was $33 million. Of that amount, $25 million was for mental health care which included $21 million for adolescent psychiatric care (Mendez, 1990). That means that child and adolescent psychiatry alone currently accounts for 64% of the total CHAMPUS

bill in the San Antonio catchment area. Clearly, too much money is being spent in this one category of care. In addition, patient outcomes for this type service under CHAMPUS are questionable. There is a perception by the senior JMMC psychiatric providers that the results of treatment in civilian facilities has not been entirely positive and, in fact, may have deteriorated from the original condition (LTC Jesse Delacruz, Department of Psychiatry, BAMC, personal communication, 16 May 1990).

CHAMPUS Recapture Proposal

In 1989, Major General Ball, Commander of the JMMC, ordered a study of the possibility of recapturing some, if not all, of these CHAMPUS expenditures by providing partial or complete in house child and adolescent psychiatric services under the Alternate Use of CHAMPUS Funds Test. This test is a Department of Defense (DOD) initiative intended to recapture CHAMPUS workload by bringing care back into the military hospital. Each military service can use up to $50 million of its CHAMPUS funds for projects such as contracting with civilian providers at a reduced CHAMPUS rate. (Government Accounting Office [GAO], 1990).

After studying the problem for a year, a [illegible]

committee submitted a proposal which contained three alternatives: (a) to provide outpatient services in house at Brooke Army Medical Center and contract for inpatient services at a civilian facility, (b) provide outpatient services in house (BAMC), inpatient services in house with 20 beds at Wilford Hall Medical Center (WHMC), and continue the remainder of the inpatient workload through CHAMPUS, (c) provide outpatient services in house (BAMC), inpatient services in house (20 beds at WHMC), and contract the remainder of the workload at a civilian facility. Note that all three of the alternatives above call for outpatient services at BAMC. By providing outpatient adolescent mental health services within BAMC, savings are anticipated in two areas. First, cost per outpatient visit will be reduced, even with contracted manpower. Second, costs associated with inpatient treatment will be cut since admissions and length of stay in local civilian facilities would be reduced through military control and the availability of follow-on outpatient support in house at BAMC (JMMC, October, 1989).

The proposed outpatient clinic will provide outpatient services for dependent [illegible]

19 that require: outpatient evaluation and/or treatment, evaluation for inpatient treatment, outpatient evaluation in lieu of inpatient evaluation, and post-hospitalization followup treatment. The following services will be offered when the clinic is fully operational: family therapy, individual play therapy, individual psychotherapy, group therapy, activity therapy, recreational therapy, psychiatric chemotherapy, selected educational/vocational assessment, and parent support education groups (JMMC, October, 1989).

The BAMC clinic received a $1.6 million start-up and 1st fiscal year budget. This budget will cover the necessary construction costs for refurbishing Chambers Pavilion, Fort Sam Houston, purchase of office and other equipment, and partial staffing of the clinic. Refurbishment has begun and the equipment has been ordered with most of it already received. One half of the staff will be hired in the first year. In the first six months of the second year, the next one fourth of the staff would be contracted and the last fourth hired in the latter half of that year (LTC Delarm, personal communication, 10 May, 1990).

The statements of work for staff members have been released for bids and it is anticipated that the contracting will be completed by June 1991. Due to delays in refurbishment, patients will not be seen before October 1991 (COL Delano M. Collins, Chief, Department of Psychiatry, BAMC, personal communication, 21 March, 1991).

Supporting Research and Analysis

As part of the proposal committee's work, a marketing analysis was conducted. However, this analysis was limited by a lack of adequate secondary research data. As a result, several unforeseen problems may arise when the project is initiated. First and foremost is the possibility that the clinic may not be staffed to fully accommodate the diagnostic needs of the presenting patients. Current plans call for staffing the clinic for 100% diagnostic services for 65% of the patient load. It is estimated that to bring the staffing costs in under CHAMPUS costs, the clinic must be staffed for 26,000 annual visits out of an anticipated 33,000 visits in the service area (65%) (JMMC, October, 1990). By staffing the clinic to provide 100% [illegible] diagnostic services, it is possible that [illegible] portion of the most expensive

diagnostic treatments may be lost to the 35% annual visits not covered in house. In addition, it is very likely that a "ghost population" of patients will increase the possible workload once the usual CHAMPUS cost share is waived as part of this project.

Another possible problem is that created as a result of not performing a proper patient origin study. This type study identifies the areas from which patients come to seek treatment for a particular condition. It is possible that child and adolescent psychiatric patients using CHAMPUS for treatment are located in the outer perimeters of the catchment area. As a result, they may not take advantage of the BAMC clinic, wishing instead to continue with nearby CHAMPUS care for convenience. This would result in an inability to recapture those CHAMPUS dollars.

Finally, it will be important to properly promote the outpatient clinic to ensure CHAMPUS recapture through it's use. An effective patient profile, identifying the characteristics of a patient likely to use the clinic, would be most helpful in this respect.

Problem Statement

Child and adolescent psychiatric services are not provided in house at Brooke Army Medical Center (BAMC). The cost for this service under CHAMPUS is exorbitant and growing steadily. The planned outpatient child and adolescent psychiatric clinic project at BAMC is in need of supporting research and analysis to ensure it's success at recapturing CHAMPUS workload.

Literature Review

Psychiatric services is a very important part of our health care industry. In fact, conservative estimates show that approximately 15% of the country's population is affected by some mental disorder (Bittker, 1985). The National Mental Health Association places the figure at an even higher rate - one in five adults suffers from some form of mental-emotional illness. In addition, the American Psychiatric Association (APA) has determined that 7.5 million children under the age of 18 will have some type of mental illness during any six-month period (Westbrook, 1988). However, this category of care, like most others, is feeling the pressures of our changing and sometimes constricting health services environment. In fact, the literature shows that increasing attention is being given by those associated with psychiatric care to escalating costs, managed care, and the marketing of mental health care. The interest in these areas has also led some professionals to be concerned with certain related ethical considerations.

Escalating Costs

There is an increasing concern found in the literature relating to the encroaching expenses of

health care as it affects psychiatric services. Several references mention the 11% plus portion of the gross national product (GNP) that health care is currently demanding. One article states that mental health benefit costs are increasing at twice the rate of all other medical benefits (Donkin, 1989). Government and private health insurers are complaining that their spending on mental health benefits are rising 10 to 20% a year which is faster than any other medical benefit (Coile, 1990). In military medicine, CHAMPUS mental health cases represent the fastest growing segment of total CHAMPUS costs (Braendel, 1990). There is also analysis of the effects the escalating costs are having on third party payers. Because the government's reaction to costs resulted in regulated reimbursement, providers are incrementally increasing charges to payers such as CHAMPUS and Blue Cross and Blue Shield. Other burdens on third party payers include inflation, costs of medical education, expensive medical technologies, and the three sins of medicine - defensive medicine, lazy medicine, and poorly managed medicine. Psychiatric services have suffered disproportionate cost escalation in some benefit plans due to the longer term orientation of psychiatric ca

and consequent time in psychotherapy (Rodriguez, 1985). In addition, psychiatric and some other specialty hospitals do not fall under the prospective pricing system of Medicare (Kim, 1988). Those hospitals which have defined psychiatric units were able to apply for an exemption from payment based on diagnostic related groups (DRGs) and instead continue to bill for charges on a fee for service basis (Kim, 1988. Coile, 1990). Further elements adding to the crisis in *public* psychiatry are fewer available dollars, more patients due to patient shifting from the private sector, and legal imperatives for deinstitutionalization (Rodriguez, 1985).

Seventy percent of mental health dollars are spent on inpatient care (as opposed to 43% for inpatient care in other areas of health care). Within CHAMPUS, nearly 80% of mental health expenditures are for inpatient care. It has been estimated that 40% of all hospitalizations may be inappropriate. Further, the evidence shows that whether the care is given on an inpatient or an outpatient basis, the eventual outcome is not significantly affected (DeLeon, 1988). One article cites the results of some sixteen different

studies of cost and outcomes comparisons between extensive hospitalization and either brief hospitalization and outpatient care or outpatient care alone. These cases went back as far as twenty years and each one showed alternatives to extensive hospitalization were always more cost effective and resulted in the same or better outcomes. (Sharfstein, 1985)

Despite the facts outlined above, cost-effective alternatives to psychiatric hospitalization are not generally available. In fact, twenty-five percent of all hospital days are for mental disorders. One article cites three reasons for this: 1) disincentives to outpatient psychiatric care in health insurance plans; 2) a traditional belief that serious mental illness must be treated in the hospital setting; and 3) psychiatry prides itself on being scientific and to move out of the hospital would disrupt access to biomedical technology, clinical research, and the rest of medicine (Mosher, 1983).

This is not to say that there are no managed care plans available for mental health care. As employers and insurers increasingly balk at the rising costs of mental health care, mental health HMOs and PPOs are

beginning to emerge. These new plans are succeeding through their reduction of inpatient care and emphasis on ambulatory and nonhospital treatment. The mental health managed care model relies heavily on nonphysician mental health professionals and use outpatient services as the gateway to inpatient services. (Coile, 1990)

Finally, the literature specifically addresses the effect of adolescent mental health care on rising costs. Adolescent care may represent 50% of a company's psychiatric benefit expenses and the length of stay for adolescent psychiatric care may be two to three times that of adults. In addition, the National Institute of Mental Health has released figures showing that adolescent admissions to private psychiatric hospitals increased 159% between 1970 and 1980. Admissions to private residential treatment centers increased 133 percent. (Westbrook, 1988)

Managed Mental Health Care

Outpatient psychiatric clinics with contracted staff, such as that proposed at BAMC, fall into the description of managed care. Braendel defines managed care as "all activities performed by the payer, insurer, or health care provider organizations to

assure delivery of appropriate and quality health care to beneficiaries" (Braendel, 1990 p. 19). David Ottensmeyer explains that the purpose of such activities is "to effect a precise balance in the utilization of health care resources, cost containment and quality enhancement" (Goldstein, 1989 p. 272). Essentially, managed care attempts to correctly match the treatment to the problem (Donkin, 1989). An effective managed care plan will ensure that the product truly meets consumer needs and not what they think the consumer *should* want (Kongstevdt, 1989).

One approach to managed care recommended in the literature is known as genuine managed care. Genuine managed care has as it's primary thrust the improvement of the system of care. It emphasizes outpatient treatment and extensive shorter-term interventions. Patients are hospitalized primarily for stabilizing acute episodes. (Goldstein, 1989)

The extent of mental health care in managed care programs is still very small and it may well be the last area to overcome. There has been a boom in mental health care which has led to costly hospital stays and enrollment in resident chemical dependency centers. Many health care organizations are beginning to

recognize that this field is ripe with potential savings for prospective clients. Consequently, companies that manage mental health treatment are growing rapidly as the demand increases.(Modern Healthcare, 1989) AmericanPsych Management has reduced costs by 20% for two of it's clients. Martin Marietta and Georgia-Pacific. Alta Health Strategies has saved Memorex/Telex Corporation $90,000 in one quarter. Preferred Health Care has reversed a high inpatient utilization rate at GTE in California. (Donkin, 1989)

The primary focus of all managed mental health care programs is a mandating of outpatient care whenever possible. If they are to compete, hospitals will have to develop outpatient and day treatment facilities. (Larkin, 1989) In addition, organizations will have to become involved in preauthorizing inpatient admissions, concurrent review of length of stay, selection of preferred providers, development of alternative programs, and use of case management services (Rothbard, Hadley, Schinnar, Morgan, and Whitehill, 1989).

The military health care system resembles a giant open ended health maintenance organization (HMO) with

nine million beneficiaries. However, under ordinary conditions, there is little attempt at managed care strategies practiced at military treatment facilities. In the area of mental health care, the use of concurrent review is rare and formal preauthorization of admissions is nonexistent. Nevertheless, the military is conducting several managed care initiatives around the country. One of these is the Army's Fort Bragg, North Carolina contract with the state to provide child and adolescent psychiatric care. (Braendell, 1990) In addition, the Department of Defense has contracted with Health Management Strategies Incorporated, a utilization management firm, to provide case management for all CHAMPUS inpatient and some CHAMPUS outpatient psychiatric care (Staff, 1990).

An example of the increased interest in managed care in the federal sector is a Government Accounting Office (GAO) study ordered in 1988 by the House Committee on Armed Services. The committee asked the GAO to determine the potential for savings by treating CHAMPUS patients in military hospitals. The GAO looked at four specialties: psychiatry, orthopedics, obstetrics, and gynecology at six military hospitals.

One of the results of the study was the finding that the percentage savings for the government was highest in the area of psychiatry. In addition, it was determined that the greatest potential savings for beneficiaries was also in psychiatry. (GAO, 1990)

The literature is somewhat sparse in the area of managed care for child and adolescent psychiatry. There is, however, an important mention of the need for complete family support services as accompaniment to any child or adolescent mental health care. The approach must be integrated, involving all family members. It has been noted that teenagers sometimes stay in hospitals or resident treatment centers beyond what is necessary. However, the point is made in one article that the teenager may not have a responsive family to return to and therefore community support systems become important. (Westbrook, 1988) Another caution found in the literature regarding cost-cutting alternative concerns what we have come to call the "ghost population". This is referred to by the authors as the failure to control utilization. In the absence of strong controls, alternative services generate new business and new cost. (Astrachan and Astrachan, 1984

Marketing Mental Health Care

The literature in the marketing of mental health care was reviewed for possible directions and guidance for a needs assessment. It appears that there is a burgeoning interest in marketing within the mental health arena. This can be attributed to the new business orientation affecting all of health care. However, just as in managed care, the mental health system seems to be on the tail feathers of the move to health care marketing. The stigmas associated with mental health care, which prevented it's open solicitation, have greatly disappeared. This, along with increased funding, has led more providers to enter the field and made competition for market share more critical. Many providers are realizing that well-organized marketing can mean better use of available resources and improved access for patients. (Sargent, 1984)

Because marketing is fairly new to mental health care, the bulk of the literature dealt with introducing mental health care providers to the fundamentals of marketing and how they can relate to and can be used in the mental health arena. Marketing can be defined as "various activities related to satisfying needs and

wants through exchange processes" (Day and Ford, 1987, p. 14). Unfortunately, most mental health organizations begin implementing the strategies and tactics of their marketing efforts without a firm planning foundation. Market failures usually occur as a result of omitting the planning process. (Winston, 1986) Market planning forces an organization to confront its operations and accurately assess its strengths and weaknesses in such areas as services, personnel utilization, and community value. This allows the organization to become more effective and more important to the community. (Day and Ford, 1987)

A marketing plan must begin with the expression of goals and objectives which the organization wishes to achieve. All goals must be long term in nature and generally agreed upon by a consensus of the organization. Milestones and responsibilities should be assigned for objectives. (Sargent, 1984; Schmeling, 1984)

The organization will have to conduct an internal and external environmental assessment which identifies the opportunities and constraints of the current practice and also the needs and demands for its services within the community (Sargent, 1984). The most

step is researching and identifying market segments and target groups. It is unfortunate that too many non-profit organizations try to provide all services to all people. In order to do its best at providing some good to the community, an organization must concentrate on and direct its efforts toward certain groups (Day and Ford, 1987). Market segmentation partitions a large market into submarkets or segments of individuals with similar needs and wants. Product and service mixes can then be designed to meet these needs and wants. Mental health segments include not only patients but other publics such as employees and especially referral sources. In fact, as many as five groups may play a role in the mental health process. These can be thought of as the user, the gatekeeper, the influencer, the decider, and the buyer. All of these must be considered to avoid overlooking the primary factors that cause an organization to be selected. (Wagle, Slavik, and Kizilbash, 1989)

Markets can be segmented in different ways depending on the variables considered useful to the research undertaken. There are basically four different segmentation variables - geographic, demographic, psychographic, and behavioristic. Geographic

segmentation relates to different geographical entities such as nations, states, regions, service areas, cities, and neighborhoods. The premise is that consumer needs or response vary geographically. Most health care organizations operate within a defined service area, attempting to meet the specialized needs of that area. Demographic segmentation divides different groups based on such demographic variables as age, sex, family size, employment status, income, and occupation. Psychographic segmentation divides consumers into groups on the basis of social class, life style, or personality characteristics. The final major segmentation variable is behavioristic which attempts to divide groups based on their knowledge, attitude, use, or response to an existing service. (Kotler and Clarke, 1987)

The work described above should allow the organization to both determine its various options and choose the best option(s). The actual accomplishment of the chosen option can be facilitated by using the four "P's" of marketing: product, price, place, and promotion. Product can be the refined service which you will offer to the publics. Price refers to the actual charge and also the form of payment. In this

area you should also consider other patient costs such as time, travel, inconvenience, comfort, and the risk of social disapproval. Place refers to the location of the service and includes patient access, appearance, and atmosphere. Promotion involves informing or educating patients and referral sources about the service and its capabilities. (Sargent, 1984)

This paper is concentrating on the research and analysis phase of marketing - that research which is related to the external environment. This is more commonly referred to as a needs assessment. One author makes a very strong argument for a needs assessment when he says of its importance, "unless there is clarity about what the mental health staff wishes to measure and what is actually measured, the data that are gathered and the findings derived from those data will, at best, be confusing - and, at worst, meaningless and perhaps misleading" (Jaffee, 1982, p. 376). Health care managers need timely, accurate and adequate information as a basis for making sound marketing decisions (Kotler and Clarke, 1987).

It is important to distinguish between needs identification and needs assessment. Needs identification describes mental health services in a

given area while needs assessment estimates the importance of those needs so that priorities for services can be set. The basic difference is between that of fact gathering and decision making. (Jaffee, 1982)

The needs assessment can be thought of as a five step process. First, the basis of the assessment must be stated in clear questions which the process is expected to answer. The next step is the organizing of an internal structure to formally take on the task of conducting the assessment and implementing its results. Once this has been accomplished, the group can embark on the research phase which can actually consist of as many as four parts: reviewing previous studies, developing data gathering instruments, sampling the population, and conducting field operations (gathering the data). The next step involves analyzing the data and is perhaps the most crucial. Finally, the data can be utilized to form policies and allocate resources in certain directions. (Jaffee, 1982)

An important element of marketing research is the collection and review of existing secondary data. Secondary data can be defined as any relevant data that was initially collected for some other purpose. The

advantages of using secondary data include quicker use and less expense. Because the data was collected for other purposes, however, the researcher should be cautious in it's use and check the data for relevance, impartiality, validity, and reliability. (Kotler and Clarke, 1987)

Ethical Considerations

Just as important as assuring cost containment in psychiatric services is the assurance of quality and the proper utilization of care. We must make sure that we do not analyze the cost and assume the benefit (Lesse, 1986). The doctor-patient relationship remains the same whereby they enter into a covenant where the first rule is do no harm (Wise, 1989). However, those physicians who act as gatekeepers in managed mental health care programs, controlling entry into the program, are actually placing themselves between their patients and the "company". The aims of the physician's employer must be concordant with delivery of quality care (Sederer and St. Clair, 1989). Professionals in health care must learn to contain costs without endangering health and well-being (Goldstein, 1989). In fact, one author expresses this needed balance when he states the two imperatives of

the future for managed mental health care are cost containment and the maintenance or improvement of quality of service (Boaz, 1988).

These issues have led to a growing debate between managed care systems and psychiatric hospitals. Psychiatric hospitals are claiming that managed care systems are requiring discharges too early and placing excessive restrictions on benefits. A survey conducted by the National Association of Private Psychiatric Hospitals found problems of inadequate coverage in some plans and unqualified, unprofessional case review managers. On the other hand, managed care advocates accuse hospitals of taking advantage of health care plans by requiring the maximum inpatient days allowed. (Kim, 1988) Some experts believe that the act of providing more convenient outpatient services without the burden of lengthy hospital stays is quality of care itself (Dubin and Fink, 1986). However, a strong quality assurance program is necessary to ensure the integrity of professionals while utilization control is ensuring financial survival. Both of these tools must have measures or goals decided on in advance. An organization must delineate its values, goals, and procedures and the psychiatrists and other staff

members must adapt to them (Bittker, 1985). In developing a utilization review program , specific measures should also be employed. These can include such things as the national averages for length of stay and the number of sessions necessary for certain conditions. (Abramczyk and Forrester, 1989).

Purpose

The purpose of this study is to assess the needs for child and adolescent outpatient psychiatry in the San Antonio catchment area by identifying patient origins and the demographics and predominant diagnoses associated with utilization.

Methods and Procedures

Construction of the Project Model

One of the unique aspects of this study was the availability of specific and detailed secondary research data capable of manipulation as needed. As mentioned in the background portion of this paper, a market analysis was conducted in the San Antonio area as part of the formation of the child and adolescent mental health care proposal. The two secondary data sources used for the market analysis were the CHAMPUS published reports and the Resource Analysis and

Planning System (RAPS) of the Defense Medical Information System (DMIS)(Major Gary J. Triche, USAF, personal communication, 21 August 1990). Although these two data sources can provide one with general figures as related to catchment area populations and CHAMPUS workload by professional service category, the specificity of data necessary for many implementation decisions are not available. In addition, CHAMPUS reports and RAPS do not allow manipulation of the data with which one is presented.

The author used CHAMPUS billing data collected by the fiscal intermediary, Wisconsin Physician Services. This billing data is grouped as the Quick Response Detail File (QRDF) database and furnished to CHAMPUS who then archives the QRDF to tape. The Health Care Studies and Clinical Investigation Activity (HCS/CIA) of the Department of the Army's Health Services Command (HSC) can then put the QRDF into a useable format for manipulation. The QRDF allows access to specific CHAMPUS claims and any part of that claim. These claims in the QRDF are arranged as CHAMPUS Data Records. The CHAMPUS Data Records have a fixed and a variable portion. The fixed portion contains administrative data such as specific demographics and

billing data. The variable portions are related to the type of treatment being billed for and includes data about particular patient episodes.

The QRDF files pertaining to a one year period of San Antonio CHAMPUS billing for ambulatory professional services were uploaded into the Statistical Application System (SAS) software, U.S. Army Information Systems Command, Fort Detrick, Maryland, to facilitate manipulation and analysis. (Scott Optenberg, PhD., Statistician, HCS/CIA, personal communication, 20 August 1990) SAS is a fully integrated data management system which allows analysis of data and the generating of reports based on that data analysis. SAS creates special files called SAS data sets which contain the variables that are manipulated by SAS procedures. (SAS Basics I, 1989)

Table 1 lists the variables which were uploaded into the Fort Detrick main frame computer for this study and the SAS codes for each. Four of the variables narrowed the focus of data collection to the parameters of this study. The Billable MTF Code identified those military treatment facilities within the San Antonio catchment area (BAMC and WHMC) and thereby established the geographic area. The Claim Type identified only

those claims for professional services. The Inpatient - Outpatient Code indicated all claims for services on an outpatient basis. The Diagnosis Code was limited by instructions to select only those claims for treatment of mental disorders as identified by certain 4-digit International Classification of Disease - 9th Revision - Clinical Modification (ICD-9-CM) diagnosis codes. The remaining variables are discussed in later sections.

Table 1.

SAS Data Set Created for the Child Psychiatric Study

CHAMPUS/QRDF Variable	SAS Code
Amount Allowed for this Service	AAS
Amount Allowed - Total	AAT
Billable Military Treatment Facility	BMC
Counter (Date of claim plus 8 digit sequencer)	CNTR
Claim Type	CT
Diagnosis Code	DXCD
Inpatient/Outpatient Code	IOC
Number of Outpatient Visits	NOV
Patient Age	PA
Patient Date of Birth	PD
Patient Identification (Concatenates PD, PR, and SS1)	PTID
Patient Relationship to Sponsor	PR
Patient Sex	PS
Patient Zip Code	ZIPCODE
Procedure Code by Current Procedure Terminology - 4th Edition (CPT-4)	PC
Source of Care Identification Code	SIC
Source of Care Zip Code	SOCZIP
Sponsor Branch of Service	SBS
Sponsor Pay Grade	SPG
Sponsor Social Security Number	SS1
Sponsor Status	SS2
Total Government Pay	TGP

The period of time chosen for this study was fiscal year 1990 (October 1989 through September 1990). It was fortunate that such recent data was available at the time the analysis began. There were some assumptions associated with the selection of FY90 data. First, it was assumed, for the purposes of this study, that demand for child and adolescent outpatient mental health care and patterns of usage would remain essentially the same as it had been in the study period. Additionally, it was assumed that the behaviors of patients and their sponsors as consumers of mental health care would not change significantly. It was also assumed that certain things are important to patients or their sponsors and would continue to be so. These might include distance traveled for care and the amount they themselves must pay for care (as opposed to full third party payer coverage). We will make the assumption that the proposed tripling of CHAMPUS deductibles will go into effect in the near future. An assumption is made that those patients already in treatment will be willing or can be persuaded to go to the BAMC provider. Finally, we will

assume that the stigma of mental health care will not stop patients from coming to the BAMC clinic for treatment.

The population studied was all CHAMPUS beneficiaries 18 years of age or younger in the Brooke Army Medical Center and Wilford Hall Air Force Medical Center catchment areas who sought treatment for mental disorders under CHAMPUS. The sample included those persons in the chosen population who represented the highest cost to the government under CHAMPUS.

The reliability or dependability of the results is based upon an assumption that the data being generated by manipulation of the SAS data set is consistent in it's measurement. This was supported by exact similarity of like sums and other computations between different runs of data. Reliability is also based upon the assumption that measurement of data from another fiscal year would produce similar utilization and usage patterns related to child and adolescent mental health care under CHAMPUS in San Antonio. The validity was based on the representative sample for this study. The population being studied in this project is contained by specific constricted parameters. In

selecting a sample based on high cost and high volume subjects, the resulting large proportions certainly supported the assumption of representativeness of the sample.

As mentioned above, the patient identification variable was a concatenation of three different variables in the data base. Among these was the sponsor's social security number, a potentially sensitive piece of information. For this reason and because of the stigma usually associated with mental health care, and also because most of the study was completed during the staff contract bidding process, the author was extremely cautious in assuring the confidentiality of any programs run from the data set. In fact, the results of these computer runs, both the screen and hard copy versions, were not widely shown. In addition, the program within the SAS data base specifically related to this study could only be accessed through the use of a password. Only the author, the HCS/CIA Statistician, and one other researcher had access to the password. Finally, it must be remembered that none of the patients were

identified by their names. Therefore, a casual exposure to the data would not immediately reveal any potentially damaging information.

Determination of High Cost Areas

This was the first of three major segments of the needs assessment conducted for this study. One of the constructs of this research project dealt with the possibility of there being certain areas of the San Antonio catchment area with concentrations of patients for whom the federal government was paying out higher levels of CHAMPUS reimbursement funds for child and adolescent mental health care. Essentially, this segment was intended to answer the question, 'Where are the patients coming from as identified by patient zip code and as measured by total government pay for CHAMPUS services?'.

Using the SAS Data Set, a program was created which produced a descending order frequency count of total government pay expended per catchment area zip code. One aspect of this frequency program involved aggregating the total government pay units so that one unit represented one episode of care. An episode of care in the data base can be defined as a listing of all services associated with one claim as opposed to

single visit or procedure. One claim can be and usually is represented as several lines of different billable procedures, whether they be mental health counseling, laboratory work, or any other ancillary services or testing procedures. Since the government paid out a lump sum for all visits and procedures associated with that episode of care (or claim), the data base tags that total amount to each line. Therefore, the total government pay had to be aggregated across the several lines of one episode to assure erroneous multiples of total government pay were not associated with specific zip codes. In this way, falsely inflated frequency counts were prevented.

The resulting frequency count was analyzed to determine the highest cost zip codes. The analysis involved identifying the cut-off points for certain levels of total government pay as a percentage of the grand total across all zip codes in the catchment area. The highest cost zip codes were then grouped to form clusters based on the following: geographical situation within the catchment area, predominance of sponsor's branch of service, and predominance of sponsor's pay grade. In order to accomplish the clustering of zip codes, two more programs had to be created. The first

was a frequency count of sponsor's branch of service (e.g. Army, Air Force, Marines, Navy) within each zip code. The second program involved running a frequency count of sponsor's pay grade (Private through General) against each zip code.

Determination of High Cost Diagnoses

The second segment of the needs assessment study involved a construct related to the possibility that certain diagnoses would be more prevalent in terms of cost than others within the high cost areas identified earlier. This segment addressed the question, 'What (diagnoses) are the patients (within the high cost areas) presenting with - as identified by the 4 digit ICD-9-CM diagnosis code and as measured by total government pay for CHAMPUS services?'.

The program that was created using the SAS Data Set identified the total government pay in descending order by diagnosis only for the zip codes identified in the first segment of the study and only as clustered in that segment. As in the first segment, the total government pay was aggregated to avoid false inflation of the amounts. The frequency count that resulted was analyzed to determine the highest cost diagnoses per clustered zip code area. Cut-off points were identified

which represented specific levels of total government pay as a percentage of the grand total for all diagnoses within the different clusters.

It was then necessary to verify that there were no outlier zip codes with abnormally high cost diagnoses that had not been included in the original clusters. This was accomplished by modifying the total government pay by diagnosis program to include all zip codes in the catchment area. The resulting list was then analyzed for the highest cost diagnoses and compared to those diagnoses in the clusters to make sure that they had not been excluded.

Determination of the Prominent Demographics

The final segment of the needs assessment was concerned with a construct related to the possibility that, among those patients presenting with child and adolescent mental health disorders, there were prominent demographic characteristics which could serve to construct an average patient profile. This segment was intended to answer the question, 'Who are the patients (within the high cost areas) as identified by several pertinent demographic variables?'.

The SAS Data Set was used in running a program which performed a frequency count of five different

demographic variables. In order to obtain an accurate count, the Patient Identification (PTID) variable was aggregated. PTID consisted of a concatenation of three variables -- Patient Relationship to Sponsor (uses the Family Member Prefix, e.g. 02 for spouse or 03 for natural child), Sponsor Social Security Number, and Patient Date of Birth (Year-Month-Day). As TGP was in the earlier segments, PTID was repeated for every line of one patient episode (claim). For this reason, PTID in each episode had to be commonly linked in order to reflect one patient count and thereby avoid false counts.

A frequency count was performed for each cluster of zip codes for the following variables: Sponsor Branch of Service, Sponsor Status (active duty, retired, or deceased), Sponsor Pay Grade, Patient Sex, and Patient Age. In addition to the frequency counts, the means were determined by zip code cluster for each of the variables.

Results

The SAS Data Set for all CHAMPUS beneficiaries 18 years of age and under produced 20,491 observations. An observation is one line of data and consisted of the information related to one visit or procedure which was part of an episode of care. The data output was organized into 20 variable columns and the sequentially numbered observation column (1 through 20,491). All variables in Table 1 were listed as columns except Patient Date of Birth and Sponsor Social Security Number. These two variables were rolled up into the Patient Identification variable and so did not receive a separate column.

Analysis of High Cost Areas

The descending order frequency count of catchment area zip codes by total government pay (TGP) resulted in a listing of 91 zip codes for a grand total expenditure by the government of $1,728,479.82 (Table 2). However, the range was quite large, amounting to $155,721.84 from the highest to lowest cost per zip code.

Table 2.

Frequency of Total Government Pay by Zip Code

Total Zipcode	Grand Total Pay	Average/Zipcode
91	$1,728,479.82	$18,994.28

Max = $155,742.00 Min = $20.16

Summing the total government pay per zip code in descending order showed that 79.22% of the grand TGP was included in the first 20 zip codes - in other words, almost 80% of the catchment area costs were accounted for by approximately 22% of the zip codes.(Table 3).

Table 3.

Top 20 High Cost Areas

Zipcode	TGP	Cum Tot	% (of grand TGP)
78148	$155,742	$155,542	9.01
78250	$139,380	$295122	8.01
78245	$115,439	$410561	6.68
78239	$101,956	$512517	5.90
78233	$101,193	$613710	5.85
78234	$89,062	$702772	5.15
78244	$81,296	$784,068	4.70
78227	$76,601	$860,669	4.43
78247	$68,893	$929,562	3.99
78218	$52,616	$982,178	3.04
78236	$46,749	$1,028,927	2.70
78249	$46,306	$1,075,233	2.68
78109	$44,646	$1,119,879	2.58
78217	$41,299	$1,161,178	2.39
78240	$40,682	$1,201,860	2.35
78251	$40,045	$1,241,905	2.32
78154	$36,530	$1,278,435	2.11
78209	$34,722	$1,313,157	2.01
78226	$29,859	$1,343,016	1.73
78238	$26,128	$1,369,144	1.51

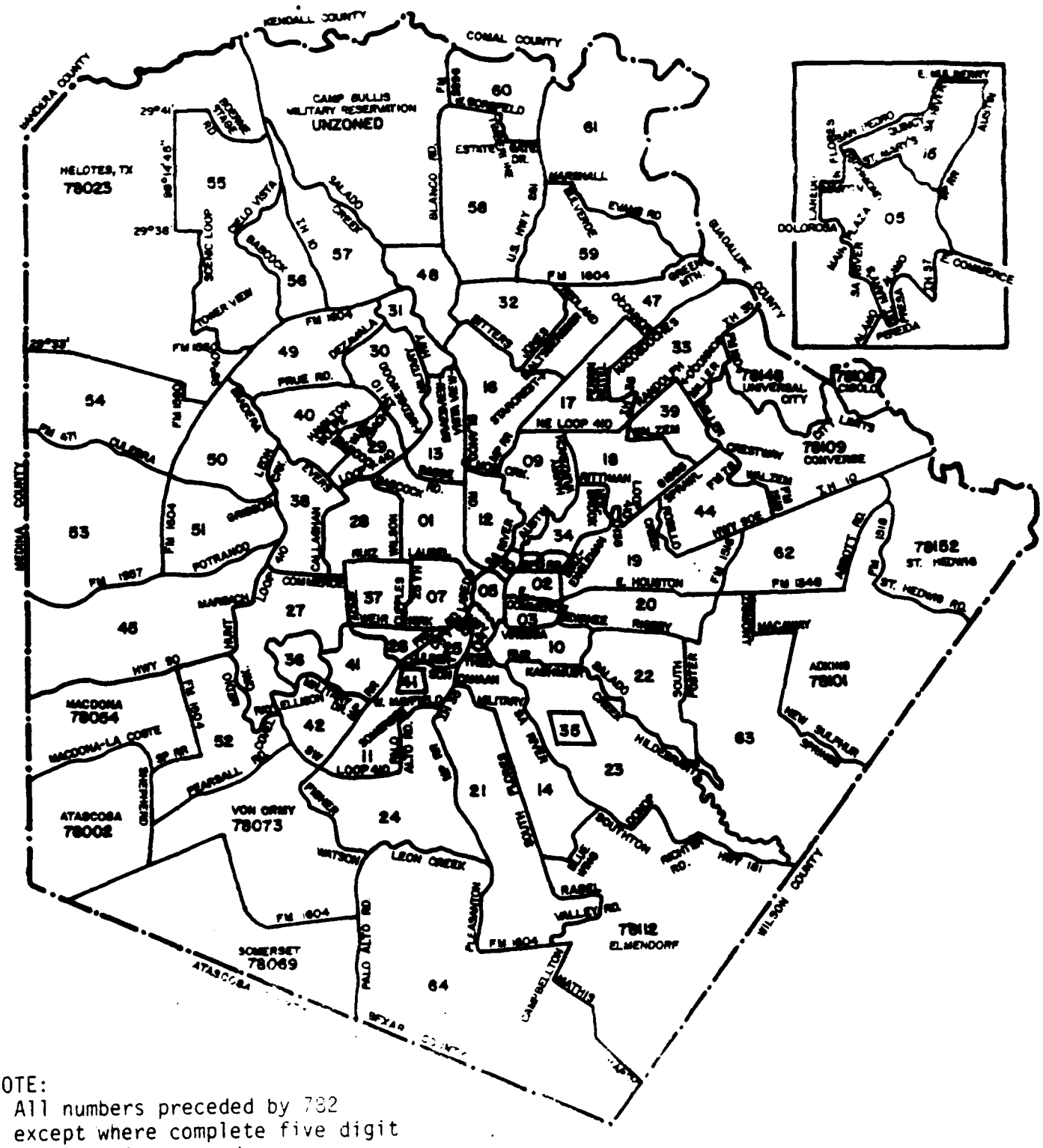
The author believed that concentrating certain zip codes together would enable a more realistic needs assessment and more intense marketing efforts than would be possible with a general, and perhaps disjointed , effort across the catchment area or even the top 20 as a whole. It was felt that certain zip codes in the top 20 would share unique characteristics. These characteristics were geographic location, sponsor branch of service (SBS), and sponsor pay grade (SPG).

Proximity of geographic location was definitely shared within the top 20 high cost zip codes (see Figure 1). In fact, these top 20 were centered around the four largest military installations in the catchment area (Table 4). Lackland and Kelly Air Force bases are collocated in the west central part of San Antonio and therefore could count as one area of zip code concentration. Lackland is an Air Force training base with a population of approximately 22,392 (SGT Mark Reinitz, Community Relations, Public Affairs, Lackland Air Force Base, personal communication, 25 April 1991). It is also the home of Wilford Hall Medical Center which has an overlapping catchment area with Brooke Army Medical Center. Kelly Air Force Base

ZIP CODE MAP

SAN ANTONIO-BEXAR COUNTY

FIGURE 1



NOTE:
All numbers preceded by 782
except where complete five digit
zip code is entered.

is an air logistics center with a population of 4,700 military personnel. It also has an outpatient clinic (1LT Dave Ebner, Public Affairs Office, Kelly Air Force Base, personal communication, 26 April, 1991).

Table 4.

Relation of Top Zip Codes to Military Installations

Lackland/Kelly AFB	Ft.Sam Houston	Randolph AFB
78226	78209	78109
78227	78217	78148
78236	78218	78154
78238	78234	78247
78240	*78233	
78245	*78239	
78249	*78244	
78250		
78251		

*These 3 zip codes were located exactly between the 2 military installations.

Fort Sam Houston is primarily an Army medical training post with a population of approximately 10,000 military personnel and the home of the 645 bed Brooke Army Medical Center (Ray Dery, Public Affairs Officer, BAMC, personal communication, 26 April 1991). Randolph Air Force Base is a flight training and military support base with an approximate population of 5,367 military personnel. It also has an extensive outpatient clinic (Sergeant Susan Miller, Community Relations, Public Affairs Office, Randolph Air Force Base, personal communication, 25 April 1991).

The frequency count of Sponsor Branch of Service observations by the 20 highest zip codes supported the connection of zip codes on the west side since the SBS was substantially Air Force in those zip codes (Table 5). It also supported the concentration of zip codes in the central sections around Fort Sam Houston and in the northeast around Randolph.

Table 5.

Geographic Location and Predominant SBS Per Zipcode

ZIPCODE	LOCATION	SBS/%
78109	Northeast	AF/65
78148	Northeast	AF/90
78154	Northeast	AF/71
78209	Central	Army/80
78217	Central	Army/71
78218	Central	Army/76
78226	Southwest	AF/97
78227	Southwest	AF/89
78233	Northeast	AF/46, Army/43
78234	Central	Army/99
78236	Southwest	AF/99
78238	Southwest	AF/91
78239	Northeast	AF/55, Army/43
78240	Northwest	AF/74
78244	Northeast	AF/50, Army/44
78245	Southwest	AF/88
78247	Northeast	AF/69
78249	Northwest	AF/60
78250	Northwest	AF/77
78251	Southwest	AF/86

Catchment Total Obs/% - Air Force = 12,966/63.28%
Catchment Total Obs/% - Army = 6,413/31.30%
Catchment Total Obs/% - Marine = 348/ 1.70%
Catchment Total Obs/% - Navy = 764/ 3.73%

The assignment of 78217 to the central area was supported by the substantial Army SBS and the assignment of 78247 to Randolph because of the amount of Air Force SBS. However, the three border zip codes - 78233, 78239, and 78244 - were still not connectable to Fort Sam Houston or Randolph since the SBS's were so evenly split between Army and Air Force.

The frequency count of Sponsor Pay Grade by the 20 highest cost zip codes distinguished certain zip codes in the west side of town. Those in the southwest section (as distinguished by a line extending west along Commerce Street and beyond - *see* Figure 1) contained predominately noncommissioned officer (NCO) pay grades (i.e. E5 - E7). Those zip codes in the northwest, although containing large percentages of NCO's, were the only areas on the west side with substantial percentages of officer pay grades (i.e. 03 - 05). The west side was therefore divided into two different clusters of zip codes: Cluster A representing the northwest zip codes and Cluster B representing the southwest zip codes (Table 6).

Table 6.

ZIP CODE CLUSTERS A THROUGH E

Cluster	Zipcodes	Nearest Installation
A	78238	Lackland/Kelly
*	78240	*
*	78249	*
*	78250	*
A	78251	Lackland/Kelly
B	78226	Lackland/Kelly
*	78227	*
*	78236	*
B	78245	Lackland/Kelly
C	78209	FSH
*	78217	*
*	78218	*
C	78234	FSH
D	78233	Randolph/FSH
*	78239	*
D	78244	Randolph/FSH
E	78109	Randolph
*	78148	*
*	78154	*
E	78247	Randolph

Note:

Lackland/Kelly are jointly located AF bases.

FSH is Fort Sam Houston - Army post.

Randolph is an Air Force base.

The group of zip codes immediately around Fort Sam Houston and with the addition of 78217 were designated Cluster C based on geographic location and branch of service. Sponsor pay grade within these zip codes contained substantial percentages of both officer and NCO ranks and so did not have any distinguishing effects. The three zip codes forming a border between Fort Sam Houston and Randolph displayed SPG's which did not warrant assignment to one or the other installation since the spreads of SPG were similar to those of both areas. For this reason and because the SBS was approximately evenly split between Air Force and Army, a special "border" cluster was established and labeled Cluster D.

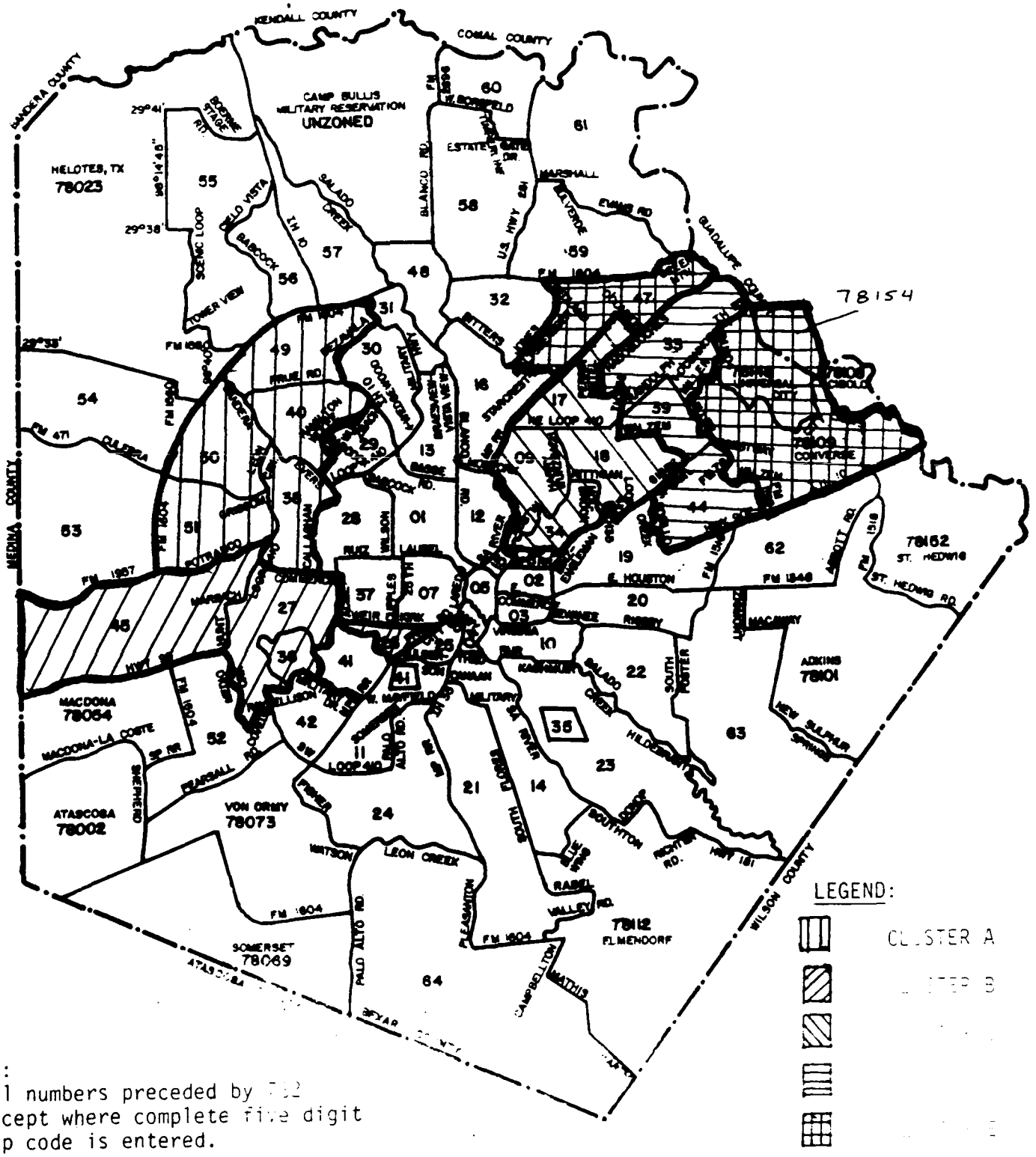
The final cluster therefore consisted of those zip codes immediately around Randolph Air Force Base and also included the predominantly Air Force zip code, 78247. This fifth and final cluster was labeled Cluster E. Figure 2 portrays a map of the catchment area with the clusters marked.

ZIP CODE MAP

SAN ANTONIO-BEXAR COUNTY

FIGURE 2

(WITH ZIP CODE CLUSTERS)



NOTE:
All numbers preceded by 782
except where complete five digit
zip code is entered.

Analysis of High Cost Diagnoses

The descending order frequency counts of Total Government Pay by Diagnostic Code (DXCD) which was run for each cluster of zip codes resulted in at least 80% of the cluster TGP being represented by the first 10 DXCDs. This was true in each of the clusters (Tables 7 - 11). See Appendix 1 for an explanation of the diagnostic codes.

Table 7.

High Cost Diagnostic Codes - Cluster A

DXCD	DESCRIPTION	TGP	PERCENT OF CLUSTER TGP
3004	Neurotic Depression	86,109	29.43
3130	Overanxious Disorder	38,429	13.14
3092	Adjust Reac - Emotions	36,980	12.64
3138	Mixed Emotion Disturb	28,863	9.87
2962	Major Depr Dis - Sngl	17,243	5.89
3094	Adjust Reac - Mixed	14,193	4.85
3140	Attention Deficit Dis	13,514	4.62
3122	Socialized Conduct Dis	9,218	3.15
3093	Adjust Reac - Conduct	5,825	1.99
3090	Brief Depress Reaction	5,613	1.92
	TOTAL	$255,987	87.50%
	TOTAL FOR CLUSTER	$292,544	

Table 8.

High Cost Diagnostic Codes - Cluster B

DXCD	DESCRIPTION	TGP	PERCENT OF CLUSTER TGP
3004	Neurotic Depression	66,126	24.59
3130	Overanxious Disorder	32,249	11.99
3138	Mixed Emotion Disturb	29,482	10.97
3092	Adjust Reac - Emotions	27,551	10.25
3094	Adjust Reac - Mixed	24,029	8.94
2962	Major Depr Dis - Sngl	18,732	6.97
3140	Attention Deficit Dis	16,937	6.30
3090	Brief Depress Disord	10,626	3.95
3098	Other Adjustment Reac	7,601	2.83
3129	Unspec Disturb - Cond	3,053	1.14
	TOTAL	$236,386	87.92%
	TOTAL FOR CLUSTER	$268,861	

Table 9.

High Cost Diagnostic Codes - Cluster C

DXCD	DESCRIPTION	TGP	PERCENT OF CLUSTER TGP
3004	Neurotic Depression	65,791	30.14
3130	Overanxious Disord	28,677	13.14
3092	Adjust Reac - Emotion	18,124	8.30
3094	Adjust Reac - Mixed	15,731	7.21
3090	Brief Depress Reac	10,554	4.83
2962	Major Depr Dis - Sngl	10,386	4.76
3138	Mixed Emotion Disturb	10,363	4.75
3140	Attention Deficit Dis	9,837	4.51
7805	Sleep Disturbance	6,412	2.94
3110	Depressive Disorder	6,076	2.78
	TOTAL	$181,951	83.35%
	TOTAL FOR CLUSTER	$218,292	

Table 10.

High Cost Diagnostic Codes - Cluster D

DXCD	DESCRIPTION	TGP	PERCENT OF CLUSTER TGP
3004	Neurotic Depression	77,987	27.41
3130	Overanxious Disorder	47,100	16.55
3092	Adjust Reac - Emotion	28,447	10.00
3138	Mixed Emotion Disturb	25,682	9.03
3140	Attention Deficit Dis	19,149	6.73
3090	Brief Depress Reac	11,720	4.12
3000	Anxiety States	10,180	3.58
3094	Adjust Reac - Mixed	7,823	2.75
2962	Major Depr Dis - Sngl	6,339	2.23
3122	Social Conduct Disord	6,100	2.14
	TOTAL	$240,527	84.54%
	TOTAL FOR CLUSTER	$284,514	

Table 11.

High Cost Diagnostic Codes - Cluster E

DXCD	DESCRIPTION	TGP	PERCENT OF CLUSTER TGP
3004	Neurotic Depression	84,109	27.50
3130	Overanxious Disorder	35,021	11.45
3092	Adjust Reac - Emotion	32,825	10.73
3138	Mixed Emotion Disturb	32,492	10.62
3094	Adjust Reac - Mixed	27,801	9.09
2962	Major Depr Dis - Sngl	14,606	4.78
3140	Attention Deficit Dis	11,699	3.83
3090	Brief Depress Reac	7,038	2.30
3122	Social Conduct Disord	6,862	2.24
3110	Depressive Disorder	6,056	1.98
	TOTAL	$258,509	84.53%
	TOTAL FOR CLUSTER	$305,815	

The descending order frequency count of TGP by DXCD for the entire catchment area produced 108 different diagnostic codes for which the government had made payment. The first 10 of these accounted for 83.60% of the catchment area TGP for DXCD or $1,444,945 out of $1,728,480 (Table 12). There were 5 diagnostic codes in the top ten of 4 clusters that were not in the catchment area top ten. However, these 5 DXCDs were contained within the catchment area's top seventeen. The 5 DXCDs were 3093 in Cluster A, 3098 and 3129 in Cluster B, 7805 in Cluster C, and 3000 in Cluster D (numbered 17, 12, 16, 14, and 13 respectively in the catchment area).

Table 12.

High Cost Diagnostic Codes - Catchment Area

DXCD	DESCRIPTION	TGP	PERCENT OF CATCH AREA
3004	Neurotic Depression	483,795	27.99
3130	Overanxious Disorder	229,983	13.31
3092	Adjust Reac - Emotion	168,906	9.77
3138	Mixed Emotion Disturb	156,377	9.05
3094	Adjust Reac - Mixed	106,603	6.17
2962	Major Depr Dis - Sngl	94,549	5.47
3140	Attention Deficit Dis	87,555	5.07
3090	Brief Depress Reac	58,518	3.39
3122	Social Conduct Disord	30,883	1.79
3110	Depressive Disord NOS	27,776	1.61
	TOTAL	$1,444,945	83.60%

Analysis of the Prominent Demographics

The frequency counts of Patient Age by Patient Identification (number of patients) per cluster produced a total count of patients seen within each cluster regardless of the number of visits (Table 13).

Table 13.

Patient Age By Number of Patients Per Cluster

AGE	A #(%)	B #(%)	C #(%)	D #(%)	E #(%)
0	2(.5)	4(1.1)	1(.3)	0(0)	0(0)
1	1(.3)	3(.8)	4(1.4)	2(.6)	0(0)
2	3(.8)	7(1.9)	4(1.4)	3(.9)	2(.5)
3	3(.8)	9(2.5)	8(2.7)	2(.6)	5(1.3)
4	5(1.3)	7(1.9)	5(1.7)	1(.3)	6(1.6)
5	8(2.0)	14(3.9)	6(2.1)	4(1.2)	7(1.9)
6	13(3.3)	21(5.8)	16(5.5)	18(5.5)	14(3.7)
7	20(5.1)	24(6.6)	14(4.8)	18(5.5)	8(2.1)
8	18(4.6)	21(5.8)	18(6.2)	19(5.8)	13(3.4)
9	23(5.9)	27(7.5)	15(5.1)	16(4.9)	19(5.0)
10	25(6.4)	20(5.5)	23(7.9)	24(7.3)	18(4.8)
11	25(6.4)	27(7.5)	19(6.5)	22(6.7)	17(4.5)
12	33(8.4)	32(8.8)	23(7.9)	25(7.6)	30(8.0)
13	35(9.0)	31(8.6)	17(5.8)	27(8.2)	38(10.1)
14	39(10.0)	19(5.2)	21(7.2)	37(11.3)	39(10.3)
15	42(10.7)	35(9.7)	33(11.3)	35(10.7)	53(14.1)
16	37(9.5)	28(7.7)	32(11.0)	24(7.3)	37(9.8)
17	32(8.2)	19(5.2)	24(8.2)	30(9.1)	42(11.1)
18	27(6.9)	14(3.9)	9(3.1)	21(6.4)	29(7.7)
TOTAL	391	362	292	328	377
MEAN	12.32	10.90	11.53	12.24	12.95
MODE	15	15	15	14	15

The N's for each cluster, with the exception of one, are relatively close (Cluster C being the notable exception). The means range from 10 to almost 13 years old. However, the standard deviations for age among the

clusters were quite large and suggest a more reasonable measure of centrality might be the mode which was a much higher 15 years old in 4 out of the 5 clusters.

The Society for Adolescent Medicine considers adolescence as beginning at age 13 (COL John A. Baker,M.D., Chief, Adolescent Medicine Service, BAMC, personal communication, 24 April 1991). However, the Department of Defense (Health Affairs) disagrees with this beginning date. In a recent report to Congress on the state of mental health care cost control, DOD refers to adolescents as being 10 to 19 years old (Department of Defense, 1991). For these reasons and because the larger frequencies started appearing around age 10, the frequency counts of patient age were analyzed for summed percentages across both 10 - 18 and 13 - 18 years of age (Table 14).

Table 14.

High Frequency Age Groups

AGES	A	B	C	D	E
10-18 Y. O.	75.5%	62.1%	68.9%	74.6%	80.4%
13-18 Y. O.	54.3	40.3	46.6	53.0	63.1

Finally, there were certain frequency bulges among some of the ages that deserve mentioning. These occurred both within and outside of the adolescent age groupings (refer to Table 13). In 4 of the 5 clusters,

there is a high percentage of patients in the midteen year group (e.g. 13-15 or 14-15).One of the most notable frequency bulges is that appearing among the early school year ages - 5 to 9 in Cluster B (29.60%). These ages would represent kindergarten through 4th grade. To a lesser extent, Clusters C and D reflect the same early age bulge in the 6 to 9 year olds (21.48% and 21.70% respectively).

The frequency counts of Patient Sex by Patient Identification did not produce an excessive majority of either male or female patients in any of the clusters (Table 15). Although the males were predominant in all of the clusters, the females had a substantial count as well. The most notable results of the patient sex analysis is the spread of males and females in Clusters A through D. The proportions are almost duplicated across these clusters.

Table 15.

Patient Sex by Number of Patients Per Cluster

	A	B	C	D	E
SEX	#(%)	#(%)	#(%)	#(%)	#(%)
1=M	236(60.4)	229(63.3)	176(60.3)	198(60.4)	206(54.6)
2=F	155(39.6)	133(36.7)	116(39.7)	130(39.6)	171(45.4)
TOTAL	391	362	292	328	377
MEAN	1.40	1.37	1.40	1.40	1.45
MODE	1	1	1	1	1

The frequency counts for Sponsor Branch of Service by Patient Identification reflected a definite majority in each of the clusters except Cluster D - the "border" cluster (Table 16). Of course, Air Force is the predominant branch across the catchment area as a whole with 3 of the 5 clusters showing a substantial number of Air Force patients. This is to be expected since the number of Air Force bases in the San Antonio area (4) far outnumber that of any other service. In fact, the 3 clusters with large numbers of Air Force patients are all concentrated around Air Force bases just as the one Army predominant cluster is located immediately around Fort Sam Houston. However, one notable area is Cluster E which, although predominantly Air Force, does contain over 20% Army patients. Cluster D is almost evenly split between Army and Air Force. The Navy and Marine Corps branches did not amount to much in any of the clusters. Their best showing was in Cluster A with a combined total of a mere 7.4%.

Table 16.

Branch of Service by Number of Patients Per Cluster

SBS	A #(%)	B #(%)	C #(%)	D #(%)	E #(%)
1 Army	62(15.9)	31(8.6)	247(84.6)	144(43.9)	78(20.7)
2 AF	300(76.7)	313(86.5)	35(12.0)	166(50.6)	289(76.7)
3 Marine	14(3.6)	3(0.8)	3(1.0)	3(0.9)	4(1.1)
4 Navy	15(3.8)	15(4.1)	7(2.4)	15(4.6)	6(1.6)
TOTAL	391	362	292	328	377
MEAN	1.95	2.01	1.21	1.66	1.84
MODE	2	2	1	2	2

The frequency count for Sponsor Pay Grade by Patient Identification showed the same tendencies that the Patient Age count had shown (Table 17). The pay grades E1 through E9 represent the enlisted military ranks of Private through Sergeant Major. E5 through E9 represent the noncommissioned officer ranks. O1 to O6 reflect the officer ranks of Second Lieutenant through Colonel and O7 and O8 are General ranks. The W1 through W4 are Warrant Officer ranks. See Appendix 2.

Table 17.

Sponsor Pay Grade by Number of Patients Per Cluster

GRADE	A #(%)	B #(%)	C #(%)	D #(%)	E #(%)
1=E1	1(.3)	1(.3)	0(0)	2(.6)	0(0)
2=E2	0(0)	0(0)	0(0)	0(0)	2(.5)
3=E3	3(.8)	2(.6)	8(2.7)	1(.3)	2(.5)
4=E4	12(3.1)	28(7.7)	26(8.9)	9(2.7)	13(3.4)
5=E5	35(9.0)	102(28.2)	36(12.3)	23(7.0)	38(10.1)
6=E6	68(17.4)	106(29.3)	62(21.2)	69(21.0)	51(13.5)
7=E7	94(24.0)	74(20.4)	58(19.9)	97(29.6)	91(24.1)
8=E8	24(6.1)	14(3.9)	18(6.2)	30(9.1)	33(8.8)
9=E9	17(4.3)	3(.8)	5(1.7)	11(3.4)	19(5.0)
10=01	1(0.3)	1(.3)	1(.3)	1(.3)	0(0)
11=02	4(1.0)	3(.8)	1(.3)	3(.9)	3(.8)
12=03	43(11.0)	17(4.7)	13(4.5)	36(11.0)	32(8.5)
13=04	46(11.8)	9(2.5)	27(9.2)	21(6.4)	43(11.4)
14=05	29(7.4)	1(.3)	12(4.1)	16(4.9)	35(9.3)
15=06	6(1.5)	0(0)	18(6.2)	3(.9)	9(2.4)
16=07	0(0)	0(0)	0(0)	0(0)	0(0)
17=08	1(.3)	0(0)	0(0)	0(0)	0(0)
18=W1	0(0)	0(0)	1(.3)	1(.3)	0(0)
19=W2	4(1.0)	0(0)	2(.7)	0(0)	1(.3)
20=W3	2(.5)	0(0)	3(1.0)	3(.9)	0(0)
21=W4	1(.3)	0(0)	1(.3)	1(.3)	2(.5)
TOTAL	391	361*	292	327*	374*
MEAN	9.00	6.05	8.14	8.27	8.80
MODE	7(E7)	6(E6)	6(E6)	7(E7)	7(E7)

*Totals slightly reduced due to missing billing information.

The frequencies of pay grade are primarily accounted for by the NCO ranks, specifically E5 - E7. In fact, all clusters reflect a mode of either E6 or E7. However, all clusters except B show some definite strength in the officer numbers, particularly O3 to O5. The mean for most of the clusters hovers somewhere around the rank of Sergeant Major (E-9). However, these numbers are probably skewed by the strong officer numbers mentioned above since they received a greater weight in the computations of means. This is supported by the fact that Cluster B, without a substantial number of officers, showed a much lower mean (E-6). Thus, the mean equals the mode in that cluster. A better indicator in the other 4 clusters would probably be the modes while keeping in mind that the numbers among the officers cannot be ignored.

The results of the Sponsor Status by Patient Identification frequency counts showed a clear majority of one category in all of the clusters (Table 18). The categories for this variable include active duty (AD), retired, and deceased. As might be expected, the active duty status far outweighed the other categories. However, the retired category had substantial numbers in all the clusters and must be considered. The

deceased status was generally small with the highest showing being a 2% in Cluster A. The spreads of sponsor status show an interesting similarity between some of the clusters (e.g. clusters A and D or clusters B, C, and E).

Table 18.

Sponsor Status by Number of Patients Per Cluster

STATUS	A #(%)	B #(%)	C #(%)	D #(%)	E #(%)
1 AD	260(66.5)	279(77.1)	222(76.0)	215(65.5)	281(74.5)
2 Ret	123(31.5)	80(22.1)	65(22.3)	109(33.2)	89(23.6)
3 Dec	8(2.0)	3(.8)	5(1.7)	4(1.2)	7(1.9)
TOTAL	391	362	292	328	377
MEAN	1.36	1.24	1.26	1.36	1.21
MODE	1	1	1	1	1

DISCUSSION

High Cost Areas (Patient Origins)

Although the QRDF data for this study shows a total of 91 zip codes producing child and adolescent mental health patients seeking outpatient care under CHAMPUS, the usefulness of that information may be lacking. The range of zip codes from highest to lowest expenditure of total government pay illustrates that a great many areas are only producing one or a few patients. Since recapture of CHAMPUS dollars is the focus of the BAMC outpatient clinic project, it would be more cost effective to disregard those low cost zip codes in any marketing efforts. This is the reason that analysis of the data concentrated only on the high cost areas.

The sample of child and adolescent mental health patients seeking care in this catchment area are all coming from the San Antonio area. In fact, as expected, the overwhelming majority of patients are centered around the largest military installations in the city. There are no patients traveling great distances to seek care from specific providers in San Antonio. However, 753 of the total sample are originating from the far west side of the town. This represents 43.03% of the sample with 997 or 56.97% in

the central to northeast corridor. This could possibly pose a problem since the BAMC clinic is actually located on the east central side of the city, forcing patients from the west side to drive anywhere from 25 to 35 minutes in possibly heavy traffic. Therefore, the question becomes, "will 43% of the patients be willing to travel that far for treatment?"

Current plans for the clinic project do not call for either mandatory use of the clinic or the requirement that one obtain a nonavailability statement for outpatient care under CHAMPUS. This means that patients (or their sponsors) may choose to use a CHAMPUS provider rather than drive the distance to the BAMC clinic. This may be further complicated by earlier use of a particular CHAMPUS provider. Will patients already under care or returning for another episode of care to a nearby CHAMPUS provider be willing to forego that provider and travel to the BAMC clinic? In addition, the child and adolescent mental health care project will be focusing on outpatient care in an attempt to save inpatient costs. This will entail more visits than in the past under CHAMPUS when one or two visits were all that was required before a patient was admitted to an inpatient facility. So, even if a

currently or formerly used CHAMPUS provider is as far away from the patient's origin as the BAMC clinic, will those patients now travel that distance many more times for treatment?

These questions raised by the proposed location of the clinic and the distance that a large percentage of the patients would have to travel can best be answered with historical experience. The Department of Psychiatry at BAMC has a small Adolescent and Child Psychiatry Service that sees patients for referral to ChAMPUS providers. According to the Chief of that service, Dr. Ted Cottrell, only patients residing on the east to northeast side of town have ever been seen at his service. He feels certain that patients are not willing to travel from the west side of town for treatment. Of course, this is impacted by the fact that Wilford Hall Medical Center at Lackland Air Force Base on the west side has it's own better staffed, though still small, child and adolescent mental health clinic (Dr. Ted Cottrell, personal communication, 6 May 1991).

If distance will indeed have such a significant impact on the use of the BAMC clinic, would it be

worthwhile to market primarily or even exclusively to those areas where distance is not a factor? Again, we must look at the amount of CHAMPUS recapture we can expect. Clusters A and B on the west side account for $524,848 or 30.36% of the catchment area TGP. Clusters C, D, and E on the east central to northeast side account for $808,621 or 46.78% of the total. Clearly, the west side represents too much of the equation to ignore.

The geographic location of the patients can also speak of social class considerations (a psychographic segmentation variable). Kotler states that social classes can be determined by 4 characteristics - income, occupation, education, and type of residence (1987). Income is dictated by the pay grade of the sponsors and will be addressed in the patient profile discussion. All of the sponsors within the sample have basically the same occupation as a service member in the armed forces. We can generally establish social classes within the sample by looking at the types of residences that are predominant in the various neighborhoods of the different clusters. Cluster A would therefore be described as upper middle class, Cluster B as middle to lower middle class, Cluster C as

a mix of upper middle down to lower middle class, Cluster D as middle to lower middle class, and Cluster E as middle to lower middle class.

These various classes can indicate the education levels of the sample with the higher classes being more indicative of a higher educational level. This would mean that those persons might be better informed regarding medical treatment, sources of treatment, and expected outcomes. These same sponsors might be more easily persuaded to use the BAMC clinic if emphasis on outpatient care is stressed in the marketing effort.

High Cost Diagnoses

The types of mental illness being presented are even more concentrated than the geographic locations of patients. Only 10 diagnostic codes are necessary to capture over 80% of the total government pay in each of the clusters (in most clusters, nearly 85% or more). This represents a wonderful marketing opportunity since a concentrated focus is possible. Overall, across all clusters, only 15 diagnostic codes, or 8.33% of all diagnostic codes in the catchment area, accounts for 67.88% of the catchment area TGP ($1,173,360 out of $1,728,480).

The 15 high cost diagnostic codes can be categorized according to their general disorder characteristics. The first category of DXCD's involve adjustment reactions. It includes 3092 - adjustment reaction (with disturbance of emotions), 3138 - mixed emotional disturbances, 3093 - adjustment reaction (with disturbance of conduct), 3094 - (with mixed disturbance of emotion and conduct), and 3098 - other adjustment reactions.

The second category involves depressions (dysthymia). Included here are 3004 - neurotic depression (the highest cost DXCD across the catchment area), 2962 - major depressive disorder (single episode), 3090 - brief depressive reaction, and 3110 - depressive disorder.

The third category deals with pure conduct disorders and excludes conduct related to adjustment reaction. It includes 3122 - socialized conduct disorder, 3140 - attention deficit disorder (commonly associated with conduct disorders), and 3129 - unspecified disturbance (conduct).

The fourth is related to anxiety disorders and includes 3000 - anxiety states (a variety of possible

illnesses associated with one type of anxiety or another), and 3130 - overanxious disorder.

Finally, there is one diagnostic code in a category by itself. This is 7805 - sleep disturbances. This DXCD involves insomnia that is not related to mental disorders but rather to a physical condition, medications, or substance abuse.

There are 4 DXCD's from the categories above which are commonly used by providers prior to admitting for inpatient care. These are 2962 - major depressive disorder (single episode), 3122 - socialized conduct disorder, 3093 - adjustment reaction (with disturbance of conduct), and 3129 - unspecified disturbance (conduct). It is difficult to say whether these DXCD's would be as prevalent in an outpatient focused setting such as the BAMC clinic. However, it is reasonable to assume that the other DXCD's could and probably would be treated on an outpatient basis.

Dr. Cottrell stated that the high cost diagnostic codes identified in this study were common among children and adolescents with the exception of 2962 - major depressive disorder which he considers rare for the under 19 age group (personal communication, 6 May 1990) . The commonality of the DXCD's to children is

borne out to a certain extent for a few of the codes analyzed in the DSM-III-R of the American Psychiatric Association (1987). In fact, four of the codes are found in a chapter specifically devoted to disorders in infancy, childhood, or adolescence. Overall, information on age is included in the manual on 8 of the 15 DXCD's. The manual states that onset of the particular disorder during childhood or adolescence is common in 6 of the 8. These 6 codes are 3140, 3120, 3122, 3129, 3092, and 3138. Unfortunately, information on age at onset is unavailable in the manual on 5 of the DXCD's. Information on prevalence of the diagnoses at different ages is unavailable for all of the DXCD's.

Information on the sex of the patients among the DXCD's is somewhat more available in the manual (9 of the 15 DXCD's). Four of the codes were similar to this study's data in that the manual stated the disorder was equally common in both sexes. These four are 3092, 3130, 3004, and 3000. Four of the DXCD's (3140, 3120, 3122, and 3129) showed prevalence among males were several times that of females. Another interesting DXCD was 2962 which was found to be twice as common among females as males.

The proposed staffing for the BAMC clinic would be adequate to meet the needs of the prominent diagnoses identified in this study (Dr. Cottrell, personal communication, 6 May 1991). The treatment staff would include a child psychiatrist, clinical psychologists, clinical social workers, occupational therapists, child and family therapists, and psychiatric technicians (Performance Work Statement, 1991).

Patient Profile (Demographics)

If one merely looked at the demographic data across all of the clusters on a general level, the patient profile could be described as an adolescent (aged 10 to 18) male dependent of an active duty Air Force E-6 or E-7. However, there are both glaring exceptions and small nuances of difference throughout the clusters which must be considered in any marketing effort of the BAMC clinic.

It is obvious from the data that marketing efforts could concentrate on an expanded adolescent segment of 10 to 18 year olds. This would allow us to market to over 60% of the patients in any of the clusters. Actually, the range would be from 62.1% in Cluster B to 80.4% in Cluster E. This adolescent marketing segment is also supported by the midteen bulges (high numbers)

seen in 4 of the 5 clusters (Cluster B being the exception).

Of course, the adolescent span in Cluster B is offset by the substantial number of 5 to 9 year olds. This poses a need to consider this age group when formulating a marketing effort for Cluster B. For the same reason, the 6 to 9 year olds must be considered in Clusters C and D.

With the above information in mind, the question then becomes one of either concentrating your marketing efforts toward all of the high frequency age groups, i.e. adolescence as a whole, midteens, early age (5 -9); or merely concentrating on one predominant segment within each of the clusters.

In the demographic variable of patient sex, the data shows a fairly even spread between males and females. This spread is about 60% - 40% in most of the clusters. This points to a need to treat gender indiscriminately in our marketing efforts.

The Branch of Service of the patient's sponsors is largely Air Force across the catchment area. However, the branch of service opening the BAMC clinic is, of course, Army. Therefore, the gatekeeper to the Air Force inpatient facility at WHMC will be Army. This

necessitates additional effort be made to include both branches in the marketing effort. It is important not to let the fact that the clinic is located at Fort Sam Houston lull the staff into thinking that since the word is getting out to the Army, that everyone served by the clinic is well aware of it.

At any rate, it will be necessary to construct a two branch marketing effort for Cluster D where the Army and Air Force are almost evenly split. Additionally, it will be a necessary challenge to market to the patients and their sponsors far over on the west side (clusters A and B). It must also be remembered that Cluster E cannot receive a straight Air Force marketing effort since over 20% of the patients are Army.

Among the Sponsor Pay Grade data, there is an overall concentration of E-5 to E-7. However, a lot of attention must be given to the officer ranks in Clusters A and C through E. Three officer ranks (O3 - O5) in Clusters A, D, and E have substantial frequencies - 20% - 30% of their respective clusters. Although the number of officer ranks that must be

addressed increases to 4 in Cluster C (03 - 06), the result is a hefty 24% of the cluster. This would make the marketing effort worthwhile.

More than anything else, SPG is probably related to the age of the patients. The general age of the service members at these ranks roughly correspond to the age of a parent who would be in the child rearing years, particularly the teen years. This basically explains the concentrations of pay grades in generally the middle of the NCO and officer ranks.

Whereas patient origin, or location, was a general reflection of socioeconomic levels, SPG is a more specific and measurable indicator. According to Kotler (1987), income is an old and popular segmenter. Income can determine whether a person can receive psychiatric long term care, for example. A person's insurance may determine whether the person must seek care in a public rather than private facility. As related to this study, the majority of the patients can afford to seek private care under CHAMPUS. Both the senior NCOs and most of the officers have disposable income sufficient to meet the needs of the required cost share. This may not be true of the lower grade NCOs.

The current cost share for psychiatric care under CHAMPUS includes both an annual deductible and a moderate copay per visit or inpatient stay. However, there is an impressive increase programmed for FY 92. It will raise both the deductible and the copay as well as reduce the amount of days authorized for inpatient psychiatric care (DOD, 1991). This will definitely impact on the BAMC clinic and must be remembered in formulating marketing efforts.

Clearly, Sponsor Status across the catchment area is largely active duty. This is to be expected in a catchment area which includes so many training installations. However, due to the fact that several large military bases and two large military medical centers are located in San Antonio, it has become a respectable retirement community for many former active duty service members. This is reflected in the data which shows substantial numbers of retirees in the catchment area.

Particularly popular with retirees are Clusters A and D with over 30% retirees in each. However, no cluster contains less than 22% retirees. For this reason alone, it would be important to consider the retirees in marketing efforts. However, in this

community, retirees have a significant social and political power base that goes well beyond their sheer numbers.

It has been well documented that the military retirees of San Antonio are capable of substantial influence, particularly in the area of health care, a natural concern for older persons. For these reasons, it is extremely important that the BAMC clinic marketing effort include both the active duty and retirees.

Conclusions and Recommendations

This management project has addressed the lack of child and adolescent psychiatric services at Brooke Army Medical Center which has led to continuing high CHAMPUS costs for this particular service. A planned outpatient child and adolescent mental health clinic at BAMC had not been given supporting research and analysis sufficient to ensure success at recapturing CHAMPUS workload.

The research and analysis undertaken in this project were conducted as an overall needs assessment for child and adolescent psychiatric services in the San Antonio catchment area. As stated in the literature review, a needs assessment provides the information necessary for making sound marketing decisions. The results and analysis of those results in a needs assessment should allow us to choose the best options for implementation. As Sargent stated earlier, the accomplishment of our options in a complete and efficient manner can be facilitated by use of the 4 "P's"of marketing: product, price, place, and promotion (1984). The 3 segments of this study (patient origins, high cost diagnoses, and the patient profile) have provided concrete information which points to definite

directions to take in each of the 4 "P's".

Product

A product is either a good or service that is offered in exchange for something else of value. In this exchange process, it is important not to limit the scope of the services offered. Ideally, a service mix should be dictated by what both your patients and referral sources demand and by what you can reasonably provide. (Sargent, 1984) The patient origin segment of this study gave us an idea of the social classes within the various clusters. As discussed earlier, social class reflects education levels which in turn suggest varying degrees of knowledge of medical treatment and outcomes. For this reason, it will be necessary to stress the outpatient focus of the BAMC clinic primarily in Cluster A but also to a lesser extent in Clusters C through E.

The high cost diagnostic codes validated the staffing composition proposed for the clinic. In addition, they provide directions for the product lines or services that should be offered. Initially, we should offer the usual direct services normally associated with child and adolescent mental health care with one glaring exception. There is no evidence that

substance abuse treatment has any impact on the cost of services in this catchment area. Another product line that should be added to the clinic is that of educating or training those in related services such as pediatrics, social work service, adolescent medicine, Chaplains and other clergy, teachers, and counsellors. These are, for the most part, the referral sources for the clinic and may be even more important to the marketing effort than the patients themselves or even their sponsors. This should be remembered as each of the 4 "P's" are discussed.

The high cost DXCD's also verified our ability to focus on outpatient care. In addition, based on the codes and the literature, family oriented services become very important. This reemphasizes the need for training of related services and stresses the importance of certain variables in the patient profile. In respect to the patient profile, age somewhat dictates the concentration of the services we offer (adolescent and early school age).

Price

Price refers to anything a patient is willing or unwilling to expend for a service. This can include not

only the actual charge but other patient costs, such as time, inconvenience, comfort, or social disapproval. (Sargent, 1984) There is currently a respectable copay associated with the use of CHAMPUS for mental health care. However, the BAMC clinic project will not require a copay of any kind by the patients using their services. Although one would think that the prospect of no copay would be a very strong draw, we must remember that the intangible costs mentioned above can have an overwhelming influence on choice of product.

The patient origin analysis results have shown that patients and their sponsors will indeed pay a certain price in time and convenience by traveling to the BAMC clinic. Particularly affected are those patients in Clusters A and B.

The high cost diagnostic codes point to an outpatient focus in the treatment regimen. This suggests that the patients will be investing more time due to the increased number of visits associated with outpatient treatment. This must be kept in mind when formulating the marketing plan so that negative attitudes can be identified and addressed.

Within the patient profile, sponsor pay grade alerts us to the need to stress the elimination of

copays in all areas but heavily in some. We should definitely stress no copay in Clusters A and B to counter the distance problem. Cluster B should receive the most attention in this respect due to the lower pay grades. It will also be important to market the no copay aspect to the retirement community for whom the copay is higher. In addition, it is possible that many of the retirees will have less discretionary income than their active duty counterparts unless they have taken another job since leaving the service. Further study is necessary to ascertain the employment status of retirees in the community and how that impacts on their use of CHAMPUS. It is also recommended that lobbying efforts be made for the requirement to obtain a nonavailability statement for outpatient child and adolescent mental health care.

Place

The location of the service, particularly ease of patient access, becomes very important in the marketing effort. Place is also concerned with a variety of other considerations such as appearance, convenience, atmosphere, space allocation, hours of operation, parking, and even the helpfulness of the staff. (Sargent, 1984)

Access is bad for at least 43% of the patient sample (those on the west side). We have gathered that they will not travel to the BAMC clinic due to the excessive availability of mental health providers on the west side. In addition, the primary route for those patients is Interstate 410, a highly traveled loop which is one of the main thoroughfares in San Antonio. Interstate 410 is also several miles from Fort Sam Houston, site of the BAMC clinic, which entails traveling through busy commercial areas, numerous traffic lights, and school zones. Once on Fort Sam Houston, patients will find that the clinic will be hard to locate. It is isolated which is a plus for those concerned about the stigma of mental health care and a need for confidentiality. However, it's very isolation means that it is not visible from any main roads and requires numerous turns, down streets that are not even marked in some cases. This will pose a problem even for the patients coming from the central to northeast corridor.

In determining location of a service, Sargent recommends considering renting space with greater proximity to the population (1984). This may have been a useful idea at the outset of this project because of

distance and isolation and because considerable sums had to be expended on refurbishing the clinic area at BAMC and areas for organizations displaced by the clinic. Since this is no longer possible due to the late phase of the project, it is highly recommended that consideration be given to placing a portion of the contract provider staff of the clinic in the WHMC Child and Adolescent mental health clinic. This would provide services to the west side and thereby assure CHAMPUS recapture in that area.

The high cost diagnostic codes will dictate the type of facilities required for treatment. The layout of the area must be sufficient for the type of treatment being provided. The staff at the BAMC clinic must study these DXCD's to determine if the original proposal for space, equipment, and supplies agrees with the requirements indicated by these codes. In addition, if the recommendation for placing a portion of the contract staff at WHMC is seriously considered, it must be determined if WHMC has the space to take on 1/3 to 1/2 of the workload.

The patient profile data tells us that the patients are primarily associated with the Air Force. These

patients and their sponsors will be unfamiliar with Fort Sam Houston. If a portion of the staff is not moved to WHMC, it will be very important to provide maps with all literature and assure adequate signage on Fort Sam Houston.

Patient age data dictates that most of the patients will have to be driven and escorted by their parents. Sponsor status can impact on the availability of parents during the day. An active duty parent may not be free to take off work to escort their child, especially for numerous visits under the outpatient focused care. This may be particularly true for the sponsors in lower pay grades. It is recommended that the hours of operation be extended beyond the normal duty day to facilitate these patients.

Promotion

The purpose of the promotion phase of marketing is to assure that patients and referral sources are aware of the service, understand the intent of the service, and know how and where to obtain the service (Sargent, 1984). Because of the facts associated with patient origins, our first challenge then becomes the education of all patients and sponsors concerning the location of the clinic, the best routes from all directions, bus

services, and parking. Again, it is important not to slight Clusters A and B in any promotional activities. There are a variety of possibilities for educating the public: post and base newspapers, the larger city as well as small community newspapers, organizational newsletters, official command channels, local television, and even an Air Force local access television station which is already in existence. In advertising the existence of the clinic, location should be stressed as an advantage in Clusters C, D, and E. If some of the staff are placed at WHMC, make Clusters A and B aware of the expanded service.

The high cost diagnostic codes require a focus on education regarding the types of disorders being treated. Promotional activities should strongly push the outpatient focus of the care being provided, especially in Cluster A but also in Clusters C, D, and E to a lesser extent.

It is essential to market the services to the referral sources, both military and civilian, mentioned earlier. Start with an education program for the staff at BAMC (social work, adolescent medicine, pediatrics, chaplains, etc.), then for the same referral sources at WHMC, and finally work out into the community. In

dealing with other professionals, it is important to determine the acceptable advertising techniques as influenced by the referral sources in the area (Sargent, 1984).

Since the patient profile is made up largely of patients with sponsors who are in the E-6 or E-7 pay grade, it is recommended that existing NCO channels be used for disseminating information on the clinic. The services should be largely marketed to the NCOs across the catchment area. However, the officers in Clusters A and C through E must get considerable attention.

A strong marketing push to the retirees must be made in Clusters A and D. Use the existing retiree organizations, keeping in mind that we are marketing primarily to the younger retirees that probably still have teenaged children at home.

There should be a heavy concentration on marketing to the expanded adolescent age group (10 -18) across the catchment area. Concentrate also on the 5 to 9 year olds in Clusters B, C, and D. Finally, males and females should receive equal marketing efforts in all clusters.

General Marketing Approach

As stated in the Discussion section of this paper, the patient population and the amount of total government pay in Clusters A and B are too significant to merely concentrate our efforts on the central to northeast corridor. Therefore, a total catchment area marketing plan would include the following descriptions organized by cluster.

Cluster A -- Concentrate on the outpatient focus of treatment. Include to a lesser degree the absence of copay and educate extensively on the location, directions, and routes. It is highly recommended that a portion of the contract staff be placed at the WHMC Child and Adolescent Mental Health Services.

Cluster B -- Concentrate on the absence of copay but include to a lesser degree the outpatient focus. Educate extensively on location and highly recommend the placement of staff at WHMC.

Cluster C -- Concentrate on the convenience of location and also the absence of copay. Include the outpatient focus and educate about the exact location on Fort Sam Houston.

Clusters D and E -- The marketing effort should concentrate on the same aspects as Cluster C but emphasize to a slightly higher degree the education about location and directions.

To facilitate the total catchment area marketing plan, consideration should be given to marketing the outpatient clinic at BAMC and the inpatient facility at WHMC together as a package. The overall child and adolescent mental health care project could be christened with an identifying name and advertised in this manner with the public. It may also be necessary to appoint one person to oversee both the Army and the Air Force facilities in order to assure coordination of all efforts to include marketing.

Recommendations for Further Study

This study does not address all the possibilities for research and analysis that a needs assessment could include. There are many other useful avenues which might be pursued using this study's QRDF data base or an expanded version of it. Some of the possibilities are discussed in the following paragraphs.

First, it would be useful to compare the number of visits to each of the patient profile demographics. In

this project, we used total government pay to determine the top zip codes and diagnostic codes, then switched to patient identification to determine our patient profile. By adding the number of visits to the study, we can ascertain whether a few patients are high volume/high cost and therefore should receive more attention for recapture.

Are the CHAMPUS patients chronic or return patients or are they primarily one episode patients? By using patient identification and diagnostic codes, we should be able to determine how much we will have to concentrate on luring patients away from civilian providers with whom they have an established patient/provider relationship.

The high cost providers need to be identified. The Source of Care variable can be compared to the TGP for this answer. Additionally, we would want to look at their location. The next step would be to compare the location of the provider to the patient origin to show exactly how far patients are traveling for civilian care.

It would be very useful to conduct a procedures study using the CPT-4 codes of the Procedure Code

variable. In this way, we could determine the ancillary treatment being ordered by the primary provider for different DXCD's and the various treatment approaches the providers are using.

It is very important that a service such as mental health care be able to identify it's primary referral sources. Unfortunately, the CHAMPUS QRDF does not allow this since a referral source is not identified on the CHAMPUS bill. However, once the clinic opens, this could become a primary research project tracking those patients using the BAMC or WHMC clinic.

Another important information need which cannot be supported by the QRDF is the employment status of the retirees. As mentioned earlier, it would be helpful to know what conclusions we can draw concerning the retired sponsor's ability to make copayments, travel long distances for care, and get off from work to do so.

Finally, it is strongly recommended that a needs assessment model such as the one created in this study be required for use in all future DOD projects to recapture CHAMPUS dollars (such as the Alternate Use of CHAMPUS Funds Program). Although proposals are currently required for such programs, this study has

shown that such proposals are lacking in their ability to adequately project the needs of the catchment area and those various circumstances which can impact on the project's success.

Perhaps with the availability of the Quick Response Detail File, it will be possible for organizations to adequately project needs for certain services and make adjustments in a project plan before any phase of the implementation. In addition, a thorough needs assessment, such as the one in this study, will provide a firm foundation for the project marketing effort, another endeavor which is necessary to ensure success.

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APPENDIX A

DEFINITIONS

Catchment Area - A geographical area encompassing a 40 mile radius around a military treatment facility.

Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) - An annually funded Department of Defense health program for active duty dependents, military retirees, and retiree's dependents wherein these beneficiaries may seek care from a civilian medical provider who will be at least partially reimbursed by the government for the care.

Concurrent Review - The monitoring of care for it's appropriateness and efficacy as the care is being delivered.

Deinstitutionalization - A trend in the mental health care field toward greater treatment of patients on an outpatient basis while they attempt to live in the general public, usually with the assistance of psychotherapeutic drugs. This trend is largely influenced by recent court decisions mandating the movement of mental health patients out of institutions.

Fee for Service - A method of billing and payment for physician services in which the unit of remuneraton is a service or procedure.

Fiscal Intermediary - An organization who accepts billings from a medical provider and makes payments on behalf of a third party payor.

Ghost Population - A term referring to those unidentified patients who do not use the services of a provider until a favorable change takes place, such as easier access or reduced cost share.

Joint Military Medical Command (JMMC) - An iniative established in 1986 that combined all military treatment facilities in the San Antonio catchment area under a single command for the purpose of cost effective sharing of resources.

Health Maintenance Organization HMO) - A health care program which concentrates on preventive and primary care and is financed through a prepaid amount for a set number of beneficiaries.

Preferred Provider Organization - An arrangement between providers and payors in which care is provided to a set number of beneficiaries on a discounted fee for service basis.

Psychotherapy - Refers to a number of techniques for treating mental illness by psychologic methods.

Reliability - A research analysis term referring to the amount of dependability of the measuring instrument

chosen for a particular research project.

Utilization Review - A set procedure in which both quality and appropriateness of hospital care is monitored.

Validity - A research analysis term which addresses the necessity for assuring that what is measured in a research project is specifically applicable to the intended population.

Appendix B

High Cost Diagnostic Codes

Adjustment Reaction (with disturbance of conduct) - Used when the predominant manisfestation resulting from a psychosocial stressor is conduct in which there is violation of the rights of others or of major age-appropriate societal norms and rules.

Adjustment Reaction (with disturbance of emotions) - The essential feature is a maladaptive reaction to a psychosocial stressor which manifests in emotionally related behavior. The stressor can be associated with separation anxiety, emancipation of adolescence and early adulthood, academics or work, or culture shock.

Adjustment Reaction (with mixed disturbance of emotion and conduct) - Used when the predominant manisfestations resulting from a psychosocial stressor are both emotional symptoms (e.g. depression, anxiety) and a disturbance of conduct.

Anxiety States - Associated with unrealistic or excessive anxiety and worry about two or more life circumstances. This may include panic attacks.

Attention Deficit Disorder - Associated with developmentally inappropriate degrees of inattention, impulsiveness, and hyperactivity.

Brief Depressive Reaction - Used when the predominant manifestation is symptoms such as depressed mood, tearfulness, and feelings of hopelessness.

Depressive Disorder (not otherwise specified) - Disorders with depressive features that do not meet the criteria for any specific Mood Disorder or Adjustment Disorder with Depressed Mood.

Major Depressive Disorder (single episode) - Used for a major depressive episode without a history of either a manic episode or an unequivocal hypomanic episode.

Mixed Emotional Disturbances - Used specifically for children and adolescents when the predominant manifestation is emotional in nature. This may include oppositional (negative defiance) disorder, identity disorder, or academic underachievement disorder.

Neurotic Depression - Displays chronic disturbance of mood involving depressed mood (or irritability in children and adolescents) more days than not for a period of at least one year.

Other Adjustment Reactions - Used when the predominant manifestations resulting from a psychosocial stressor do not directly relate to emotions or conduct. They may include prolonged posttraumatic stress disorder,

reaction with physical symptoms, and reaction with withdrawal.

Overanxious Disorder - The essential feature is excessive or unrealistic anxiety or worry for a period of six months or longer.

Sleep Disturbances - Used to describe an insomnia disorder that is related to a known organic factor, such as a physical condition, the use of certain medications, or a psychoactive substance use disorder.

Socialized Conduct Disorder - The essential feature is the predominance of conduct problems occurring mainly as a group activity with peers.

Unspecified Disturbance (conduct) - This subtype of conduct disorders is used for children and adolescents displaying a mixture of clinical features that cannot be classified as either solitary aggressive or group type.

Sources: *Diagnostic and Statistical Manual, Third Edition (DSM-III)and International Classification of Diseases, 9th Revision - Clinical Modification (ICD-9-CM).*

Appendix C

Description of Military Pay Grades

PAY GRADE	ARMY	AIR FORCE
E-1	Private E1	Airman Basic
E-2	Private E2	Airman E2
E-3	Private First Class	Airman First Class
E-4	Corporal/Specialist	Sergeant/Sr. Airman
E-5	Sergeant	Staff Sergeant
E-6	Staff Sergeant	Technical Sergeant
E-7	Sergeant First Class	Master Sergeant
E-8	Master Sergeant	Sr. Master Sergeant
E-9	Sergeant Major	Chief Master Sgt.
O1	Second Lieutenant	Second Lieutenant
O2	First Lieutenant	First Lieutenant
O3	Captain	Captain
O4	Major	Major
O5	Lieutenant Colonel	Lieutenant Colonel
O6	Colonel	Colonel
O7	Brigadier General	Brigadier General
O8	Major General	Major General
O9	Lieutenant General	Lieutenant General
WO1	Warrant Officer	N/A
CW2	Chief Warrant Officer 2	N/A
CW3	Chief Warrant Officer 3	N/A
CW4	Chief Warrant Officer 4	N/A