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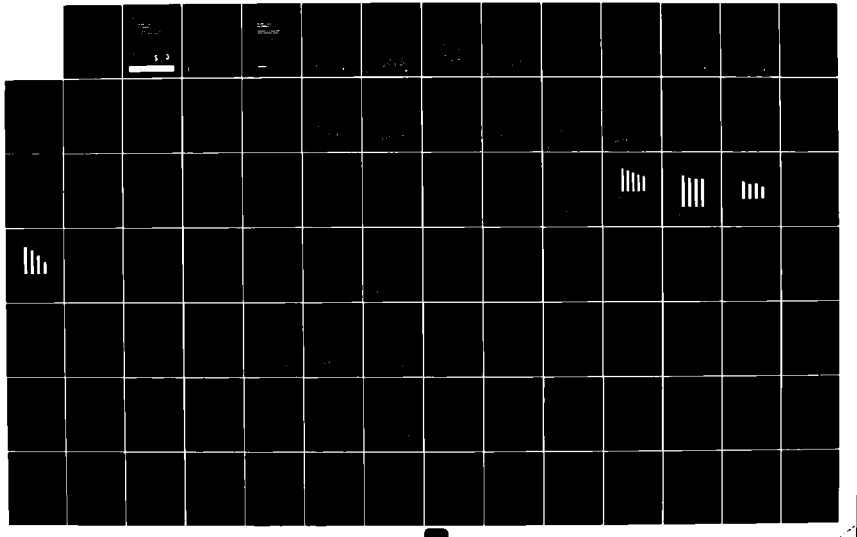

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Feasibility and Desirability of a Health Enrollment System

Charles E. Phelps, Susan D. Hosek,
Joan L. Buchanan, Adele R. Palmer,
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Rand

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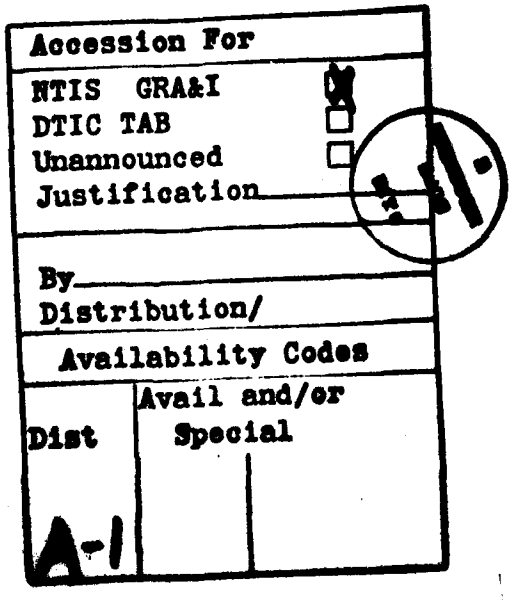
PREFACE

This report responds to a Congressional mandate for a study of the feasibility and desirability of changing the military medical health system from its current configuration to a closed-enrollment concept called a "Health Enrollment System" (HES). Reasons for considering the change include possible reductions in the cost of military health care, increases in quality, and an enhanced ability to plan for and manage peacetime and wartime medical care.

The study was performed within Rand's Health Sciences Program under contract with the U.S. Department of Defense, Assistant Secretary for Health Affairs, Office of the Deputy Assistant Secretary for Health Program Evaluation. At The Rand Corporation, the study was conducted within the Division of National Security Research, D. Michael Landi, Vice President, under the supervision of Albert P. Williams, Director of Rand's Health Sciences Program. Charles E. Phelps and Susan Hosek served as co-principal investigators.

The report should be of interest to persons concerned with assessing the military medical care system, and more generally to those involved in studying DoD planning and operations.

A brief executive summary precedes the body of the report; a more extended summary can be found in Sec. I.



EXECUTIVE SUMMARY

Medical care in the military is delivered through two parallel systems. In the direct care system, Military Treatment Facilities (MTFs) are operated by the Army, Navy, and Air Force, providing care for active duty persons and, on a space-available basis, for active duty dependents, retirees and their dependents, and survivors. Nonactive duty persons are also covered by the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). If the MTF cannot provide needed care (or if the person prefers civilian care for ambulatory services), nonactive duty patients use civilian providers and CHAMPUS pays for that care much like a standard major-medical insurance plan.

A fundamental consequence of this method of providing care is that MTF commanders cannot know how many people they care for; some of their patients do not reside within their "catchment areas" (40 mile radius around each MTF), and some people within the catchment area may never seek care from the MTF. Particularly with current data systems, DoD cannot learn how much medical care active duty or nonactive duty persons use each year, and that makes evaluation of MTF performance difficult. The only available way to evaluate MTF performance is by counting how many activities they produce, rather than how many cures they effect or how many people they care for. Particularly for persons who "cross over" between the MTF and civilian systems, lack of continuity and duplication of effort appear problematic. Finally, because of the open-ended aspects of the current system, DoD and the Congress have expressed concern that the costs of providing medical care for military beneficiaries may be higher than need be.

A potential remedy for this system has been proposed: the Health Enrollment System (HES). Under this plan, as we have studied it, each MTF would be responsible for providing care to a fixed set of persons, including all active duty persons in their catchment areas and any remaining nonactive duty persons choosing to enroll, until the MTF enrollment target was reached. The MTF commander would be responsible for providing or arranging for all of the covered medical care for these persons (not just for active duty beneficiaries, as is the case currently). All remaining persons within and outside each catchment area would be enrolled in an alternative plan--either an insurance plan or a prepaid practice plan (Health Maintenance Organization). With an HES, open-ended referral to the civilian sector (via CHAMPUS) would no longer be possible.

The proposed change to an HES raises a number of important issues that we have addressed in this study:

- How would an HES affect the costs of providing medical care for active duty and nonactive duty persons?
- How would an HES affect the quality of care delivered?
- How would an HES affect the ability of military medical systems to carry out other missions, particularly medical readiness?
- What changes would need to be made in organization and law to carry out the HES concept?
- What choices arise in the enrollment of beneficiaries with specific health providers, and how do these various enrollment options affect DoD goals, including recruitment and retention of active duty personnel?
- What benefit structure (scope of benefits and copayments) should be offered, and what consequences might this produce for morale, retention, cost, and quality of care? How might changes in benefits affect equitable treatment of beneficiaries across Services, geographic regions, and people receiving care from different providers?
- What incentives for efficient delivery and use of care might be found in an HES, and how do these incentives compare with those in the current system?

Together, these issues pose the two primary questions addressed in our study: Is the HES feasible? Is it desirable? To answer these questions, we engaged in a twofold research activity. We visited and interviewed a dozen MTFs representative of the three Services providing medical care, with considerable diversity in geography, MTF size, and remoteness. We also visited the medical commands in each Service to gain even more information than provided in the MTF visits. At the same time, we engaged in a series of analyses using available data from DoD, including previous health survey data, plus standard reports from DoD management information systems.

Our answers to these questions are briefly summarized here:

- Medical care costs could rise or fall, depending upon key choices made by DoD in configuring an HES (Sec. VII).
- Quality of care would rise with enhanced continuity of care (Sec. V, Sec. VIII).
- Preparation for readiness would not likely be impaired, but [illegible]

- Changes in resource management, organizational structure, and possibly military benefit authorizations would be needed before an HES could provide its full benefit (Sec. V).
- HES beneficiary enrollment could be conducted centrally or decentrally, and with mandatory or voluntary choice by individuals. We recommend central enrollment and voluntary choice (Sec. IV).
- Incentives for efficient provision of care should increase in an HES compared with the current structure of military medical care (Secs. I, VI, and VII).

More generally, we conclude that the concept of an HES is not currently feasible unless changes in DoD organization and function are made. The key changes include:

- A replacement budget to provide resources to MTFs automatically if staffing falls below authorization levels.
- A reinsurance plan to reimburse the MTF for providing care to the occasional extremely expensive patient.
- Enhanced data management systems to track patients and patient expenses.

Other changes would enhance the efficiency of an HES, but those cited here would be most critical to the success of an HES.

Our determination of feasibility is based on a number of elements. First, our studies have shown that an HES would not greatly disrupt current medical use patterns. As a corollary, voluntary enrollment would also probably not disrupt the mix of surgical and other patients desired by DoD for readiness and mobilization training. Second, the replacement budget and the reinsurance plan we have proposed offer protection for the MTF against risks arising from organizational inflexibility and from unusually costly cases. The CHAMPUS system provides this protection currently. Without CHAMPUS, alternative arrangements are needed.

To undertake an HES, DoD must make a number of choices regarding the structure of the HES. Central among these choices are:

- Should there be copayments, and if so, what should they be?
- Should nonactive duty beneficiaries be charged premiums for enrollment, and if so, how high should they be?
- Should an allowance be offered to offset copayments and premiums, and if so, how much should it be?
- What should the target enrollment be for the MTF system and for each MTF individually?

We provide information showing that copayments, limited by catastrophic protection for enrollees, could substantially reduce DoD costs without noticeable effects on the health status of individuals enrolled.

We recommend that if copayments are considered, DoD also consider implementing a health allowance (similar to the current housing allowance used in DoD) to offset the financial consequences of copayments. Even if a lump-sum offset is provided, the copayment will still reduce beneficiaries' use of health care services.

Under an HES, MTFs could enroll a target number beyond which no new subscribers could enter. All active duty personnel would enroll in the MTF, and then we foresee unrestricted voluntary enrollment. We show how the health allowance could be used to balance supply and demand for MTF care, if the number of persons wanting to enroll did not match the target set.

Setting the enrollment target for MTFs presents a difficult planning task. Current data systems cannot at present accurately match MTF resources with a target enrollment population. We show how currently available planning models could be used to begin a demonstration, but we believe that better planning for enrollment targets would enhance the desirability of an HES. These would require new data and further modeling.

The HES concept appears promising, even if only for the enhanced management ability and improved incentive structures it offers to MTF commanders and staff. A number of issues need to be resolved before a final determination of desirability of the HES could be made. Key issues of uncertainty include both patient and provider behavior under an HES. A carefully designed demonstration would provide this information. An alternative approach would begin a phased implementation. While this approach would lose the advantages of added information that a demonstration would offer, it would introduce less delay and reduce the risk that a demonstration might fail where a fully implemented system would succeed. (These issues are discussed more fully in Sec. I and Sec. VIII.)

ACKNOWLEDGMENTS

We wish to express our appreciation to the medical and administrative staffs of the twelve medical treatment facilities we visited during our study, particularly for their willingness to prepare large amounts of information for our use on rapid notice. We similarly appreciate the time and information given by persons higher in the medical command structures of each Service we visited and in the Office of CHAMPUS. While the number of persons is too large to list, we extend our gratitude for their assistance.

We have received useful comments on previous versions of this report from Robert Heavner, Emmett Keeler, Joseph Newhouse, and Albert Williams at Rand. We have also benefited from advice about the exposition and structure of the report from Diane Bolay Lawrence and Steven Arnt in the Office of the Assistant Secretary of Defense for Health Affairs. Emmett Keeler and Arleen Leibowitz provided important assistance in parts of the computer analysis of health utilization data.

GLOSSARY

BAQ	Basic Allowance for Quarters
CAT	Computed Axial Tomography
CCU	Cardiac Care Unit
CHAMPUS	Civilian Health and Medical Program of the Uniformed Services
DEERS	Defense Enrollment Eligibility Registration System
DoD	Department of Defense
FEHBP	Federal Employees' Health Benefits Program
HES	Health Enrollment System
HMO	Health Maintenance Organization
HSUS	Health Services Utilization Survey
ICU	Intensive Care Unit
IPA	Independent Practice Association
MHSS	Military Health Services System
MTF	Military Treatment Facility
O&M	Operations and Maintenance
PPO	Preferred Provider Organization
PRISM	Provider Requirements Integrated Specialty Model
QA	Quality Assurance
RAPS	Resource Analysis and Planning System
RM	Risk Management
TRIMIS	Tri-Service Medical Information System
TRIPAS	TRIMAS Patient Appointment and Scheduling
UCA	Uniform Chart of Accounts
UR	Utilization Review
USM	Uniform Staffing Methodology
VHA	Variable Housing Allowance

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I. INTRODUCTION AND SUMMARY

This report summarizes research conducted by The Rand Corporation to assess the feasibility and desirability of a Health Enrollment System (HES) for the Department of Defense (DoD) health care systems. The report responds to a Congressional requirement to conduct such a study.

The concept of an HES was proposed as a possible way to improve efficiency, lower costs, and raise the quality of care (e.g., through better patient-provider continuity) for beneficiaries of the current military health care system. However, concerns were raised about the effects of an HES on recruiting and retention ability of the Services, on peacetime provision of health care for active duty and nonactive duty persons, and on other missions, such as readiness training and ability to mobilize.

In the remainder of this section, we set forth the issues confronting DoD and the Congress regarding the HES concept and summarize the results of our research. Since the HES concept has not been fully specified in previous discussions, we discuss and analyze alternative ways to structure an HES and (where possible) assess the implications of these choices for feasibility and desirability of an HES.

THE CURRENT HEALTH CARE SYSTEM IN DOD

DoD currently provides health care for military active duty persons, their dependents, retirees from the military, their dependents, and survivors of military personnel under a two-part health system: direct military care, and civilian care through a separate insurance plan. To provide the direct care, the Army, Navy, and Air Force operate Military Treatment Facilities (MTFs).[1] These provide care for all active duty persons (except those stationed too far from MTFs). These same facilities provide care on a space-available basis to all nonactive duty persons, including dependents of active duty personnel, retirees, their dependents, and survivors, under annual budget authorizations from the Congress. Nonactive duty persons may also receive care from civilian providers through the Civilian Health and Medical Program of the

[1]We have not specifically studied hospitals operated by the Coast Guard and U.S. Public Health Service. Their beneficiary eligibility and entitlements rules are nearly identical to those we discuss.

Uniformed Services (CHAMPUS). Nonactive duty beneficiaries use the MTFs for ambulatory care when it is available and when they do not prefer to use the civilian alternative (through CHAMPUS). The care may not be available, either because the MTF capability is being fully used or because it does not exist. The MTF hospital must be used by inpatients living within a 40 mile radius (catchment area). If care is not available, a Certificate of Nonavailability is issued and the patient must find civilian hospital care. (The MTF staff are not allowed to refer the patient to any specific civilian provider.)

This system currently cares for some 1.6 million active duty persons and provides at least part of the care for a total of 8.0 million eligible persons.[2] This system of care currently costs the DoD about $5 billion annually for the MTF system and another $1.2 billion annually for CHAMPUS payments.[3] Thus, the average annual cost per eligible participant is about $775. This does not represent the total cost of care for these persons, both because of copayments arising through the CHAMPUS program and from benefit payments from private insurance held by retirees and active duty dependents.

Almost all active duty personnel get most or all of their medical care through the MTF system as is also true of their dependents. But some active duty dependents, and a larger proportion of retirees, use the CHAMPUS system extensively. Further, there appears to be a nontrivial body of persons not currently using either the MTF system or filing bills with CHAMPUS for civilian care, primarily retirees. (We show evidence of this phenomenon in Sec. VI.) Many of these people are covered by some form of private health insurance or by Medicare. Perhaps as many as half of all retirees' families, and 10 percent of all spouses of active duty personnel, currently have such insurance.[4]

MTFs in the three Services do more than just provide care to active duty and nonactive duty persons. They also maintain a standby system for providing medical care during war—a mission generating many separate activities within MTFs currently—and (particularly in the

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[2]These numbers include costs for beneficiaries in all FY83 ambulatory catchment areas in the Continental United States, 6,232,625 total, plus all active duty and nonactive duty persons living outside ambulatory care catchment areas. A slightly smaller number of persons live within inpatient catchment areas.

[3]Total appropriation for FY83 for MTFs amounted to $6.8 billion, but this includes costs of overseas MTFs that are excluded from the HSR concept that we studied. We use $5 billion as an approximation of the MTF costs for those in the Continental United States.

[4]These figures were reported to us by the CHAMPUS office in Denver, Colorado. Data from a 1976 survey show slightly lower rates of private insurance coverage, but the overall expansion of private insurance in the United States in the intervening years makes the higher numbers quite plausible.

Navy) provide staff to support ongoing military activity (such as shipboard medical care). At many MTFs, there are further missions of environmental and occupational health, aerospace and flight medicine, underwater medicine, etc., all related to current operations of the military.

THE PROPOSED HEALTH ENROLLMENT SYSTEM

The Congress required an evaluation of a proposed alternative organization of patients and MTFs, called the Health Enrollment System. Under this proposal, *all active duty personnel would continue to receive care from the MTFs*, and all nonactive duty persons would receive *all* of their care either from an MTF or from an alternative insurance system. The non-MTF enrollees could join existing prepaid group practices, where available (such as Health Maintenance Organizations (HMOs) or preferred provider plans), with all or part of their enrollment fee paid by the HES. From the enrollees' point of view, this would represent a fundamental change in their world. For the first time, these persons would be required to seek all of their care from a single "system" (either the MTF or the civilian sector), rather than choosing one system or the other on a visit-by-visit basis, as is currently possible.

From the point of view of the MTFs, an HES would also cause several fundamental changes: MTFs would be responsible for delivering or acquiring care for a fixed and known body of patients. By contrast, in the current system their patient responsibilities are not under their control, or even well-defined. In an HES, the MTFs would be responsible for providing or arranging for *all* of the care for that patient population, rather than deflecting patients (through CHAMPUS) to the civilian sector when the MTF does not have the space or capability to provide needed care. Currently, the MTFs do this for active duty persons, either referring the active duty person to another MTF or purchasing civilian care through a "Supplemental Care" budget. Indeed, the ability to refer active duty patients to other providers is an important part of the current system, and it is used with varying intensity depending on the staffing mix, size, and particular circumstances of each MTF. Under an HES, MTFs would be similarly responsible for the care of all of their enrolled patients, whether active or nonactive duty.

Discussions to date of this HES concept have not specified completely just what the structure of an HES should be. There is consensus in previous DoD and military Service discussions that all active

duty persons should receive all of their care from MTFs (as noted). But beyond that specification, there is considerably less agreement. Therefore, we analyzed a number of possibilities, including copayments, premiums for nonactive duty persons, alternative options for enrollees' health care, central or decentralized enrollment (at the MTF level), and how to determine the number of people enrolled in each MTF. Our report discusses implications of each of these choices.

ISSUES AND METHODS OF ANALYSIS

To evaluate the feasibility and desirability of the HES, we have undertaken a variety of studies to assess the following key points of concern:

- How would an HES affect costs of providing medical care for active duty and nonactive duty persons?
- How would an HES affect the quality of care delivered?
- How would an HES affect the ability of military medical systems to carry out other missions, particularly medical readiness?
- What changes would need to be made in organization and law to carry out the HES concept?
- What choices arise in the enrollment of beneficiaries with specific health providers, and how do these various enrollment options affect DoD goals, including recruitment and retention of active duty personnel?
- What benefit structure (scope of benefits and copayments) should be offered, and what consequences might this produce for morale, retention, cost, and quality of care? How might changes in benefits affect equitable treatment of beneficiaries across Services, geographic regions, and people receiving care from different providers of medical care?
- What incentives for efficient delivery and use of care might be found in an HES, and how do these incentives compare with those in the current system?

To answer these questions, we have engaged in a dual-track research approach. First, we developed a plan for information-gathering from onsite visits to MTFs. Although we could not visit many MTFs within the time and budget available for this study, the 10 we did visit in the three Services ranged from large to small, teaching and nonteaching,

urban and remote hospitals.[5] The answers provided by the staffs from these MTFs to the questions in our protocol (included as an appendix to this report) provided our researchers with detailed information for this sample of MTFs on the nature of their patient load, staff, and resource management capabilities and limitations. Just as importantly, these visits also provided more subjective evidence (both formed by our staff and offered by MTF personnel) about key issues in the potential transition to an HES.

We have also undertaken a number of analytic studies using available data, intended to answer quantitatively, where possible, the questions raised by the prospect of an HES. These analyses bring data and results of other available studies to bear on the questions of feasibility and desirability of an HES in general.

The combination of information gained in our MTF visits, from analytic studies, and from our past experience with the military, military health care, and health policy issues in general provides the basis for our research, as described in the remaining sections of this report. These analyses assess implications for readiness training. They assess the capability of existing data systems to support an HES concept. And they address issues of cost and equity within various groups of beneficiaries under alternative structures of an HES.

FINDINGS

Individual components of our research often spanned several of the key issues concerning an HES. Thus, a straightforward description of the research itself would not directly address the key issues in a one-for-one manner. At the same time, many of the policy questions cannot be answered until several lines of our research are brought together. We attempt to resolve this dilemma by summarizing here the major conclusions we draw and point to the parts of our research supporting those conclusions. Subsequent sections describe the research results in more detail.

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[5]The hospitals visited included Eisele, Langley, Plattsburg, Travis, and Wilford Hall Air Force hospitals; Ft. Meade, Ft. Hood, and Brooke Army hospitals; Long Beach, Oakland, Patuxent, and San Diego Naval hospitals.

Incentives for Efficient Care

We find that the current system lacks incentives for efficient provision of care, and there is a corresponding lack of information that would allow efficient management of the military health care system. The rate at which medical care is used by patients can only be crudely estimated, because nobody knows the true size of the patient populations actually being served in MTFs. Military providers of care have little organizational incentive to choose patterns of medical practice that lead to the most efficient use of medical resources. Patients have little incentive to use the system efficiently, and they respond with very high utilization rates compared with civilian populations of the same age-sex mix. Finally, since no other measures are available, the current system measures the performance of providers by the numbers of medical visits, treatments, prescriptions filled, etc., per provider per month, but takes no account of whether those visits and treatments were appropriate. And the system does not account for complexity of activity. For example, each of 12 monthly visits for a controlled diabetic (for a prescription refill) counts the same as an intensive workup of a new diabetic. The current incentive structure leads to considerable activity and little ability to measure its appropriateness.

An HES could facilitate rationalization of the incentive structure. With a known population being served by the MTF, it would be possible to measure both the rates of use by individuals and the productivity of providers in caring for patients. Output of the MTFs could be measured in patients cared for, rather than in visits produced.

The ability of DoD to control and measure activity in the health care system could enhance the efficiency of the system beyond that currently achievable. How much gain could be achieved cannot be learned from existing data: A demonstration of the concept would provide such information.

Benefit Structures Within an HES

The health benefits provided to HES enrollees can be described in four dimensions:

- The scope of benefits (services and treatments covered).
- The degree of catastrophic protection provided.
- Any copayments made by beneficiaries.
- Other financial conditions (e.g., premiums).

The current package of MTF and CHAMPUS coverage provides the appearance of a broad scope of benefits, limited copayments, and

substantial catastrophic protection, but in many cases, this guarantee is illusory. The current scope of benefits in the MTFs includes standard medical care for active duty personnel, with dental and psychiatric care and no copayments. At the other end of the spectrum, retirees living far away from an MTF rely primarily on the CHAMPUS system of insurance, which imposes substantial financial risk and no catastrophic protection. Between these polar cases, active duty dependents and retirees rely on a combination of MTF care (with little financial risk, when such care is available) and CHAMPUS, which poses an open-ended risk. Since the MTF system imposes Certificate of Nonavailability on at least some patients, this risk logically faces every nonactive duty beneficiary.

If DoD moves toward an HES, it will have to choose how to alter the health benefit (if at all) from this current package. Some possible changes (e.g., catastrophic protection) would enhance benefits. Others (e.g., copayments for nonactive duty persons for using the MTFs) would be viewed as a reduction in benefits. Many of the choices about the benefit package cannot be answered in a feasibility study alone. DoD must make choices involving tradeoffs in many dimensions. In this study, we have analyzed benefit packages with the following variations:

Scope of Benefits. The current CHAMPUS package of benefits closely matches that of many private health plans.[6] Excluded services include those not directed toward the diagnosis or treatment of disease: dental care; custodial and long-term care; much cosmetic surgery; routine vision and hearing; routine physical examinations; obesity treatment; sex therapy; and autopsies. Aside from these (and a few more esoteric exclusions), CHAMPUS provides the full scope of medical care for active duty dependents and retirees. For active duty personnel themselves, covered services also include dental, vision, hearing, physical examinations, and other services not available to nonactive duty persons. This same set of added benefits is available to retirees (but not to their dependents) from MTFs. Thus, retirees living sufficiently close to an MTF to obtain this care receive benefits exceeding those in the CHAMPUS package, whereas those living far away from an MTF effectively receive the CHAMPUS benefits only.

DoD could change this scope of benefits either with or without adopting an HES, and the implications for recruiting and retention would be similar in either case. To avoid injection of this added complexity into our study, we presume that this scope of benefits will remain unchanged. Changing the benefit package (for example) to

[illegible] like the coverage [illegible] complexity.

include dental care for all eligible beneficiaries would modify our estimated costs and could affect retention and enlistment activity, but little of the remainder of our analysis depends upon this assumption. Discussion of the feasibility and desirability of the HES concept does not change if DoD chooses a different scope of benefits, and we do not mean to imply by this choice that we endorse the current package or any possible alternative.

Copayment and Cost Sharing. Payments by patients at the time care is received clearly reduce medical utilization. With growing costs of care in the MTF and CHAMPUS systems, Congressional interest in a copayment within the MTFs also increases. A recent report from the Senate Appropriations Committee directed the DoD to reexamine the opportunities to reduce costs with user fees, seeking a report to the Committee by July 1, 1984.[7] In this study, we analyze three generic proposals for copayments under an HES—full coverage, a 25 percent copayment by individuals, and a flat deductible paid by individuals before full coverage begins. Other variants are obviously possible.

We do not recommend any specific choice of copayments. The tradeoffs involved in making such a selection require choice by DoD and include matters beyond the scope of this study. We do provide evidence on the costs and other consequences of choosing alternative copayment plans to assist DoD decisionmakers in their consideration of this issue. (Sec. VII summarizes these results.)

Catastrophic Protection. The current combination of MTFs and CHAMPUS does not provide catastrophic insurance protection uniformly to all active duty persons, their dependents, and retirees. Including a catastrophic cap on expenses would provide a new benefit to nonactive duty persons. We provide data (in Sec. III) showing that such protection does not add greatly to the costs of an HES. Its desirability to the beneficiaries as a new benefit is obvious: If copayments are included in an HES, the catastrophic cap limits the financial risk facing individuals. From the point of view of DoD, the catastrophic cap can also limit any adverse effects on recruiting and retention arising from copayments.

Premiums for Nonactive Duty Enrollment. An additional dimension of cost sharing available to DoD is to charge nonactive duty beneficiaries a premium to participate in an HES. The tradeoff facing DoD is quite direct: Charging a premium lowers the total cost of an HES but raises recruiting, retention, and training costs to the extent that

[7]Department of Defense Appropriations Bill, 1984, 98th Congress, First Session, Senate Report No. 98-292, Calendar No. 353, November 1, 1983, p. 44. Congressional Budget Office (1982) is a report evaluating approaches entitled "Options for Change in Military Medical Care."

the premium affects decisions about enlistment. We have not studied such issues in our report, but we note that formal recruiting/compensation models are readily available to assist DoD in assessing the effects of various premium choices.

A Health Allowance. Just as with insurance premiums, imposing copayments raises the risk that recruiting and retention might fall if enrollees perceive the new copayment structure as a loss of benefits. To confront this issue, we have devised a system whereby DoD could provide a new "health allowance"—similar to the current housing allowance system—to offset any effects on recruiting, retention, and morale. In concept, this health allowance could be set at any level, including (if desired) an amount large enough to offset completely the average payment that beneficiaries might make for a given copayment plan. While we do not suggest that health allowances be set that high, it should be clear that the health allowance concept provides sufficient financial flexibility to allow DoD the option of including copayments as a utilization controlling device while maintaining enlistment and reenlistment at desired levels.

Costs of an HES

DoD can choose various configurations of an HES that imply different costs. We can estimate the costs of an HES under various choices, but these estimates must be validated with demonstrations of the HES concept to be certain of their accuracy. For example, it is impossible to determine in advance just how much efficiency gain might arise from changing incentives and organization of MTFs, and yet such efficiency obviously affects costs.

We can show the relative effects on cost of different HES options open to DoD. The major dimensions of choice we study include:

- The level of copayment chosen.
- The target enrollment set for the MTFs.
- The rate at which new resources are added to MTFs as new patient loads are added.
- The net premium (premium minus health allowance) for beneficiaries.

Plans involving copayments for nonactive duty persons cost substantially less than those with full coverage. Using data from a recent social science experiment conducted by The Rand Corporation, we calculate that an HES with full coverage for all medical care would cost $9.6 billion per year more than a plan with a 25 percent copayment for nonactive duty persons (limited by catastrophic coverage), and $1

billion more than a plan requiring a per-person annual deductible for nonactive duty persons of $250.[8]

Costs alone are not the only factor affected by choice of copayments. We also provide evidence that imposing copayments as discussed above will lead to only small effects, if any, on the health outcomes of enrolled individuals. The Rand Health Insurance Experiment showed that persons enrolled in all copayment plans (25 percent copayment, individual deductibles, and plans requiring even larger copayments) showed negligible reductions in health compared with those on the free plan.

Another major determinant of total HES costs is the level of health allowance chosen (if any) to offset the financial loss of copayments, coupled with any insurance premium charged. If the insurance premium is zero, and the health allowance is $100 per person (a "net premium" of -$100 per person), then the costs of the HES are about $1.5 billion higher than if the net premium is +$100 per person. Our simulations (Sec. VII) show that DoD should carefully consider the benefits from reducing a net premium to nonactive duty beneficiaries, because the cost consequences rapidly add up. We provide tables in Sec. VII showing the cost consequences of a larger set of such choices.

The choice of premiums and copayment structure in an HES could also affect individuals' decisions to maintain the private insurance coverage they currently hold (often provided through employment-related group insurance). Even though employers contribute a considerable amount to this insurance, surveys show that large proportions of these individuals pay at least some premium toward their policies. If the HES is provided without any premium, and particularly if the HES coverage exceeds that in privately held insurance plans, then the incentives to continue the private insurance could fall or vanish. If this occurs, the benefit payments currently made by that insurance would vanish, and the medical costs of that care would be paid by the HES. We have crudely estimated the amount of those private benefit payments to exceed $0.5 to $1 billion in 1983 (see Sec. III). A new survey showing the coverage, total premiums, and costs to individuals and families of private insurance would help DoD design a premium structure to protect against this consequence.

Another factor affects overall HES costs—the target population assigned to the MTFs. Currently, of course, the number of persons under the case of the MTF system cannot be known with certainty, but the HES enrollment concept resolves that ambiguity. The choice of

[8]We study this copayment scheme in detail in Sec. III. For further detail, see Newhouse et al. (1981) and references cited therein. The calculations showing the differences in HES costs for different copayment plans are discussed in Sec. VII of this report.

how many people are to enroll in the MTFs significantly affects costs, and the cost consequences of this decision interact with the decision about copayment levels. These results (again) are shown more fully in Sec. VII. To show the importance of this decision, consider one case: If a net premium of zero is charged (no premium, no health allowance), and the MTF enrollment is set at the low end of a plausible target range (4 million enrollees), total HES costs are over $1.5 billion higher than if target enrollment is set at the high end of a plausible range (6 million enrollees). This same enrollment choice changes total HES costs by less than $1 billion if copayments are used, demonstrating the interaction of these two central decisions facing DoD about configuration of an HES.

The Enrollment System

Basic and Supplemental Plans. An HES enrollment would automatically include active duty persons in the MTF plan. Since we are considering the same broad scope of benefits that currently exist for active duty persons in the MTF system, no discussion of supplemental benefits is needed.[9] For nonactive duty persons, a system much like that available for civilian federal employees (through the Federal Employees' Health Benefits Program—FEHBP) seems appropriate: A "basic" package, defined in terms of scope of benefits, copayments, and premium payments, would be offered each nonactive duty person. As noted, we presume for simplicity that the scope of benefits would match those now available. We do consider alternative copayment structures and discuss the consequences of those choices.

As with FEHBP, an HES should offer optional coverage that would improve upon the basic package. We recommend that the entire incremental cost of such "high option" packages be borne by the enrollee. The set of non-MTF enrollment options should include, where possible, prepaid practice plans such as HMOs, and any other approved plan that was available. Since such plans differ in their capabilities and desirability, this option will obviously introduce variability in the

[9] If DoD selected a more limited scope of benefits for active duty personnel, then much of the following discussion of supplemental options would apply to active duty persons. However, the mechanisms to offer supplemental coverage to active duty persons who may enroll only in the MTF plan differ from the mechanisms available for nonactive duty persons using non-MTF care. Most simply, the supplements would take the form of a supplemental insurance policy, adding (for example) dental care coverage within the MTF. Such supplemental policies are common now, both in CHAMPUS and Medicare. DoD could sell such plans directly, or could allow them to be marketed by independent companies, with the payments for the care being made to the MTFs when the supplemental care was provided.

coverage available to HES enrollees, depending upon where they might live. But the availability of the basic plan to each enrollee provides the equality of treatment deemed desirable by DoD.

How Should Enrollment Be Conducted? We studied several enrollment options open to DoD. One important choice determines whether enrollment is centrally or decentrally administered. At one extreme, wholly decentralized enrollment places the enrollment activity in the hands of each MTF commander for all persons in his catchment area. Under this system, the MTF commander would presumably receive a single budget for all his eligible population and choose how many to treat in the MTF and how many to enroll externally. We rejected this model as requiring too many management changes in DoD, possibly conflicting with readiness and mobilization goals of the DoD, and as requiring each MTF command to acquire new skills not now represented in the system.

A more central enrollment conducted by DoD and the Services seems better suited to an HES. Economies of scale could be developed, and the geographic relocation of active duty persons and their families or retirees would be handled better and easier with a central system.

Another important issue in enrollment is the extent to which free choice is offered to the enrollees. At one extreme, each enrollee would be told in which plan he would receive care. At the other extreme, each nonactive duty enrollee would be allowed wholly free choice of plan. Free choice obviously benefits the enrollees, presumably increasing morale and reducing retention and enlistment problems. However, a risk arises that free choice would lead to enrollment patterns that would conflict with other DoD goals, notably providing an appropriate patient mix for readiness training.[10] Based on patient choices shown in a 1978 survey, voluntary enrollment would not disrupt patient care patterns greatly from those currently found. This implies that patient mix would not change greatly and hence that readiness training would not be disrupted. This conclusion is based on a simulation that assumes no change in premium or copayment structure from those found in the MTFs or CHAMPUS. If any salient feature of the benefit package is altered, particularly to make MTF or non-MTF care relatively more desirable, this enrollment pattern could change. A demonstration program would be particularly important to test the enrollment outcomes under an altered benefit package.

Voluntary enrollment also offers the possibility that more (or fewer) persons would seek MTF enrollment than the system could handle.

[10]Generally, MTF commanders and staff describe surgical care as most important in maintaining readiness training.

Excess demand for MTF enrollment could be controlled by assigning priorities among enrollees and rationing eligibles. However, if too few persons sought MTF enrollment, alternatives must be found. We discuss (in Sec. IV) how the health allowance concept could be used, either alone or together with adjusting premiums charged to nonactive duty persons, to direct patients toward or away from the MTF as one potential solution to this issue. By this plan, the amount of health allowance offered to an individual could vary, depending on whether he enrolled in the MTF or non-MTF plan. A similar pattern of allowances is now common for housing allowances, depending on whether or not the person resides in base housing. An HES demonstration could provide important information on the sensitivity of patient enrollment choices under different health allowance patterns.

We also considered whether voluntary enrollment should be offered to individuals or to whole families. Observed patterns of medical care use suggest that most families now use the same source of care for their entire family. Thus, imposing family (rather than individual) enrollment would not present a hardship to many families. One group in particular—families with older children—shows the greatest propensity to use different sources of care for different family members, so this group would be most affected by a decision to allow only family-based enrollment. The obvious tradeoff involves costs of the enrollment system. If individual family members may enroll in different plans, the complexity of the enrollment process rises, as do the opportunities for the families to "game" the enrollment system to their particular advantage.

How Many MTF Enrollees? In our discussion of the costs of an HES, we noted that costs are potentially quite sensitive to overall enrollment into the MTFs. Enrolling more people into the MTF should reduce total HES peacetime costs, because the system will not have to pay for additional capital facilities that are already available for wartime standby. For this reason, MTF enrollment should cost less than enrolling a beneficiary in the private sector plans. (This presumes that an HES could achieve comparable efficiency to existing private sector health care systems.)

Determining the most appropriate level of enrollment in the MTFs is a complex task, posing considerable data requirements. We find that existing data systems within DoD cannot support the best types of planning models available, but we see no reason why such data could not be generated in the military health care system if desired. However, if a demonstration of the HES concept is undertaken, some basis of assigning enrollment must be made. We use the data and structure from an existing planning model in the Air Force (PRISM—Provider

Requirements Integrated Specialty Model) to demonstrate how such planning could take place with existing data. We believe that this model would form an adequate basis at least for demonstration of the HES concept with some changes in the primary/specialty care mix specifications.

Changes Needed To Accomplish an HES

Our study also addresses the changes needed in DoD programs and management to make an HES succeed. While many changes would improve the functioning of an HES, several changes appear central to success. The major changes we set forth (and some smaller changes we recommend) would require changes in legal authorization, Service regulations, or both. In some cases, interpretations may vary concerning the need for new authorization, and appropriate legal review would be needed.

Replacement Budgets. Actual staffing in MTFs deviates from manning authorizations because of the overall inability of the military to recruit as many providers as the plan includes, and because assigned providers may be called on sudden duty elsewhere. We develop a new budgetary device called the "replacement budget" to offset this risk. Put simply, when an MTF receives a target patient load to enroll, it also receives authorization for a specific mix and size of provider staff. Any time this staffing authorization is not filled, an automatic replacement budget amount would be allocated, so that the MTF commander could either purchase supplemental care from the private sector (on a visit-by-visit basis) or hire temporary or permanent replacement staff. We envision this budget as administered by the Services through their normal medical chains of command.

Reinsurance. MTFs face risk not only from staffing uncertainties but also from the unusually expensive patient. Especially in smaller MTFs, a single expensive case (motorcycle accident with patient in a coma, burn patient, as examples) could place considerable financial stress on MTF budgets. Thus, we develop a reinsurance mechanism, administered by each Service, whereby unusually expensive patients are paid for by a central insurance plan. Such a plan corresponds to the sorts of reinsurance that private prepaid practice plans (such as HMOs) purchase from the insurance industry.

The Health Allowance. We have already discussed the potential uses of the health allowance. We note here that this concept is new and would require new legislation. This new allowance represents a form of pay and would be considered through the same mechanisms as any changes in the pay or benefits structure of the military.

Data Systems. The current data systems of DoD could not support an HES, but certain changes could be made that would allow DoD to use these systems effectively. The capabilities of DEERS (Defense Enrollment Eligibility Registration System), TRIMIS (Tri-Service Medical Information System), and other systems would have to expand, and the accuracy and completeness of these systems would have to be enhanced. Many MTFs do not yet have all of these systems operational, and successful functioning of an HES would depend upon widespread functioning of these information systems.

Other Changes. These changes represent the most important that we have identified in the course of our research to allow an HES to function. We have also identified additional changes that would allow an HES to operate more efficiently, although many of these changes would improve efficiency regardless of whether the HES concept were adopted or not. Section V details these changes.

→ This study concludes

CONCLUSIONS AND NEXT STEPS

From our research findings, we conclude that the HES concept is not feasible today but would be feasible given the changes we discussed in the report — especially the replacement budget, the reinsurance plan, and successful completion of appropriate data and information systems. The authors

We cannot draw final conclusions on the eventual desirability of an HES. While the incentive structures of an HES and the ability to manage the health care system better both offer great promise for improvements in cost and quality of care, only a demonstration offers the opportunity to observe how outcomes vary under different program designs. Specifically, a controlled demonstration can provide information including: (1)

Military Treatment Facilities (MTF)

- Would patient enrollment match the projections? Would differential premiums or health allowances be needed to balance supply and demand for MTF services? What are the readiness training consequences of actual enrollments? (2)
- How much efficiency gain would arise from the new incentives? (3)
- How would patients use medical care under an HES environment in MTF? How would medical practice patterns change (if at all)? and (4)
- Are currently available models adequate to project enrollment or are new data and models needed?

In addition, choices must be made to configure an HES appropriately. The major choices include copayment levels, catastrophic insurance

protection features, any premiums charged, health allowance levels, and certification of non-MTF health plans. A demonstration could include variability in copayment structures to determine whether copayment has the same effects as observed in the civilian sector.

Each important change in DoD management and organization requires new activities in DoD and choices about the level of administration, the mechanisms of financial control, and the establishment of plans that provide appropriate financial protection to MTF commanders without destroying the desirable features of incentives built into the HES concept.

Two paths appear open to DoD. The first would proceed with a demonstration to gather data on important aspects of an HES that cannot be learned from current data. Section VIII discusses how such a demonstration might proceed.

An alternative path would begin a phased implementation of the HES concept without the intermediate step of a demonstration. This assumes that DoD has decided that the benefits of an HES outweigh the costs, i.e., the concept is desirable. If so, then the advantages of proceeding immediately include:

- Less delay will have been introduced before the HES would be operational.
- Greater assurance is provided that the first phases will accurately represent the effects of a full-scale program.

In particular, a fully implemented HES would require significant changes in organization and management. The possibility exists that a demonstration might have to take place without such changes being fully implemented, leading to apparent failure of the demonstration. Even if the demonstration is carefully designed to mimic full implementation, it can fail if the participants, believing the changes to be temporary, fail to respond. Therefore, particularly in the context of large and complex organizations, demonstrations can run the risk of providing incorrect indications of what a system-wide change might produce.

Proceeding without a demonstration also raises significant risks, as noted previously. The very issues that a demonstration could clarify all pose potentially important sources of difficulty for operating an HES effectively while allowing the goals of military medicine to be met. A demonstration appears desirable to reap the full potential of an HES, but we recognize that organizational complexities might make the results from a demonstration misleading. As we discuss in Sec.

VIII, most of the steps that DoD would take for a phased implementation appear similar to those needed to initiate a carefully designed demonstration.

II. BENEFICIARY CHOICE PATTERNS UNDER THE TRADITIONAL MILITARY HEALTH SERVICES SYSTEM

To assess the probable impact of conversion to an HES, it is necessary to begin with a clear picture of the status quo. Under the traditional Military Health Services System (MHSS), it has been possible for individual military beneficiaries to select a mix of sources for health care and for MTFs to depend on alternative sources to supply services that lie outside the capability or mission of the MHSS. An HES would restrict those options and thus in principle might represent a radical departure from the status quo. But such options can exist in principle and yet be rarely applied in practice. Whether restricting those options would have much practical impact is an empirical question—one addressed in this section using data from the 1978 Health Services Utilization Survey (HSUS).[1]

OVERVIEW OF THE FINDINGS

The following summarizes the quantitative results and our interpretations of them:

1. About two-thirds of all military beneficiaries in 1978 exclusively used a single source of care.

Even if active duty personnel are not counted, exclusive reliance on a single source was frequent: 60 percent of all nonactive duty beneficiaries used either MTFs or the civilian sector exclusively. Among these beneficiaries, formal enrollment with their usual source would not (in itself) have been a noticeable departure from the traditional MHSS. It would also have had no impact on the MTF case loads and case mixes attributable to these beneficiaries.

2. Another 5 percent of the beneficiaries (6 percent of the nonactive duty beneficiaries) reported no utilization and no usual source of care during 1978.

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[1]What is needed to answer the question is evidence on the extent to which individual military beneficiaries already use a single source for all or nearly all of their health care. Such evidence is difficult to obtain from military information systems that were designed to support the traditional system. One of the very few data sources that report utilization patterns for individual beneficiaries is the 1978 survey, described in Appendix A.

This provides the best available estimate of the proportion of the beneficiary population that rarely seeks health care. It is difficult to predict what enrollment decisions would be made by infrequent users. What can be said is that their decisions would have little effect on MTF case loads or case mixes, but that MTFs would benefit from enrolling these beneficiaries if resources are allocated to MTFs by a capitation formula.

3. Crossover users—individuals who obtained care from mixed sources—accounted for about 30 percent of the 1978 beneficiary population (one-third of nonactive duty eligibles).

About half of these beneficiaries used MTFs for about 50 percent of their health care and might have used MTFs more if there had not been provider shortages. The remainder of these beneficiaries obtained more than half their care from civilian sources.

Enrollment choices among crossover beneficiaries would have the greatest impact on MTF case loads and case mixes. Hypothetically, if all crossover beneficiaries had enrolled with MTFs under an HES program in 1978, MTF case loads would have been 46 percent greater. However, it is unlikely that all of the crossovers would have voluntarily chosen MTF enrollment (in the absence of added economic incentives to do so). A more reasonable estimate is that voluntary enrollment under an HES might have increased 1978 MTF service responsibilities by just 10 to 30 percent.

4. Without increasing ambulatory or inpatient case loads,[2] MTFs in 1978 could have enrolled all active duty personnel and their dependents and about 40 percent of all other eligible beneficiaries.

Because most active duty dependents already relied on MTFs for most health care, giving them priority for MTF enrollment would have only modestly increased their aggregate utilization of MTFs, even if all of them chose MTF enrollment. There would have remained a substantial number of enrollment slots for retirees, whose case types are regarded as contributing to MTFs' training and readiness missions.

5. About three-quarters of the eligible families relied on the same source of care for all family members.

An HES policy that permitted choice of enrollment but required all family members to select the same source would have been comfortable for the vast majority of families. However, such a policy would interfere with the historically observed transition to civilian sources among children approaching the age of MHSS noneligibility.

6. Demographic and socioeconomic characteristics—and especially travel time to the nearest MTF—are important in determining whether beneficiaries rely on the civilian sector, or the MTFs, or cross over.

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[2]Section VI addresses the specialty mix implications of case mix changes.

A preliminary model applied to the 1978 HSUS data suggests that enrollment decisions can be predicted in the aggregate and for individual MTFs. A demonstration or experimental HES project could refine and calibrate the model, making it feasible to plan a full-scale HES and evaluate its cost and utilization impacts.

COMPONENTS OF THE ANALYSIS

The analysis has three components. The first uses unweighted cross-tabulations to address basic questions about the health care sources used by military beneficiaries in 1978, how reliant they were on those sources, and how that reliance varied among Service branches and eligibility categories.

The second component uses the 1978 HSUS data to illustrate how more recent survey data could help predict beneficiaries' enrollment choices under HES. Details of the preliminary prediction model are reported in Appendix A.

The third component simulates the enrollment patterns and MTF case load impacts that might have been observed if an HES had been implemented in 1978.

BASIC FINDINGS FROM TABULATIONS

Do Many Beneficiaries Rely on a Single Source of Care?

Yes. Most survey respondents indicated that they rely on a usual source of care and reported obtaining most services there.

People who reported some ambulatory visits and a usual source represented three-quarters *of* all the survey respondents—and 75 percent of them reported that *all* their visits were to the usual source they cited. Another 10 percent reported more visits to their usual source than to any other.

Of the 1191 individuals who reported inpatient stays as well as a usual source of care, more than three-quarters had all hospital stays at their usual source. This figure ranges from 70 percent for respondents whose usual source is the MTF to 90 percent for those whose usual source is the civilian sector.

We suspect that even more people would have obtained their inpatient care from their usual source if provider choice had not been restricted. Certificate of Nonavailability data for 1980 through 1982 show that roughly 70 percent of the authorizations for inpatient care

away from the MTF were issued because of an "excess wait for admission" or to obtain a "type of care not provided"; if the same was true in 1978, perhaps 90 percent or more of the patients who said they rely on the MTF would have gotten inpatient care there if availability had permitted it. Similarly, the patients who rely on the civilian sector might have received more of their inpatient care from civilian sources if they had not needed Certificate of Noneligibility authorization.

Do Entire Families Cite the Same Usual Source of Care?

Yes. Among the survey's 2430 multiperson families,[3] all but 18 percent cited the same usual source for all family members. If we suppose that people who cite a usual source would be amenable to enrolling in an HES plan with that source, fewer than one family in five would have trouble selecting a single plan for all family members.

The MTF was the most common unanimous source cited, accounting for 55 percent of the families. Another quarter of the families named the civilian sector as the unanimous choice.

Active duty dependents generally rely unanimously on the MTF, along with their active duty sponsor. This was the case for 86 percent of the active duty families.[4]

A smaller fraction—43 percent—of the multiperson families with nonactive duty sponsors unanimously listed the MTF as the usual source of care. Among the nonactive duty families, nearly 35 percent named the civilian sector as the unanimous choice.

The ages of children are related to whether the MTF is their usual source. Among children for whom a usual source was cited, we found a steady decline in the MTF percentage as age rises—and a corresponding increase in the civilian percentage. The children's age "effect" is illustrated in Fig. 1. For many children, the transition away from

[3]In this report, we use the term "household" to mean a sponsor and all of that sponsor's dependents. (However, it is not necessarily true that all household members reside together.) Some households contain only one member: an active duty single, a retired single, or a single survivor without dependents. We reserve the term "family" for multiperson households. Notice also that most data reported in this section derive from responses for individuals within a household, whereas the data for this question are for entire households or families.

[4]Among active duty families without children, just 19 percent indicated that the spouse relies on a different usual source than the active duty sponsor. (Nearly half the active duty families with a single parent (i.e., an active duty sponsor with children but no spouse) indicated mixed sources of care, but there were only 28 sampled families in this group.) Among "whole" active duty families (sponsor plus spouse plus children), only 13 percent varied their sources of care; when a "whole" active duty family has a mix of usual sources, it is common for the children to have the same usual source as the active duty sponsor.

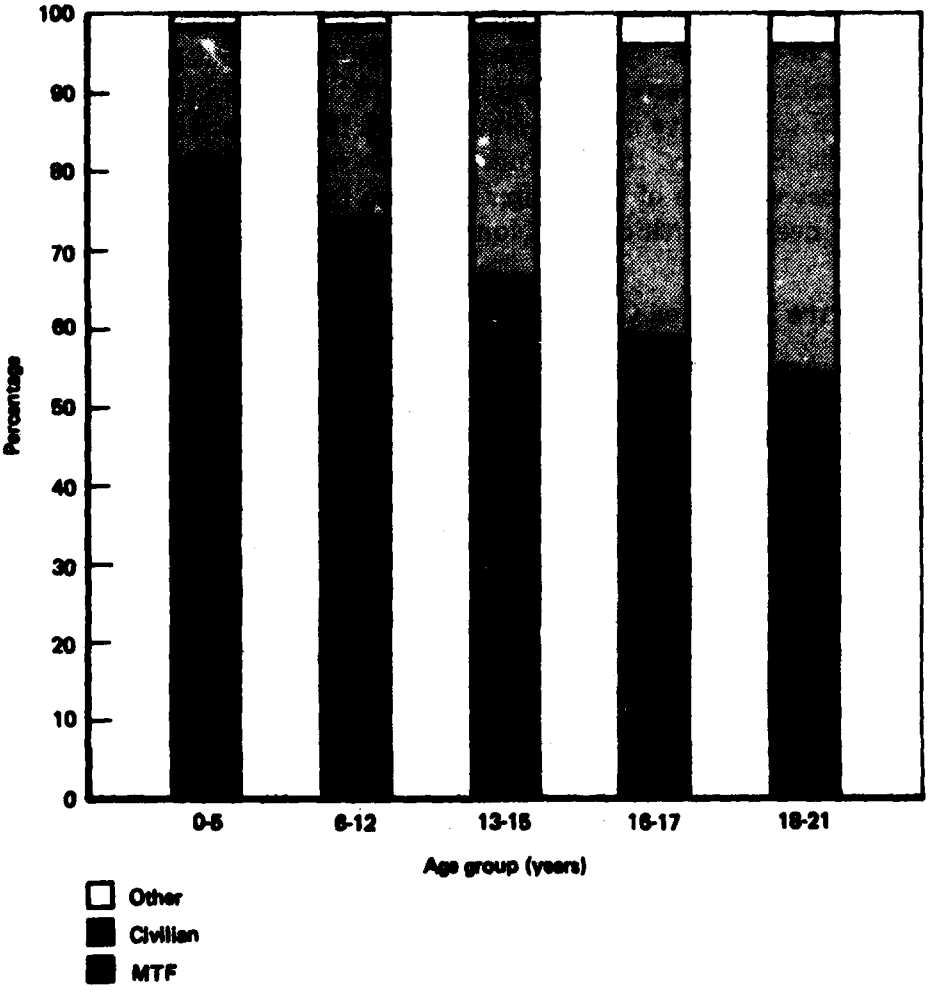

Fig. 1—Usual source of health care for all dependent children, by age

MTF affiliation anticipates the age at which MTF eligibility ends. Under current MHSS policy, this transition is feasible for children without any change in the sources usually used by their parents and younger siblings.

To simplify enrollment management (e.g., eligibility determination and tracking), an HES could implement a policy requiring household rather than individual enrollment. This policy would alter the MTF enrollment mix only slightly, if at all; MTF enrollment would be especially common among active duty households, followed by retiree households, and then by survivor households. However, the policy would interfere with the natural transition away from MTF affiliation as children approach the age of noneligibility.

Does Family Reliance on the MTF Vary by Branch of Service? If So, What Might Account for the Differences?

Figures 2a and 2b indicate some differences among Service branches in the frequency with which all household members cite the MTF as

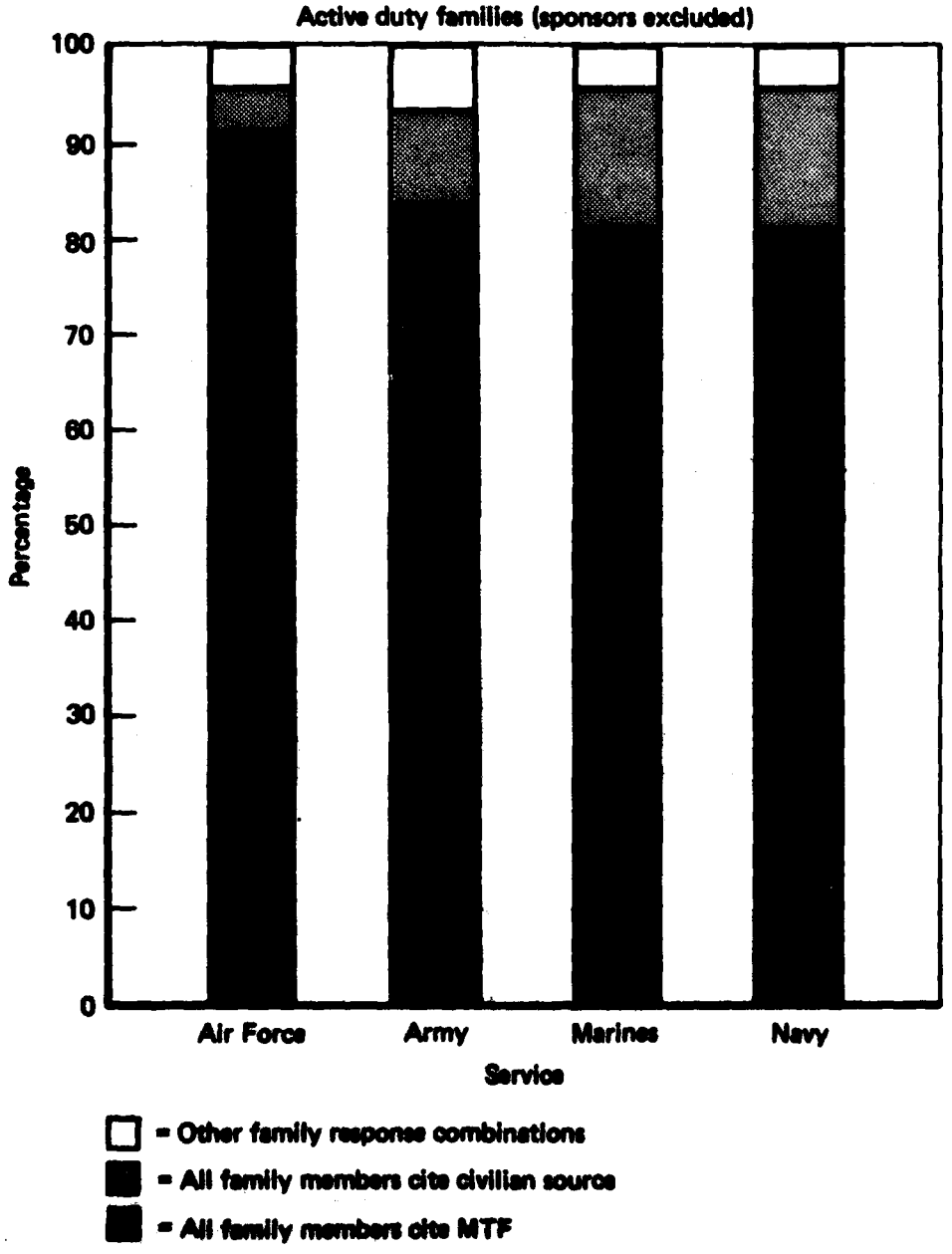

Fig. 2a—Percentage of active duty families citing different usual source combinations, by sponsor's status and Service branch

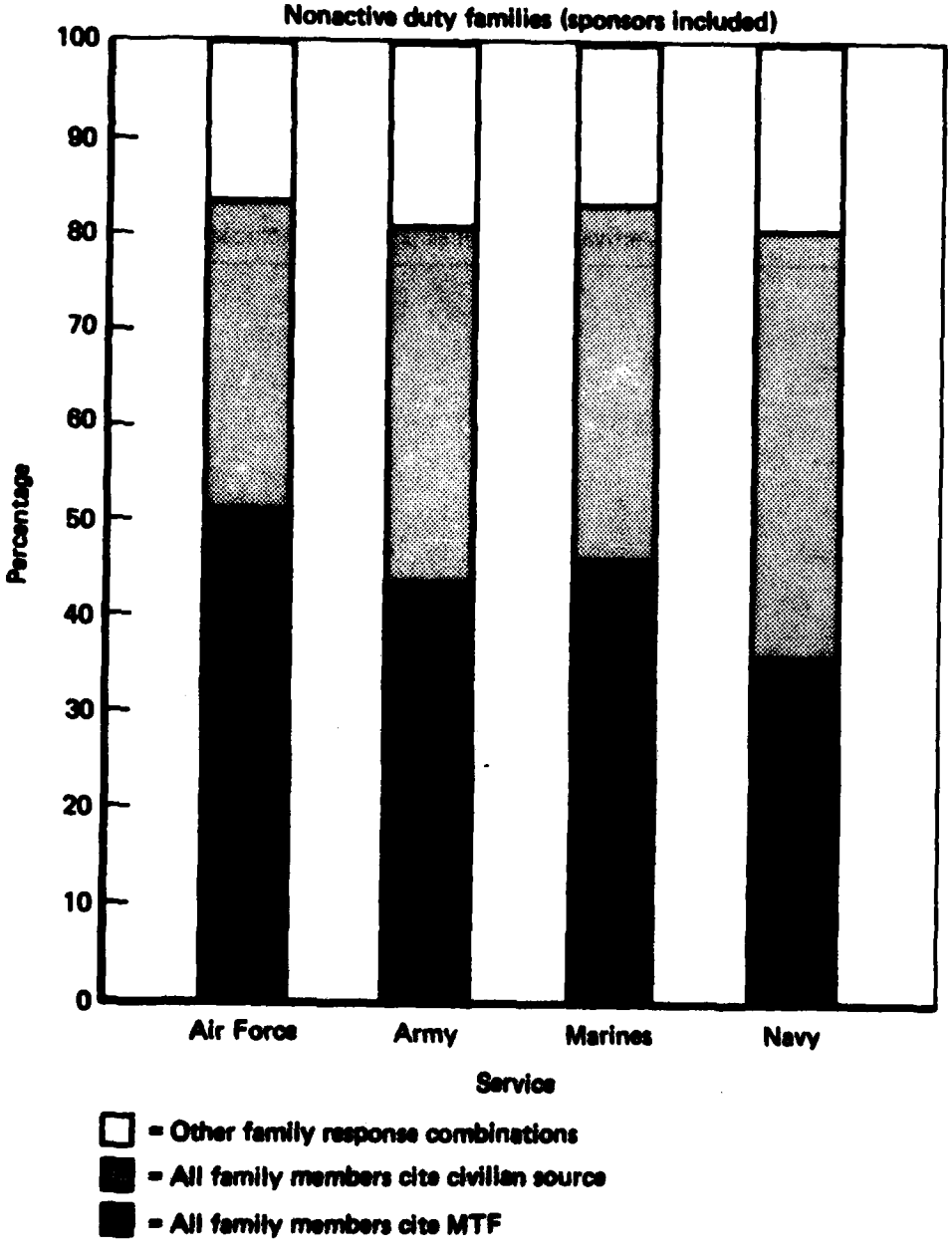

Fig. 2b—Percentage of nonactive duty families citing different usual source combinations, by sponsor's status and Service branch

their usual source of care. Figure 2a pertains to active duty families, Fig. 2b to nonactive duty families. (The data underlying the two graphs are in Appendix A, Tables A.1 and A.2.) In both graphs, Air Force households show the highest rates of unanimous MTF reliance as the usual source of care. Army households stake out the middle

ground. They are somewhat less likely than Air Force households to rely unanimously on the MTF, and somewhat more likely to rely unanimously on civilian providers. For active duty families, MTF reliance is least common in the Marines and the Navy. However, Marine nonactive duty households rely on alternative sources much like Army nonactive duty households, leaving the Navy as the least MTF-reliant of the branches with respect to nonactive duty households.

We explored the possibility that the lower MTF-reliance rates for Navy and Marine eligibles might be related to the fact that there are relatively few Navy MTFs (which serve Marines as well). The hypothesis was that Navy and Marine eligibles might have to travel much farther to use an MTF, which might reduce their tendency to rely on MTF care.

Distance to the MTF is clearly associated with its mention as a usual source in the survey data overall. This is illustrated in Fig. 3. For each of four categories for travel time to the MTF, the figure shows the percentage of eligibles claiming the MTF as their usual source. The percentages fall as travel time increases.

However, data presented in Appendix A, Tables A.3 and A.4, show that Navy and Marine active duty households do not live farther from their MTFs than households in other Service branches, and that Navy nonactive duty households generally live closer to MTFs than do nonactive duty households in other Service branches. For nonactive duty households, travel-time differences do not explain interservice differences in MTF reliance. For active duty families, travel times might help explain the high MTF-reliance rates in the Air Force but would also suggest that the Army—not the Navy or Marines—would have the lowest MTF-reliance rates. If anything, travel-time distributions make the relatively low MTF-reliance rates for the Navy and Marine active duty families even more puzzling.

We also tested the hypothesis that the explanation might lie in differences among the characteristics of households in different Service branches. Overall, the survey data suggest that MTF-reliance is more frequent among households that contain young children. (This could be explained by the absence of copayments for MTF care, since civilian HMOs that have low or zero copayments also tend to enroll a high proportion of families with young children.) For example, among active duty families in all Service branches, the percentage relying unanimously on the MTF rises from 76 percent for those without children to 86 percent for those with at least one child.

There are Service branch differences in the composition of families (e.g., the percentage of active duty families with children is somewhat lower in the Marine and Navy survey samples), but they are insufficient to explain much of the difference in MTF reliance. For example,

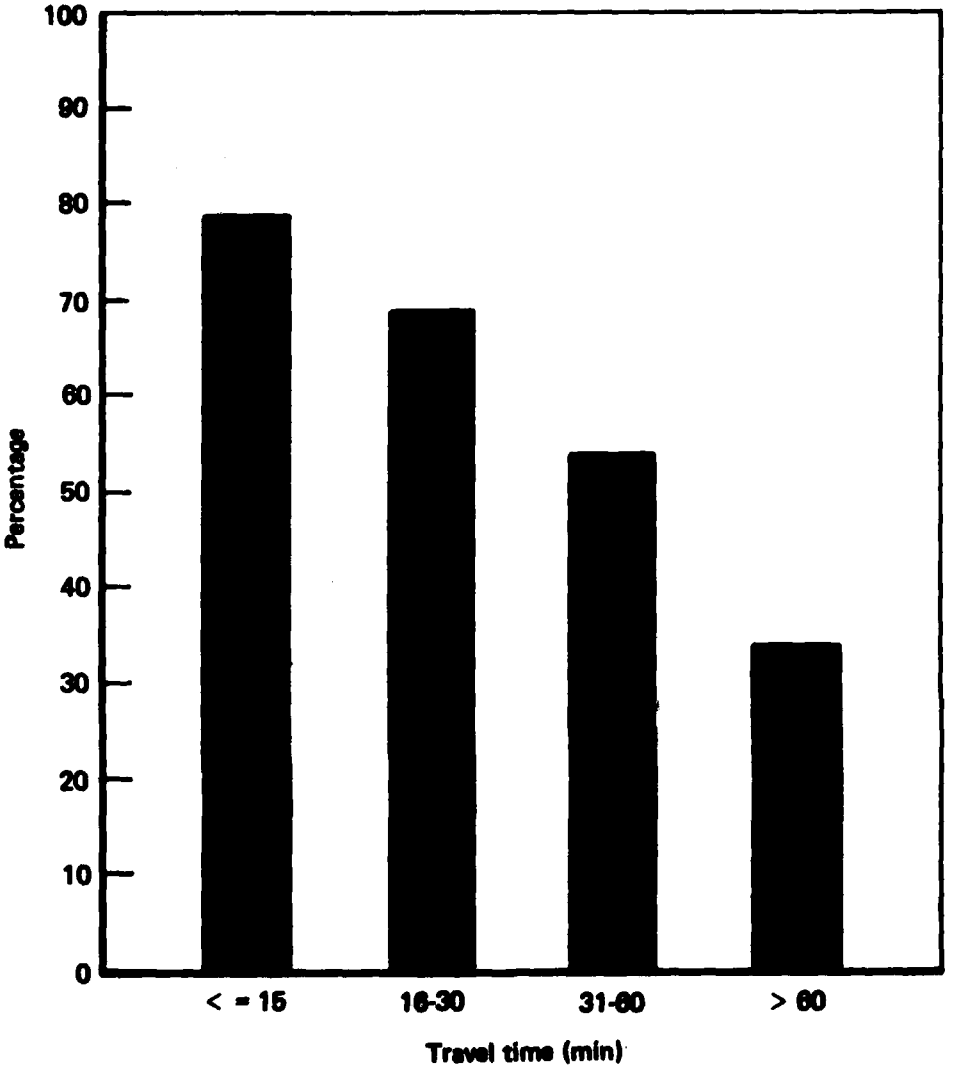

Fig. 3—Percentage who named MTF as usual source, by distance to MTF

if we adjust the Navy data to the values they would have if Navy active duty families were as likely to have children as Air Force active duty families, the Navy MTF-reliance rate rises only slightly, from 80.9 to 81.7 percent, still well below the 88.7 percent rate for the Air Force. Furthermore, the enrollment choice analysis presented in Appendix A suggests that, after taking account of age, travel time, family income, and other demographic characteristics, a smaller fraction of Navy children relied on MTFs than did children in other Service branches. Thus reliance on MTFs would be less common in the Navy than in other services even if there were no differences in family composition.

Many Navy MTF officers argue that active duty dependents should receive first priority for enrollment under an HES because the Navy has a special obligation to assure dependents' welfare when the active duty sponsor is away at sea. The survey data indicate that active duty sponsors' absences were about as common in the Army as in the Navy and Marines—and that active duty dependents whose sponsors are away from home did *not* choose to rely more on the MTF. On the contrary: Among Naval active duty families that had some ambulatory visits during 1978, the percentage that used only the MTF was actually higher among those whose sponsors were present (68 percent vs. 48 percent). Several different examinations of the survey data yielded the same conclusion: Active duty dependents with absent sponsors, in the Navy and in all Service branches, have less reliance on the MTF.

We suspect that the 1978 Service branch differences in MTF reliance were caused by differences in availability of MTF health services, particularly those most heavily used by children. Since 1978, the availability of MTF resources has changed markedly. With more recent survey data, we could test the hypothesis that changes in MTF resources have changed MTF-reliance patterns. If the hypothesis is correct, we would not expect to observe different MTF enrollment rates among Service branches under an HES that implements a uniform MTF resource allocation policy. Being unable to test the hypothesis with currently available data, however, we are forced to conclude that Service branches might experience different HES enrollment rates.

Do People Without Visits Have Distinctly Different Usual Sources of Care?

About 14 percent of the individuals who cited a usual source of care had no reported visits. The following evidence suggests that, overall, people without visits are distributed among usual sources much like people with visits:[5]

	Usual Source of Care (%)			
	MTF	Civilian	VA[a]	Other
Individuals with visits	65	30	2	3
Individuals without	59	33	2	5

[a]Veterans Administration.

[5]The distributions become even more similar when we omit active duty sponsors. For example, the percentages naming the MTF become 60 percent and 56 percent for nonactive duty eligibles with and without visits, respectively.

Individuals without visits may represent a simple random sample of all people who have usual sources.

However, people who do not have ambulatory visits during a full year could include individuals who are especially healthy or especially reluctant to seek ambulatory care. Such individuals do not impose much utilization on a source of health care and thus would be advantageous enrollees for providers whose reimbursement is by capitation. People who do not use much care may also be especially amenable to changing their usual source in response to the premiums charged for alternative insurance plans. Only by implementing an HES, perhaps on a demonstration basis, would it be possible to determine what enrollment decisions would be among these beneficiaries.

What Sources Are Used by People Who Do Not Name a Usual Source?

About 12 percent of the individual respondents indicated that they have no usual source of care. (Remarkably, this statement was made by over 17 percent of the active duty sponsors.) An observer might speculate that these individuals rarely use health care and, when they do, are especially likely to vary their sources of care from one episode to another. However, 84 percent of the individuals who reported no usual source nevertheless reported ambulatory visits during 1978—and the evidence from these visits (see Appendix A, Table A.5) suggests that such individuals rely on particular sources of care about the same way as people who reported a usual source.[6]

People who did not name a usual source may not feel themselves to be reliant on a particular source of care—and thus may shift allegiance easily if financial or other considerations warrant it. However, even these individuals often use a source of care exclusively, and we would not be surprised to find them enrolling with that source under an HES. That is what we postulate in the simulation reported below; a demonstration would provide evidence to support (or refute) these beliefs.

IMPLICATIONS FOR ANALYZING MTF ENROLLMENT AND CASE LOADS UNDER AN HES

The findings from the basic tabulations of 1978 HSUS data suggest that: (a) The survey data yield plausible results without anomalies

[6] There is one way in which people who did or did not name a usual source differ markedly: use of inpatient services. Almost every individual who had an inpatient stay reported having a usual source of care. Persons with inpatient stays accounted for nearly 14 percent of all nonactive duty persons who reported a usual source of care.

that might suggest major sampling or response biases; (b) military eligibles reveal provider choice patterns not unlike those observed for civilians (e.g., in terms of response to such factors as travel times); and (c) the majority of the survey respondents rely on a single source for most or all of their health care. Even in the absence of an HES and during a period of severe restrictions on MTF provider availability, many—though not all—eligibles behaved as though they were enrolled with a particular source and used the MTF as that source for ambulatory as well as inpatient care.

Some changes have undoubtedly occurred since 1978. The eligible population is larger today, and changes in enlistment and reenlistment rates may have shifted the population's composition with respect to age, sex, family size, and other characteristics. Changes in the availability of resources (especially providers) at MTFs have probably increased their ability to provide care to those who seek it. The Beneficiary Health Care Survey currently underway might well show changes in MTF-reliance rates within eligibility strata as well as changes in the numbers of eligibles in those strata.

Nonetheless, we anticipate that the new data, like the 1978 survey, will show that most individuals (and even entire households) tend to receive the majority of their health care from a single "usual" source—typically either the MTF or the civilian sector. Though today's MHSS eligibles may have different MTF and civilian reliance rates than 1978's eligibles, we expect reliance on *some* usual source to remain a prevalent behavior pattern.

Reliance on a usual source produces utilization patterns much like those under an enrollment system. Once an individual decides to rely on a particular provider group, nearly all utilization is directed to that group. On occasion, the individual might turn to an alternative provider, or the usual provider might decline treatment. However, this occurs even in formal enrollment systems (e.g., civilian HMOs); such systems invariably contain provisions for emergency care and referrals, and their enrollees occasionally purchase out-of-plan services. An individual may change his or her usual source over time, perhaps because of changes in family composition and especially in response to changed insurance benefits. But again, such changes are also observed in formal enrollment systems during their "open enrollment" periods. Formal enrollment would not have much impact on those individuals who have formed a close informal bond with a particular provider group.

Compared to formal enrollment systems, what distinguishes the "quasi-enrollment" based on informal bonds is the existence of a crossover population—a group of individuals who frequently mix their sources of care. These are the individuals whose response to a formal enrollment system is least predictable, and these are the individuals

whose enrollment decisions will most affect MTF case loads and case mixes under an HES.

At present, the extent to which we can predict HES enrollment and utilization patterns is limited in two ways: Available data on usual-source patterns and the size of the crossover population are five years old. And even current data would reflect current insurance and financing terms that might be revised under an HES. The first limitation will soon be eliminated by results from the new survey. The second limitation could be eliminated using data from an appropriately designed demonstration program.

Using 1978 data, however, we can illustrate how the analysis would proceed. The illustration simulates what an HES program might have done to MTF case loads if the program had been implemented in 1978.

ENROLLMENT SIMULATION

For simulation purposes, we classified individuals according to their usual sources and levels of demonstrated reliance on them. Details of the quasi-enrollment classification scheme are described in Appendix A. Here, we describe the seven major groups used for the simulation.[7]

The first group consists of all active duty sponsors, who would (with few exceptions) necessarily enroll with MTFs under an HES. The remaining six groups are nonactive duty persons only.

Individuals who used only MTF care are designated as "MTF-reliant." Throughout the simulation analysis, these individuals are assumed to enroll with the MTF. Correspondingly, individuals who used only civilian care are designated as "civilian-reliant" and are assumed to enroll with civilian providers.

Some individuals who used mixed sources of care named the MTF as their usual source and are grouped as "MTF-preference crossovers." Crossover users who named the civilian sector as their usual source are designated as "civilian-preference crossovers."

"Infrequent users"—people without visits who did not name a usual source—form a separate category because their enrollment decisions would have little effect on utilization patterns.

Finally, individuals who did not meet the foregoing criteria form the "all other" group.

The weighted distribution of the 1978 survey respondents among the quasi-enrollment groups is:

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[7]For most eligibles, the categorization reflects their own statements about their usual sources of care. Exceptions were made when the individual's ambulatory visits reflected reliance on some source other than the usual one. Inpatient stays were not used in the classification process. The Certificate of Noneligibility program makes data on sources of inpatient stays suspect as an indicator of preferences among alternative providers.

Group	Percent of Respondents
Active duty	15.6
MTF-reliant	33.3
MTF-preference crossovers	15.9
Civilian-preference crossovers	7.7
Civilian-reliant	17.9
Infrequent users	4.9
All others	4.6

These quasi-enrollment rates are behavioral outcomes actually observed under conditions that prevailed in 1978. Such rates are naive indicators of what HES enrollment decisions might have been even in that year.

If an HES were to be implemented in the future, a full enrollment prediction analysis would be highly desirable. The analysis would estimate how provider choices are affected by a patient's demographic characteristics, accessibility to MTF and civilian sources of care, local health care costs, and other variables. A full prediction methodology would permit predictions of enrollment and utilization patterns for individual MTFs (much needed for resource allocation planning) and could even suggest how these patterns might change over time and in response to different insurance plans under an HES.

To test the feasibility of developing a full enrollment prediction method, we applied a preliminary model of quasi-enrollment behavior to the survey data. The model is overly simplified because it assumes that travel times and personal and family characteristics are the only explanatory variables. Nonetheless, the preliminary model results suggest that a more refined analysis would be both feasible and useful. The results of the feasibility test are presented in Appendix A.

Because the model is not yet fully developed, we have not used its predictions in the 1978 simulation presented below. Instead, we use the quasi-enrollment and health care utilization patterns actually observed in 1978. Thus, the simulation of 1978 HES enrollment patterns makes the following assumptions:

1. Under HES enrollment, an individual would have the same numbers of visits, inpatient stays, and inpatient days per stay as were observed under quasi-enrollment.
2. MTF-reliant and civilian-reliant individuals would enroll with the MTF or the civilian sector, respectively. Active duty personnel would be enrolled in the MTF.

In an actual analysis, copayment effects on utilization patterns should be recognized (contrary to assumption 1). An actual analysis should

also examine outcomes under different enrollment policies, such as those requiring whole-family enrollment; a possible outcome is less than universal enrollment with the usual source among MTF-reliant and civilian-reliant individuals (contrary to assumption 2). At the end of this section, we will relax assumption 2 to consider an enrollment policy that gives MTF priority to active duty dependents.

The simulation does consider alternative assumptions about the enrollment decisions among crossover eligibles. We simulated effects on MTF case loads for three alternative enrollment choice scenarios:

1. Universal MTF Enrollment: This simulation assumes that all 1978 eligibles would have enrolled in the MTF option. We do not regard this as a likely outcome under HES, but we use it to identify an upper bound for case load effects.

2. Preference-Based MTF Enrollment: This simulation assumes that the MTF would have enrolled all active duty personnel, all MTF-reliant nonactive duty individuals, and all MTF-preference crossover individuals—and no one else. In the absence of a fully developed enrollment choice model, this simulation provides the most likely estimate of what MTF enrollment would have been under a 1978 HES.

3. Preference-Based and Residual Enrollment: This simulation expands case 3 enrollment by assuming the all other group would also enroll with MTFs. Enrollment decisions in the all other group are especially uncertain. The comparison between case 3 and case 2 shows how much MTF case loads could vary depending on whether the all other group would select MTF enrollment.

Results for each scenario are measured as percentage changes from 1978 utilization reported by survey respondents. (The reported numbers of MTF visits, inpatient stays, and inpatient days are presented in Appendix A, Table A.9.) The survey data probably understate utilization—especially ambulatory visits.[8] Survey respondents may simply have failed to recall some health care obtained during the previous 12 months, and recall errors are probably more common for visits than for inpatient stays. However, the measures of case load effects are designed to be accurate if underreporting was randomly distributed among individuals and between civilian and MTF utilization. For example, suppose as much as 40 percent of visits are unreported across the board. Then each simulation result would understate both preenrollment and postenrollment MTF visits by 40 percent. Nonetheless, the percentage change in MTF visits would be accurate.

[8]Using weighted 1978 sample data, the average number of reported ambulatory visits per person is 4.4 (or 4.1 for active duty personnel only), whereas the average inpatient admissions rate is 0.19 (or 0.16 for active duty personnel). This inpatient admission rate is similar to the value obtained from the Resource Analysis and Planning System (RAPS) data for FY82, but the survey's ambulatory visit rate is much lower than FY82 PMRRS data show. See Sec. VI.

Results for the simulation scenarios are summarized in Table 1; Appendix A shows detailed results, including outcomes by branch of service.

One notable implication of the simulations is that the ambulatory case load effects of MTF enrollment appear much smaller (in percentage terms) than the inpatient case load effects. (This applies to each service branch as well as in the aggregate.) The reason: Compared to active duty and MTF-reliant nonactive duty individuals, those in crossover groups reported fewer ambulatory visits but higher inpatient admissions per capita. Consequently, when the simulation "moves" utilization by the crossover groups into the MTF, the percentage increase in MTF ambulatory case loads is smaller than the percentage increase in MTF inpatient case loads.

There are two alternative reasons to suspect that the simulation understates enrollment effects on MTF ambulatory case loads. One is nonrandom recall error: If crossover groups simply recalled a smaller fraction of their visits, then the simulated enrollment effects would understate the appropriate percentage change in ambulatory case loads. The other possible explanation is a violation of simulation assumption 1: If crossover groups curbed their visits to civilian sources in response to civilian copayments, then the absence of MTF copayments would encourage increased ambulatory utilization when crossover patients enroll there. In an actual HES enrollment analysis, the separate effects of recall error and copayment effects should be distinguished to determine how different HES insurance plans would affect utilization.

Based on inpatient data, the simulation results suggest that even universal MTF enrollment among crossover individuals would have

Table 1

SIMULATED MTF CASE LOAD EFFECTS OF 1976 HES

Simulation Case	Percentage Change in: MTF Visits	MTF Inpatient Stays	MTF Inpatient Days
1. Universal enrollment	+27.9	+42.0	+46.6
2. Preference-based enrollment	+5.9	+10.7	+11.2
3. Preference-based and residual enrollment	+14.6	+27.3	+33.7

SOURCE: Authors' calculations from HSUS data, weighted for nonresponse and excluding dependent parents.

increased 1978 MTF case loads by less than 50 percent. A reasonable speculation that presumes less than universal MTF enrollment would be a 10 to 30 percent increase, resulting from fairly high MTF enrollment among MTF-preference crossovers (and perhaps by the all other group) but fairly low enrollment among civilian-preference crossovers.

In 1978, when MTF resources were somewhat more restricted than today, it might have been difficult for MTFs to absorb such an increase. (As we noted in the discussion of question 1 above, the 1978 MTF usage rates for inpatient care might have been higher if MTF capability had permitted it.) In 1978, some rationing of MTF utilization might have been necessary under an HES.

But the simulation does not suggest that the MHSS as a whole would have had to deny MTF enrollment to those voluntarily seeking it. Under an HES, MTFs might have exercised some utilization controls over visits and inpatient lengths of stay. Such controls could have applied to MTF-reliant individuals, who were assumed to be MTF enrollees throughout the simulation and who accounted for a little over half of the 1978 MTF case load, as well as to enrolled members of the crossover groups. According to the simulation data, if nonactive duty persons reduced visits to the MTF by just 5 percent, the MTFs could have supplied 15 percent of all the civilian visits generated by crossover individuals—without any change in MTF ambulatory case loads. A 5 percent reduction in nonactive duty inpatient stays would have allowed the MHSS system to absorb 9 percent of all civilian stays by crossover eligibles. In short, even modestly rationing 1978 utilization among nonactive duty eligibles would have gone a long way to permitting voluntary enrollment under an HES. This, together with modest productivity increases and modest increases in MTF resources, probably could have avoided extensive rationing of enrollment slots in that year.[9]

The detailed simulation results in Appendix A show that failure to enroll the civilian-preference and all other groups would have much smaller effects on MTF case loads than would high MTF enrollment among those groups. The explanation: Those groups reported that a smaller fraction of their health care was from the MTF than from other sources. For example, the all other group reported that only 22 percent of their admissions were to the MTF; consequently, when the simulation "moves" this group into the MTF, the MTF case load effect is substantial—but when the simulation "moves" the group out of the MTF, the case load effect is much smaller. Though recall errors may

[9]By 1988, the aggregate physician staffs at MTFs rose 20 percent over their 1978 level. This increase would have been enough to accommodate case 3 simulated enrollment.

be a factor, the effect is so substantial that we are inclined to suspect that the finding is genuine. If so, it suggests that crossover individuals in the all other and civilian-preference groups have a fairly strong allegiance to the civilian sector and are thus more likely to enroll there than in the MTF if given a free choice and no added incentives for MTF enrollment.

In contrast, MTF-preference crossovers used the MTF for about half their ambulatory and inpatient care. If they did not enroll with the MTF, the percentage reduction in MTF case loads would be about the same as the percentage increase if they did enroll. This group might actually split between MTF and non-MTF enrollment if given a choice under an HES. If so, their enrollment choices would play a major role in determining MTF case loads. A demonstration HES program could provide evidence on this question.

Effects of Enrollment Priorities

Some MTF officers have expressed the view that the military is obligated to give first enrollment priority to active duty dependents if enrollment rationing is necessary, and that this could result in a loss of retiree case types that augment the MTFs' readiness and training missions. The survey data shed some light on what such an enrollment-priority system might have done to 1978 MTF case loads.

Table A.11 in Appendix A shows that active duty dependents represent large proportions of the eligibles in the two groups (MTF-reliant and MTF-preference crossovers) most likely to yield high MTF enrollment rates. Even under voluntary enrollment without a priority system, a high proportion of all enrollees would be active duty dependents.

But suppose only active duty sponsors and their dependents were permitted to enroll. In each quasi-enrollment group, the amount of non-MTF health care that would be moved into the MTF by active duty dependents' enrollment is less than the amount of MTF care used by retirees, survivors, and their dependents. Hence, if only active duty households could enroll in the MTF, total MTF usage would fall—and the "slack" thus created could be made available to as much as 40 percent of the eligibles in retiree and survivor households. Overall, it appears that MTFs could retain many of their older patients even with a priority enrollment system and universal MTF enrollment among active duty dependents.

Case Mix Effects of Voluntary Enrollment

The survey data do not provide direct evidence on the MTF case mix effects of HES enrollment. To the extent that crossover groups in

1978 used non-MTF sources because MTFs could not provide the appropriate health care services, extensive MTF enrollment among those groups would have required an HES to obtain specialists, transfer patients, contract with civilian providers, or otherwise increase their scope of services.

However, the simulation results suggest that voluntary enrollment would have had only small effects on the MTF inpatient case mix. According to the survey data, the civilian-preference and all other groups together accounted for only 6 percent of the MTF inpatient cases in 1978, even though the Certificate of Noneligibility program gave MTFs the option to admit inpatient cases that were judged advantageous to the military readiness and training missions. Some advantageous cases might not have been available to MTFs under HES. But to argue that a large percentage of a particular case type would have been sacrificed under HES, it would be necessary to argue that the total number of cases of that type is quite small; if, as we suspect, voluntary HES would have moved only 2 to 6 percent of MTF inpatient cases into the civilian sector, the percentage loss within a case type could be large only if that case type accounts for much less than 2 to 6 percent of all cases.

CONCLUSIONS

Our analysis of 1978 HSUS data was designed to determine whether requiring military beneficiaries to enroll with a single source of health care would cause widespread disruption of traditional MHSS delivery and utilization patterns. An enrollment system's restrictions on provider choice could cause patient dissatisfaction, perhaps enough to reduce military enlistments and retention. Under an enrollment system, MTFs might find it necessary to treat enrollees' case types that do not serve readiness and training goals and might lose access to desired case types among enrollees who select nonmilitary providers. If these outcomes were pervasive, an HES might be deemed undesirable and perhaps even infeasible. However, if these outcomes would be encountered for only a few beneficiaries and cases, then the disadvantages might be outweighed by reduced costs, greater continuity of care, or other HES benefits. The analyses reported in this section were aimed at learning just how pervasively an enrollment system would change traditional patterns of military health care.

Our analysis of the 1978 HSUS data suggests that an HES would not cause widespread disruption of familiar delivery and utilization patterns. Specifically, we infer that:

- The majority of beneficiaries already rely on a single source of care and would presumably be satisfied to continue doing so under an HES that offers enrollment with the beneficiaries' chosen providers.
- To the extent that an HES increases each beneficiary's option to obtain *all* care from the selected source, some beneficiaries would prefer an HES to the traditional system and would achieve greater continuity of care.
- Voluntary enrollment under an HES would not substantially alter general MTF case mix patterns. MTFs could experience diminished access to some case types desirable for readiness and training purposes, but the effect cannot be large except for case types that are already rare.
- Nearly all active duty dependents who desire MTF enrollment could be accommodated under a voluntary enrollment system without an enrollment priority system. A priority system might be desired by DoD to guarantee that *no* active duty dependents are refused MTF enrollment, but use of priorities would not extensively alter the MTF aggregate enrollment mix under an HES.
- Nearly all active duty dependents who desire MTF enrollment could be accommodated under a voluntary enrollment system without an enrollment priority system. A priority system might be desired by DoD

III. INSURANCE AND HEALTH BENEFITS IN AN HES

INTRODUCTION AND OVERVIEW

We have shown how people actually use the MTF and CHAMPUS systems under current coverage. But an HES would possibly include changes in benefit structure as well as in other aspects of the medical care system. In this section, we begin to discuss possible changes in the benefit package.

A benefit package can vary along several dimensions, each of which must be specified. These include:

- The scope of benefits (services provided).
- Copayment and catastrophic protection structure.
- Health allowance.
- Other payments (e.g., premiums).

We discuss these in turn.

SCOPE OF BENEFITS

For active duty persons and retirees who can gain access to care, the current MTF system provides a broad scope of benefits, including hospital, physician, dental, vision and hearing, and acute psychological treatment. The only prominent exclusions include long-term care (not in the hospital) and cosmetic surgery providing only psychological benefit to the patient. Additionally, the scope of benefits is limited in reality by the medical capabilities of the MTF (or more broadly, the MTF system, when transfers to teaching hospitals are accounted for). In the largest hospitals, some but not all feasible organ transplants are undertaken, for example, and patients who could or would not travel to distant MTFs would find a substantially more curtailed set of services available in some small MTFs.

As discussed in Sec. I, the current CHAMPUS package of benefits closely matches that of many private health plans.[1] DoD could change this scope of benefits either with or without adopting an HES, and the

[1]Appendix F lists the coverage and exclusions completely.

implications for recruiting and retention would be similar in either case. To avoid injecting this added complexity into our study, we presume that this scope of benefits would remain unchanged in an HES. Changing the benefit package (for example) to include dental care for all eligible beneficiaries would modify our estimated costs and could affect retention and enlistment activity, but little of the remainder of our analysis depends upon this assumption.

The scope of benefits described here covers more services for active duty persons and retirees than for dependents. The differences in scope of benefit parallel common options available in private sector insurance plans (e.g., whether dental and vision care are covered).

Discussion of the feasibility and desirability of the HES concept does not change if DoD chooses a different scope of benefits, and we do not mean to imply by this choice that we endorse the current package or any possible alternative.

We envision that the coverage of an MTF will include a basic plan, identical for all nonactive duty enrollees, with options available in the non-MTF plans (at enrollee expense) to upgrade the coverage beyond the basic plan. For active duty persons, we envision a wider scope of benefits and nc copayments, and we foresee all active duty persons within catchment areas receiving care from MTFs. We next outline this plan more fully.

The Basic Plan

Previous discussions of the HES strongly maintain the view that benefits available to enrollees in an HES should not vary (within any beneficiary category) no matter whether the person receives care from the MTF or non-MTF sources. Put differently, if active duty dependents make no copayments in the MTF system, the same rule should hold in the non-MTF system. If copayments are required in the non-MTF system for retirees, they should be required in the MTF system as well. Each class of beneficiaries should face equal financial consequences from enrollment. There remains considerable disagreement among sources we have consulted about the overall place of copayments. In a set of DoD working papers on the HES, one concluded that acceptable copayments would "not . . . exceed current CHAMPUS payments." Yet another working paper argued that "the concept of a user fee is totally unacceptable." Clearly the possible use of copayments raises many issues, including "fairness," "equity," and (more measurable) effects on recruitment and retention of active duty personnel.

We presume for this analysis that the HES would make available a basic plan of coverage for all enrollees. The basic plan—defined in terms of a scope of benefits and any copayment structure (deductibles, copayments, etc.) desired—would be the same for all nonactive duty persons, whether enrolled in the MTF plan or a non-MTF plan.

For Medicare-eligible participants, we view the plan as continuing, except that Medicare would replace the basic plan for those not using the MTF. The extent to which the HES would contribute toward Part B premiums is a choice DoD must make, balancing off those costs against the effects (if any) on enlistment and retention of personnel.

Some active duty persons live in areas where they could be served conveniently by more than one MTF. There may be some reasons for requiring an active duty person to receive care from an MTF in his own Service (e.g., the availability of flight medicine specialists in the Air Force MTFs for their pilots, underwater medicine for naval personnel involved in diving, etc.).

Choice of Non-MTF Plans

The next set of decisions that must be made concerns the choice of non-MTF plans for each catchment area and for regions not within any catchment area. Here, we follow the model established by the FEHBP, modified as appropriate for the military. Under the FEHBP, two nationally uniform plans are made available to every federal employee (one sponsored by Blue Cross/Blue Shield, the other by Aetna Life Insurance Company). Further, certain organizations or agencies sponsor plans, some of which are available nationally, others only locally. Finally, FEHBP eligibles may also join one of a number of "Comprehensive Medical Plans," typically HMOs, which vary by geographic region. Federally specified minimum standards can apply to these various plans; several of the plans include extended benefit "high-option" variants, available at extra cost to both the government and the enrollee.

We recommend a similar structure of non-MTF packages for enrollees in any prospective HES. Most important is the prospect for developing optional insurance coverage packages beyond the "basic plan" of the HES. Clearly, past experience shows that many persons will choose the higher coverage option. Although the FEHBP currently provides additional health benefit payments for those choosing the high option, we presume that the HES would pay a flat amount (whatever will be paid toward the basic plan) and would let each enrollee choose any higher option while facing the full financial consequences. Under this arrangement, offering the higher coverage options

costs DoD little or nothing and provides a considerable benefit of flexibility in health coverage to enrollees. This "high-option" system would likely replace the current supplemental insurance purchased by many enrollees to augment CHAMPUS coverage. Higher payments for high-option insurance could be offered by DoD, with obvious cost consequences to DoD and attendant benefits in recruiting and retention. In our subsequent analysis, we have assumed that only the basic plan cost is paid by DoD for each enrollee.

As noted previously, many retirees (and some active duty families) carry third-party insurance through employment groups and other sources. Such insurance may continue in force even under the HES (and it can be specified as the first-paying policy by law). Whether people continue to carry such insurance will depend on the details of the HES plans and their costs.

If HMOs and other prepayment plans are offered as part of the non-MTF options, DoD must still decide whether the remaining non-MTF plans should include a DoD-sponsored plan alone, private sector plans alone, or some combination. Relying only on private sector plans replicates the arrangement for federal employees (FEHBP). As such, a system is readily available for replication or possibly even for direct use. Relying upon a DoD-sponsored plan alone would most readily be accomplished by modifying CHAMPUS activities to match those found in the FEHBP. CHAMPUS, under this arrangement, would offer more than one plan of coverage to every enrollee (high and low option, for example). But CHAMPUS already administers multiple plans, since the coverage and benefits differ for active duty dependents and retirees, so this should not prove difficult.

The intermediate choice is also available of allowing both CHAMPUS and civilian plans to compete for enrollees. This arrangement may deter private plans from entering the fray if they feel that the DoD-sponsored plan would present unfair competition (fearing subsidy from the government).

The major issue confronting DoD in this decision seems to be their willingness to allow the MTFs to face open competition from private sector insurance plans. DoD can exercise more control over the entire HES by operating the non-MTF insurance plans but will lose some of the advantages of free competition, including the market pressure for efficiency and the variety of options available to enrollees.

We see no clearly dominant choice on this decision. Either modifying CHAMPUS or bootstrapping into the FEHBP systems presents feasible and logical alternatives. Whether combining these two choices represents a stable configuration cannot be known without a trial.

SELECTING COPAYMENT AND CATASTROPHIC PROTECTION FEATURES

Several features enter the decision about what, if any, copayment structure to include in an HES. One needs to understand the current coverage provided (both by law and as perceived by the beneficiaries), and also the consequences for medical care use and health status of selecting different levels and structures of copayment.

What Is the Current Coverage for Nonactive Duty Persons?

Currently, nonactive duty persons are granted access to the MTF system on a space-available basis. While the MTFs serve the medical needs of most active duty dependents and some other nonactive duty persons, the size of the CHAMPUS expenditure clearly indicates that considerable medical care to the nonactive duty population is delivered by civilian doctors, paid by CHAMPUS. While it may be true that some nonactive duty persons receive all their care under the MTF system (and hence at almost no direct cost to the patient except for travel and waiting time), many others are denied effective access because of congestion and queuing in the MTFs. In addition, for many nonactive duty persons living too far from any MTF to receive their care there, CHAMPUS represents the only effective alternative. Thus, for example, retirees living in Oregon, Minnesota, Iowa, Indiana, Vermont, West Virginia, or Wisconsin have *no* MTFs within their states. In several other states, including Montana, Idaho, Utah, Nebraska, Michigan, Ohio, Maine, Pennsylvania, and Nevada, the only MTFs available fall a considerable distance from many population centers. For all active duty dependents, and all retirees and their dependents living in these areas, CHAMPUS—not the MTF system—is the relevant standard of coverage.

Thus, as a logical proposition, the current MTF/CHAMPUS system does not provide "equity" across all beneficiaries, even within a single beneficiary class. Some are more favored than others, depending upon location. The *minimum* standard of coverage provided is the CHAMPUS plan. Those receiving space-available care in MTFs receive an additional benefit.

In any transition to an HES, part of the debate centers on whether benefits would or would not fall under the HES, compared to current policy. Current beneficiaries, particularly those now actively using the MTFs as their primary source of care, often express the view that they are entitled to such care free. Many MTF staff repeated this view to us and described how they commonly needed to reintroduce to their

patients the notion that such care was available to nonactive duty persons only on a space-available basis. Indeed, past recruiting literature seems to have supported and stimulated the belief that lifetime free care would be available for the active duty retiree. (We have not seen such literature, but numerous anecdotes support its existence.)

For retirees holding such beliefs, a switch to copayments in an HES represents an issue of fairness. For active duty persons (regarding their dependents) the beliefs—however accurate or inaccurate they might be—can affect retention of current personnel.

Because of both the "fairness" issues and the more substantive issues of recruitment and retention, we will show how the "change of benefits" issue can be addressed, while still maintaining any favorable effects of copayments on utilization and total costs. (See the discussion of the health allowance, below.)

The Effects of Copayments on Utilization and Health Status

As recently as a decade ago, there was substantial uncertainty about how copayments might alter medical care use and almost no knowledge about the consequences of such copayments on the health of the patient. In response to this uncertainty, the federal government funded a large-scale social experiment in health insurance, conducted by The Rand Corporation (Newhouse, 1974), results from which are now available. The structure of this study and its population make the results particularly appropriate for assessing the consequences of copayments within an HES for the military.

The study enrolled people randomly into several experimental health insurance plans that varied the share of medical bills families themselves paid, as well as the limit on out-of-pocket expenditure. The plans ranged from completely free care (at one extreme) to a plan where the family paid 95 percent of medical costs up to a maximum of $1000 per year before the plan paid fully for care.[2] In intermediate plans, the patients paid for 25 percent of medical costs or 50 percent of medical costs, with a maximum out-of-pocket cost of 5, 10, or 15 percent of family income, or $1000, whichever was less. Another plan had a $150 deductible (maximum $450 per family) *for ambulatory care only*, with hospital care free. This deductible is comparable to $250 to $300

[2]Some plans obviously placed families at considerable financial risk, compared with their existing insurance. The offer to join the experiment also included a guarantee that the families would be no worse off financially than before joining the experiment, but this financial protection was structured so that it did not alter their incentives to seek and use medical care. With this experimental structure, nearly 90 percent of those offered the chance to enroll in the experiment accepted the offer.

per person in 1984 prices. And in another plan, families were enrolled into well-established HMOs. The enrolled families used their experimentally provided insurance instead of their own for 3 to 5 years. The data on utilization accumulated naturally through the insurance claim system and ongoing surveys of the sample. The health status of the enrollees was measured at the beginning, throughout, and at the end of the experimental period.

An important feature of Rand's insurance plan design was the catastrophic stop-loss protection for each family. For all plans requiring copayments, out-of-pocket payments were absolutely limited each year. As noted, the study experimentally assigned families to catastrophic caps set at 5 percent, 10 percent, or 15 percent of family income each year, but in any case, limited to $1000 maximum. Thus, for a family (for example) with $12,000 annual income, their catastrophic cap could have been $600 per year or $1000 per year, depending upon their assigned plan. For a family on the 25 percent copayment plan, these caps would have required spending (respectively) $2400 or $4000 on medical care during a given year before insurance reimbursed costs in full.

This catastrophic protection proved valuable to enrollees, and the financial protection adds little cost to that of an open-ended copayment plan. For example, on the 25 percent copayment plan, 12 percent of the families exceeded their catastrophic cap. For the families on larger copayment plans (50 percent copayment and family deductible plans) up to 27 percent of families exceeded their catastrophic caps. Yet the catastrophic protection cost relatively little: For example, the 25 percent copayment plan eventually paid for 82 percent (rather than 75 percent) of all medical costs of those enrollees. The catastrophic feature added roughly 10 percent to the overall insurance plan cost.[3]

The population studied by Rand essentially was a representative sample of the under-65 noninstitutionalized population of the United

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[3]The actual increase in costs exceeds this simple calculation, because (presumably) those persons who exceeded their catastrophic cap would use more medical care—because care was then cheaper—than those facing a constant 25 percent coinsurance rate. To understand the potential magnitude of this effect, suppose that these families exceeding their deductible acted like those persons on the full-coverage plan once they had moved past their catastrophic cap. The expected difference in use rates is about a 20 percent increase once the cap has been exceeded. See Table 2. Thus, in the 25 percent copayment group, 12 percent of the people would increase their rate of medical care use by 20 percent for part of the year. At maximum, if all of these people exceeded their catastrophic cap on the first day of the year, this would add about 2.5 percent to the insurance plan costs. At the other extreme, if all 12 percent exceeded their catastrophic cap on the last day of the year, little or no added expense would occur. If these people experienced illness at a roughly uniform rate during the year, then the true outcome would be only a small increase in total program costs beyond the figures cited in the text.

States. (The upper 5 percent of the income distribution was excluded from the study.) The experiment was conducted in six areas of the country providing broad regional, urban/rural, and population variability. Although the study did not include military personnel, we believe that the results would broadly apply to the use of copayments for nonactive duty persons—that the military population would respond to copayments similarly to those in the study. We hold this belief in part because of the uniformity of response to copayments in the study's results across region, occupation, educational background, and ethnic and income categories. While some differences in the effects of copayments were observed, they were not large, and nothing suggests that the same sorts of behavior would not follow if copayments were used in an HES.

The results of Rand's experiment could prove very useful in the design and conduct of an HES. Copayments substantially affected medical utilization. Those receiving free care used nearly a quarter more medical care (of all sorts) than those paying 25 percent of their health care costs, and larger copayments created still larger reductions in health care utilization. These results appear in Newhouse et al. (1981) and are duplicated in Table 2.

More recently, the effects on health outcomes were reported (Brook et al., 1983). That study showed only very small effects on health outcomes when comparing the free-care group against all persons who shared in the cost of their care. Since many of the copayment groups faced much larger copayments than the 25 percent copayment group discussed above, we can reasonably treat the health outcomes in this study as a worst-case representation of what would occur if a 25 percent copayment group were compared with a free-care group. The analysis included a number of physiologic measures such as blood pressure, hearing, vision, lung function, etc., and a number of other health measures, including functional mobility, self-perceptions of health status, and mental well-being.

In general, few or no health effects were found when comparing the families receiving completely free care and those making copayments. For persons with high blood pressure, there was a small reduction from the base levels. Corrected vision improved in general but slightly. The only group for which health effects were notable was the lowest income group in the study. This suggests that the DoD might consider waiving any copayments for the dependents of the lowest-paid enlisted personnel, to protect against the risk of such health effects. However, even in this group, the estimated effects were small and statistically weak. In any assessment of the desirability of copayments under an HES, DoD would have to decide how important this protection of health of active duty dependents is compared with other possible uses of the resources.

Table 2

ESTIMATED EFFECTS OF COPAYMENTS ON UTILIZATION

Insurance Plan	% Reduction in Expenditure Compared with Full Coverage		
	Total Outlay	Ambulatory Care	Hospital Care
25 percent copayment	19	20	20
50 percent copayment	33	35	29
Income-related family deductiblea	31	39	25
$150 individual deductibleb	23	25	12

SOURCE: Newhouse et al. (1981), Tables 3, 9.

[a]Average of effects for plans with deductibles of 5 percent, 10 percent, or 15 percent of income, each of which also contained a maximum $1000 limit.

[b]For ambulatory services only.

These results show that the DoD would face considerably different costs, but little if any measurable differences in health outcomes for its enrollees in an HES, depending upon whether or not copayments were employed. The financial consequences—discussed in more detail below—represent only a part of the decision about copayments, however.

The Issue of Equity

Because the HES concept channels people to a single source of care, it seems innately desirable that a given class of beneficiaries face the same financial consequences (or at least have the opportunity to reach that position) whether they are enrolled in the MTF or an alternative source of care. This form of equity can readily be achieved within the HES as we discuss it. If copayments are to be employed in the basic non-MTF package, they would be employed in the MTF, and conversely. In our conceptualization of the non-MTF parts of the system, we envision a variety of options available to the enrollee (see the discussion on HES enrollment), but we have presumed for our analysis

that any improvement in coverage beyond the basic plan would be financed wholly by the enrollee, with the same cost (if any) to the enrollee no matter whether in the MTF or elsewhere. Thus, a person might actually enroll, for example, in an HMO with no copayments, but any added cost of that system above the basic MTF or non-MTF plan would be borne entirely by the enrollee.

Degradation of Benefits

Imposing a copayment on users of the MTF reduces benefits, at least for those with access to an MTF, since there is now only a nominal charge for hospital use and no charge for ambulatory care or prescription drugs within the MTF. And similarly, within CHAMPUS, active duty dependents now face only limited copayments for hospital care and a 20 percent copayment for ambulatory care beyond a deductible of $50 per person ($100 per family). Retirees and their dependents also face the 25 percent copayment for hospital care as well as for ambulatory care, with the same deductible structure as for active duty dependents. Thus, the straightforward imposition of a copayment may degrade the ability of the Services to recruit and retain individuals, if nothing else is done.

While the potential savings to the DoD from instituting a copayment appear considerable, the same mechanism imposes both a financial penalty (in an actuarial sense) on individuals now receiving free (or quasi-free) care and also imposes considerable financial risk. Even if the average copayment for a health insurance plan is small, certain medical events might produce a large (albeit unusual) financial outlay. Retirees using CHAMPUS for hospital care, for example, face this considerable risk. One way to resolve this dilemma is to include in any insurance plan with copayments a "stop-loss" feature limiting the financial risk of the enrollee. Many private insurance plans contain this feature currently, limiting the risk to $1000 to $2000 per person *out-of-pocket* per year.

Limiting the risk facing families in an HES in fact represents an increase in benefits, particularly for retirees primarily using the CHAMPUS system. Thus, we suggest that any consideration of copayments include also limits on out-of-pocket payments to provide catastrophic protection to enrollees. And as Rand's Health Insurance Experiment demonstrated, it is possible to link such catastrophic caps to family income or military grade, providing an even greater benefit to lower-income families who would otherwise be most severely affected by increased copayments.

THE HEALTH ALLOWANCE

Capping out-of-pocket expenditures may not provide sufficient limits to expenses to avoid considerable upset and attendant retention and recruiting consequences. For this reason, we believe that any consideration of a copayment feature should also include consideration of an offsetting "health allowance," analogous to the housing allowance now common in the military.

With housing allowances, individuals receive money for housing costs and then may also rent base housing from DoD. The amount of allowance can differ depending upon whether the person lives on base or off and can vary by location.

Using a health allowance to offset copayments could serve the same functions. First, it should be clear that *with a catastrophic cap included in any copayment plan*, it is *possible* to design a copayment/catastrophic cap plan wherein each enrollee is guaranteed to be no worse off financially than he is under the current system. For example, if the catastrophic cap is set at $1000 and the health allowance is $1000 above any premium charged, then the family will clearly be no worse off and likely considerably better off financially than they are today.

It is probably not desirable for the DoD to offset fully any costs of copayments, but that is a management decision that should be made by DoD after further analysis and possibly after gathering data in demonstration sites for an HES. (Our simulation of costs in Sec. VII shows how DoD costs vary as the amount of the health allowance is changed.) The tradeoffs to consider when setting the level of such a health allowance are too complicated to be considered in this feasibility study, but the ability to make such payments should greatly relieve the problems implied by any movement to a copayment system in an HES.[4]

A natural question to ask at this point is, "Why go to all the trouble of charging the copayment if you are going to give the same amount of money—or more—back to people anyway? Won't they just save that money to pay the copayments, and in the end do nothing but cause a large administrative headache?"

Fortunately, we have specific evidence on this issue. In Rand's Health Insurance Experiment, the subjects enrolled received exactly

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[4]We discuss management uses of the health allowance in Sec. IV, where we discuss the enrollment system we envision. There, we show how the health allowance might be used to balance demand and supply within MTFs, should unconstrained enrollment not lead to the desired balance. But as Sec. II shows, we anticipate no large shifts in demand for MTF care unless the relative attractiveness of the MTFs changes considerably compared with the non-MTF system as a result of HES design features.

this sort of financial arrangement; those at risk for $500 received a $500 annual payment, independent of their health care use. Those at risk for $1000 received $1000 annually, etc. Even with those offsetting lump-sum financial payments, copayments caused utilization to fall, as shown in Table 2. Thus, DoD can indeed use copayments to control utilization, and can (at their own choice) offset part or all of the financial consequences of the copayments through use of a health allowance without destroying the utilization-controlling aspects of the copayments.

PREMIUMS

We next wish to discuss the issue of a premium for nonactive duty persons to receive the basic plan. Currently, no such premium is paid by nonactive duty persons either for their MTF care or for CHAMPUS. Nevertheless, we believe that a premium should be considered (at least in concept) in the HES.

Administration of a premium differs depending upon whether non-MTF plans are private plans or are offered through DoD. In either case, the enrolled family would be charged by DoD for enrolling in an MTF plan, and this would also be true if CHAMPUS (or a similar agency) provided the non-MTF plans. If the FEHBP model is adopted, however, administering the premium would imply that DoD would pay a part (but not all) of the premium for non-MTF enrollees, and the enrollee would pay the remainder.

The central reason for charging a premium is to control HES costs. Without some contribution by nonactive duty persons, we believe that DoD runs a significant risk of markedly increased overall expense for providing health care to active duty plus nonactive duty persons, compared with current MTF and CHAMPUS costs. (Simulations of HES costs are provided in Sec. VII to demonstrate this point.)

We can be quite confident that provision of an HES plan with neither copayments nor premiums charged to nonactive duty persons would increase costs in two ways. First, because copayments (now present in CHAMPUS) would vanish, utilization would increase. Only if nearly all HES enrollees were in the MTF plan and considerable rationing reduced use of services would this result be unlikely. Second, with no copayments or premiums, any incentives for nonactive duty persons to continue to hold other third-party insurance would also vanish. Currently, about half of all retirees and their dependents are covered by some form of employer-related insurance. Similarly, approximately 10 percent of active duty dependents hold such

insurance.[5] This insurance comes at varying costs to these nonactive duty persons. The HSUS shows that in 1978, 31 percent of the families held such third-party insurance, and that their average family-paid premium for health insurance of all types was $344 per year. With a zero-premium and zero-copayment HES plan, the logical choice for these people would be to stop making all such payments, because there would be no need for the insurance, and no cost incurred by nonactive duty persons for the HES alternative.

If all of this insurance was eliminated, and the same medical care paid by the HES (instead of the private insurance plans), this would produce a new financial outflow from DoD that does not now exist and would not exist if this private insurance coverage were continued. (This assumes that the private insurance was legally obligated to be the first payer, as is now the case with CHAMPUS.)

If all such private insurance is dropped, the benefits that those plans now pay would be paid by the HES. The increase in HES costs from such a choice would be considerable. While we cannot estimate the totals well, it appears that the elimination of such insurance alone (ignoring increases in demand from the covered population) would increase HES costs by $0.5 billion to $1.5 billion per year or more.[6]

Decisions about HES premiums and copayment structures should account for effects on incentives for nonactive duty individuals to carry other third-party insurance in general. If such insurance is carried to cover as many nonactive duty persons as possible, costs to DoD will fall in parallel. But DoD cannot enforce a requirement to purchase such insurance (if it comes at any cost to nonactive duty persons).

New survey data describing the existing insurance coverage of nonactive duty persons will be needed to understand the effects of different copayment and premium structures and the availability of health insurance to nonactive duty persons through employment, fraternal,

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[5]These data were provided by Office of CHAMPUS staff in Denver. Our analysis of 1978 HSUS survey data shows slightly lower levels of third-party insurance.

[6]We calculate this number as follows: The 1978 premium payments by nonactive duty families were $333, equivalent to about $550 in 1988. Almost three-quarters of those with private insurance obtained it through work groups. Only 10 percent of those families with insurance paid no premiums. Taking the premium payments alone provides a lower bound on benefit payments by the insurance, since it ignores any premium contribution by employers. On average, U.S. families have over 80 percent of their health insurance premiums paid by employers (Phelps, 1988), so this estimate could badly understate the amount of private insurance covering the nonactive duty persons. Extrapolating the 1978 survey results to the entire 1988 nonactive duty population, we can estimate that about 0.9 million such policies were in force. Thus, the lower-bound estimate of benefit payments from those policies would be on the order of $0.5 billion. If employers paid for 80 percent of the premiums of these policies (as they did on average nationally), then the total premiums—and hence benefits that would be paid—could exceed $1 to $1.5 billion in 1988. (Calculations available from the authors.)

and other groups. If any HES actually establishes premiums, it would likely be useful and cost-effective to survey the nonactive duty population periodically to learn not only the amount and sharing of insurance premiums they face, but also the scope and structure of the insurance acquired. Only with such information can DoD accurately tailor its own premium and benefit structure in a way ensuring maximum continuation of other third-party insurance.

With such insurance in force, the law now specifies that the other insurance is the first payer, and the HES policy the second payer. DoD has recommended legislation requiring that such insurance pay for care delivered in MTFs; this would further reduce net costs of the HES to the military.

If a premium is instituted, it can be related to earnings of each active duty person or retiree quite readily. As with the housing allowance, DoD could also eliminate the health allowance at retirement, or it could reduce the allowance but still use it for other purposes as proved useful.

Premiums could be reduced as desired for the lower ranks. Naturally, such a method does not link premiums to income perfectly, since it does not include spouse's and children's incomes and nonwage income for the family, all of which affects their overall wealth. But for a large fraction of the families, rank of the enlisted person should serve as a good proxy for total family income.

We have described a system where nonactive duty enrollees in the HES might at the same time both pay a premium and receive a health allowance. Naturally, the health allowance could be increased (even dollar for dollar, if desired) to offset premium increases. A natural question to ask is why such double-entry accounting is required. Why not just use a single dollar figure, positive or negative, as things netted out?

Several reasons suggest that both the health allowance and the premium be retained, even if they offset one another. First, the combination of two financial instruments provides greater management flexibility in achieving specific compensation goals for various grades of personnel than a single tool alone would provide. One simple example of where such a mix would prove useful arises if DoD chooses the FEHBP model to administer the non-MTF plans. Presumably, those civilian insurance plans offered to HES enrollees would compute a premium for their plans using their normal actuarial methods. But the HES may prefer to offer active duty dependents and retirees a different net premium than the insurers compute. The health allowance provides just the needed mechanism.

Similarly, if DoD wishes to exempt certain pay-grade levels from paying a premium, they could use the health allowance to accomplish this goal without needing to enter complex negotiations with individual insurance companies about their premium charges. This could serve as a substitute for reducing actual premiums for lower income enlisted personnel.

Second, identifying the health allowance (or a portion thereof) as an offset to any copayments introduced should help enlistees and officers understand better the net financial consequences of the HES (however structured), but also it should emphasize the presence of the copayments—a desirable outcome to guarantee that the desired effects on utilization occur. Next, the combination of two instruments allows more directly targeted and better explained introduction of geographic variation in premiums (or compensation for health costs), as desired by DoD.

SUMMARY OF FINDINGS

We recommend that DoD offer a basic plan, with the same scope of benefits and copayment structure for enrollees in the MTF or non-MTF plans. Non-MTF enrollment would include HMO options and "high-option" insurance plans with broader benefits, lower copayments, or both, with differential costs paid entirely by the enrollee. These non-MTF plans could be administered through private plans (as with FEHBP), by DoD (using CHAMPUS or a derivative organization), or with some combination of these.

In all cases, we have presumed that the HES would continue a scope of benefits for enrollees that matches the current benefits provided under the MTF/CHAMPUS system. Altering this assumption would alter the cost calculations for an HES but otherwise would not alter the analysis of feasibility and desirability of an HES.

We recommend that DoD consider alternative copayment and premium configurations. If copayments are included, we recommend that DoD consider limiting the financial risk of enrollees with a catastrophic cap. This provides a significant new benefit to nonactive duty enrollees. We also show how the financial consequences of copayments could be offset with a health allowance (similar to the DoD housing allowance) while still maintaining any desired utilization and cost control features of copayments.

In this section, we developed information to show that:

- Copayments would significantly affect medical care utilization and HES program costs.

- Copayments (as discussed) would affect health outcomes negligibly.
- Premiums may be needed to control HES costs.
- Private insurance benefits for potential HES enrollees now reach $0.5 to $1.5 billion. Certain configurations of HES benefits and copayments could cause most of that insurance to be eliminated, shifting those expenses to the HES.
- Copayments and premiums can be offset with a health allowance. This technique provides great flexibility in tailoring net benefits to various eligible groups to guarantee equity and to minimize enlistment/reenlistment difficulties that copayments might cause.

IV. THE ENROLLMENT SYSTEM

INTRODUCTION AND OVERVIEW

This section sets forth our concept of the enrollment system itself. It leaves for Sec. VI a number of central questions, including how many people should be enrolled and how resources should be allocated among MTFs to match enrollments. Taken together with Sec. III, this section describes how we envision the functioning of an HES and characterizes the choices that DoD must make concerning its structure.

Active Duty Automatically Enrolled in MTF System

We presume throughout this discussion that all active duty personnel will continue to receive their care in the MTF. Thus, while the enrollment system must be able to keep track of active duty personnel for management purposes, much of what we describe pertains only to nonactive duty persons.

Free Choice of Enrollment by Nonactive Duty Persons

We have considered enrollment systems that do and do not allow nonactive duty individuals free choice as to their source of care. Some persons live outside of regions served by any MTF and would enroll in a non-MTF option. But within many MTF catchment areas, there are more people than the MTF could enroll. Thus, some nonactive duty persons would be enrolled in the MTF care system and others in the non-MTF options, including various insurance plans and HMOs, as available in each MTF locality.

The merits of allowing free choice are considerable, so long as the resulting MTF enrollment satisfies other DoD needs in operating the MTF system. Free choice assures that the fewest possible number of people are assigned arbitrarily to a system they fundamentally dislike. For a given dollar expenditure, free choice provides the greatest satisfaction among active duty and retired military personnel and their families.

Free choice of enrollment raises the concern that the persons actually seeking enrollment would offer a mix of illness and injury not well suited for maintaining medical readiness skills. MTF medical staff

with whom we discussed this issue during our interviews emphasized the need for a good mix of surgical patients for this purpose. Their beliefs—supported by utilization studies in the civilian sector—suggest that a mix of older patients provides this surgical case load more than younger patients. By contrast, a purely "family-oriented" practice of pediatrics and obstetrics would provide a less desirable case load for readiness training.

Our studies of the likely pattern of enrollment in an HES (discussed in Sec. II and in more detail in Appendix A) support the belief that voluntary enrollment would not alter the patient mix greatly from that now available. The studies we have done rely upon data from the current copayment and incentive system. A carefully designed demonstration could verify how enrollment actually would take place under the altered incentives. If enrollment actually proceeded as anticipated, then the readiness issue would not conflict with free-choice enrollment. We have attempted to design an enrollment system that would accommodate free choice by nonactive duty persons whenever possible.

Centralized or Decentralized Enrollment?

The other key issue in designing an enrollment system is whether the enrollment should be accomplished centrally (in DoD or the Services) or decentrally in each MTF. We discuss options for both systems and show why we believe that a centralized enrollment plan is preferred to any decentralized plan we have considered in the course of this study.

Functions of the Enrollment Mechanism

The enrollment system must accomplish several tasks. It must identify and track individuals through time and allocate each of them to a particular source of care. Provision must be made for changing the source of care at regular and irregular intervals upon reassignment of active duty personnel or relocation of any nonactive duty persons. For any free-choice plan to function, individuals must be allowed to reenroll at regular intervals. The enrollment system must be able to accommodate all such changes in the actual enrollment of persons.

The enrollment system may also be required to receive and account for premium payments made by individuals. If a premium payment mechanism is chosen, this will require a decision within the government about the ultimate disposition of all funds received. We assume for now that the funds would go to DoD and offset costs of operating the HES. However, it is possible that any MTF premiums could be

returned in part to the MTF, through an incentive system designed to reward efficiently operated MTFs and those providing high quality of care. We have not explored such a system in this study.

Finally, for persons outside the area served by any MTF, the enrollment system must arrange for the insurance coverage/source of care. We defer detailed discussion of these issues for Sec. V, where we discuss changes that would need to be made in organization and data systems to allow an HES to function.

THE ISSUE OF CENTRALIZATION

The Fundamental Choice

A fundamental choice exists between centralized and decentralized management and operation of the HES. At the most decentralized level, DoD would (a) determine the number of persons (possibly age/sex adjusted) living within the catchment area of each MTF and would (b) assign to the local MTF commander budgets for funds (O&M—Operations and Maintenance), military personnel, civilian personnel, equipment, and facilities. The MTF commander would then be responsible for providing health care to *all* persons in this catchment area, either in his own MTF or through alternative arrangements. Such arrangements might include contracts with HMOs or preferred provider organizations (PPOs), or provision of a traditional health insurance plan for the fee-for-service medical system. All of such plans would provide coverage at least matching the "basic plan" for enrollees as set forth in Sec. III. We call this form of organization for an HES the "decentralized" mode of health enrollment.

Under a more centralized plan, each MTF commander would be assigned responsibility for a fixed number of persons (all active duty and some nonactive duty persons) within his catchment area. The number of persons would be determined by a central authority, either in the Armed Service or DoD level. The HES would then enroll people into the MTF until this target had been reached. Enrollees could receive an identification card, similar to the health care plan card of most private sector insurance plans, and the MTF commander would also have on-line computer verification of the enrollment status of each individual who might enter his facility. An expanded and fully functioning DEERS system could perform this role.

Under the centralized plan, all other persons would be enrolled in some sort of health care plan by a central agency (either DoD or each

Armed Service). The enrollment, financial risk, and management of such plans would be the responsibility of the central authority rather than the MTF commander. We call this the "centralized" mode of health enrollment.

We next discuss the key aspects of these two choices.

The Decentralized Mode

The potential advantages of the decentralized mode of enrollment include (a) increased flexibility in dealing with private health providers by each MTF, (b) strong incentives for cost control, and (c) appropriate division of care between the MTF and private providers. The possible disadvantages include (a) the requirement that each MTF commander acquire and manage many capabilities not now present in an MTF (and generally unrelated to other MTF activities, rendering further difficulty due to unfamiliarity), (b) a substantially heightened financial risk facing the MTF commander, and (c) quite likely, a greater needed change in organizational structure within military medical organizations to deal with the added scope and complexity of operations.

Perhaps the greatest conflict with a fully decentralized enrollment plan is the potential conflict with nonpeacetime missions of the military. Given fully decentralized authority, an MTF commander may well choose a peacetime mix of staff and activity that would not fully support the readiness training mission. For example, he might choose (given his budget) to limit MTF enrollment below the level desired for complete readiness training of his medical staff. He could afford this choice if a low-cost HMO alternative were available and attractive to many of his potential enrollees. This problem could be avoided by setting enrollment targets centrally, but that violates the conditions for decentralized enrollment.

Setting aside the desirability of decentralized enrollment for the moment, issues of feasibility also arise with decentralization. If faced with this responsibility, MTF commanders would need to acquire expertise (or experts) in actuarial estimation. They would also need new personnel to manage this set of new activities.

Considerable interaction between these "personnel-like" activities of MTF operations would be required; every time an active duty person was reassigned, the enrollment of that person and all dependents would have to be reconsidered with budgetary implications for both MTFs. Some active duty personnel and many nonactive duty persons (particularly retirees) live outside any MTF catchment area, so that a central agency would be needed to enroll each of these persons. The MTF commander would also have to interact with this central agency.

The resource management requirements of the MTF commander would be considerably more complicated under the decentralized enrollment mode. Currently, some MTF commanders face up to two-year lags before additional active duty health providers or other needed personnel can be assigned to the hospital. Similar lags confront any attempt to relax constraints on the number of "slots" for hired civilian employees (setting aside possible financial constraints). Equipment purchases may take longer, and capital facilities often see ten years between planning and eventual use.

One of the potential advantages of decentralized enrollment is the efficiency gained when the MTF commander has the flexibility to add or change resources as appropriate to his needs, with the implicit possibility of expanding or contracting the MTF enrolled population as resources appear within the military, and as alternative sources of care become more or less costly.

This apparent gain is for naught if other resource management restrictions within the military prevent any significant increase or decrease in the operational capabilities of the MTF. Any move to a decentralized enrollment system would require markedly greater relaxation of those constraints and rules than would a centralized enrollment plan. The organizational costs and stress implied by such changes appear to be large.

We do not believe that a decentralized enrollment plan would be either meaningful or possible unless there were also effectively a substantial decentralization of resource (personnel, budget, equipment, and facilities) management. Unless DoD is equipped to deal with such considerable decentralization of authority in their medical care systems, we feel that the problems associated with a decentralized enrollment plan significantly outweigh the possible gains. Thus, we recommend that the HES adopt a centralized enrollment program.

Aspects of a Centralized Management Program

With a centrally directed HES, a decision must be reached whether each Service or whether a central DoD unit will determine the target enrollment for each MTF. The gains from maintaining control at the Service level include a greater responsiveness of the health care system to specialized needs of each Service and a better capability to balance (for example) the personnel needs of the MTFs against other activities within the military command. Each Service now faces this balancing problem when deciding (for example) whether to train and assign new personnel into a medical corps or an electronics maintenance activity.

The possible difficulties with a Service-level choice of MTF target enrollments include (a) complications when MTFs overlap geographically and (b) loss of control over the health budget of DoD in general.

An argument in favor of letting the Services determine enrollments is that each Service can best assess the consequences for readiness missions, especially as readiness and support missions of each Service differ.

Wherever enrollment decisions are made, there also remains the issue of who should administer the enrollment (and be financially responsible) for all persons not enrolled in an MTF. For reasons of economies of scale and for better management of the enrollment of retirees (who have weaker connections to a single service than active duty persons or their dependents), a DoD-wide administration of the non-MTF aspects of the HES seems most sensible.

If the Services were to set MTF enrollment levels, the levels could conflict with DoD's responsibility for controlling costs under the non-MTF plans. In the new environment of an HES, the Services and MTF commanders might try to cushion themselves against unforeseen events. If the Services did set conservative targets, the non-MTF plans would incur the costs of enrolling additional beneficiaries without offsetting savings in MTF resources. DoD might succeed in withdrawing resources from the MTFs if they were given low enrollment targets, but not without significant disruptions in the planning process.

Establishing the target enrollment level for each MTF is critical to the success of the HES. If that level is set too low, any gains in cost will vanish; major cost increases could indeed occur. In contrast, if the target MTF enrollments are set too high, the Services may be less able to conduct readiness training, quality of care could fall (from congestion within the MTF clinic appointment systems, for example), and there could ultimately be deleterious effects on retention and enlistment of personnel in the Services in general.

We recommend that the overall levels of MTF enrollment within each Service be determined jointly by DoD and each Service, given the resources available to that Service. Subsequently, each Service should be free to allocate the MTF enrollment targets among individual MTFs.

Selecting the targets for the MTF enrollment for each Service should be done using a formally developed model of utilization and staffing. Two approaches seem feasible. Either DoD could develop a general model, with the parameters (patient utilization rates and medical staff productivity parameters) determined differently for each Service, or each Service could develop its own model, subject to overall guidance and approval by DoD. We discuss the feasibility of such

models in Sec. VI, showing what can be accomplished with current data and how enrollment targeting might be improved under alternative data systems.

BALANCING SUPPLY AND DEMAND WITHIN THE MTF

Under any HES where free choice is offered to nonactive duty individuals (MTF or non-MTF coverage), only the most remarkable coincidence would lead exactly the same number of persons to seek MTF enrollment as the target enrollment set by the DoD or Service. The available MTF supply (however determined) and the actual demand for MTF coverage must somehow be brought into agreement.

Management Tools To Balance MTF Supply and Demand

To balance the number of persons seeking enrollment in an MTF and the assigned enrollment target, either administrative rules must be developed to specify priorities of enrollment, or financial incentives must be used to induce changes in enrollment patterns.

We discussed in Sec. III two types of financial incentives to facilitate making such a balance. First, we discussed the use of copayments, with a health allowance to offset the financial effects of copayments, similar to the current housing allowances for persons not receiving base housing. Just as housing allowances differ for persons with or without base housing, the health allowance could differ for persons enrolled in the MTF or non-MTF plans. Thus, if more persons wished to enroll in the MTF plan than the system could handle, the system could be brought toward balance by increasing the health allowance for those choosing the non-MTF plan, or by decreasing the allowance for those enrolling in the MTF plan. Thus, a health allowance can be used as a fundamental management tool, even if its primary purpose is to maintain the real purchasing income of enrolled persons in the face of increased copayments.

Second, if a premium is charged for enrollment by nonactive duty persons, it could similarly be varied by MTF or non-MTF enrollment to help balance the capacity of the MTF and the numbers of persons desiring to enroll. Obviously, if a health allowance is used, it could achieve the desired flexibility without introducing any further differences in the structure of premiums charged to nonactive duty enrollees.

Using a health allowance this way appears to pose great complexity for DoD. However, the current uses of the housing allowance (Basic Allowance for Quarters—BAQ—and the Variable Housing Allow-

ance—VHA) are similarly complex and appear to serve similar functions.

The BAQ depends upon grade and presence of dependents. Officers living on or off base receive differential BAQ. The same sort of differentials apply to enlisted personnel, but with different dollar amounts. On-base and off-base differentials can exceed $1000 per year.

The VHA is paid where housing costs exceed the average by at least 15 percent. Periodic surveys establish this differential empirically. VHAs depend upon grade and locations, and relationships to grade vary across different geographic locations. Annual differentials from one location to another can exceed $2500 to $3000.

The ability of DoD to administer such a complicated compensation scheme for housing suggests both the capability and the desire to adjust the total compensation bundle received by active duty personnel to match different costs of living. In any HES system relying upon copayments, there may arise differences in average out-of-pocket costs, depending upon local medical costs and—of course—whether or not the dependents of active duty personnel receive medical care from the MTF or from non-MTF plans. If DoD chose to make similar adjustments in the health allowance on the basis of local variation in medical costs, it appears readily feasible. Indeed, the same survey that establishes housing cost variations (upon which the VHA is based) could readily be expanded to include information on medical care costs. Establishing a region-specific allowance would thus be relatively simple. Further, the current BAQ system establishes the precedent of differential pay for persons using military vs. nonmilitary suppliers of a basic necessity (housing, in the BAQ case, rather than health care).

Priority Systems in a Free-Enrollment HES

Enrollment in the HES could employ priority systems, while still allowing most of the free choice of the MTF or non-MTF enrollments described above. We showed in Sec. II that priority-setting may well be unnecessary to meet DoD goals for MTFs. Nevertheless, setting priorities in enrollment is feasible.

Current priorities among potentially eligible persons are explicit: Active duty personnel have highest priority, their dependents have second priority, and retirees and their dependents third priority. However, in actual practice, especially for ambulatory care, the appointment systems of most MTFs may not discriminate between the latter two categories. Active duty personnel have special access, and all others may "fight it out" through the telephone appointment systems. First-come-first-served is often the order of the day. In some cases, MTFs will close off access to particular services for retirees, making

them available only to active duty persons and their dependents. Enrollment priorities within the HES could operate the same way, in concept, by allowing first-come-first-enrolled choices within priority classes.

If the DoD had priorities in serving active duty dependents and retirees, then such priorities could be maintained through differential levels of the proposed health allowance, or (if premiums are charged) differential premiums for each class of beneficiary. A similar precedent exists in the structure of payments under the CHAMPUS program, where retirees face higher copayments than active duty dependents.

Do Financial Enrollment Incentives Violate Equity Goals?

Previous discussions of the HES have insisted that financial equity be achieved in an HES, at least for all persons within the same beneficiary class. All of these plans using financial incentives potentially run afoul of the goals of uniform treatment of active duty personnel, their dependents, and retirees, independent of which MTF catchment area they live in.

Before discussing the achievement of such equity in an HES, it is important to point out that the current MTF/CHAMPUS system does not provide this equity. MTFs differ in quality and capabilities. Active duty dependents and retirees, for example, may be required to use CHAMPUS (with large potential copayments) because care is not available in their nearby MTF. For those persons living far from an MTF, CHAMPUS provides the only relevant alternative for obtaining care. The current system provides "equity" only in a narrow and distorted sense.

Similarly, an HES enrollment plan that does not make use of financial incentives obviously can achieve the same sort of "equity" among enrollees, but it actually cannot do as well as an incentive-based plan in terms of well-being achieved by the persons enrolled in the HES.

Consider, for example, an MTF with excess demand, where geographic proximity to the base formed the basis for eligibility. Persons wishing to enroll in the MTF would seek out housing close to the base, and—as has been well demonstrated in other similar situations—housing prices in that area (rental units and owned homes) would rise, capturing the extra value provided by access to the MTF. (Linkages between housing prices and school quality, air quality, crime rates, and many other phenomena provide the basis for this assertion.) Thus, if excess demand to enter the MTF is allocated on the basis of proximity to the base, real inequities will still be created. The beneficiaries will generally lie outside of the military—landowners, apartment and home owners, etc., who happen to own property near military bases.

If any other allocation rule is chosen, similar results will occur. Rules without financial incentives cannot do away with inequities arising across catchment areas—they can merely disguise the magnitude of inequity being forced upon the enrolled population. And of course, the same sorts of inequities arise commonly in other aspects of military life, as could be readily inferred from the desirability of assignment in Hawaii versus a cold northern state.

SUMMARY

In this section, we have discussed two primary options for enrollment of nonactive duty persons in an HES—whether such enrollment should be centralized or decentralized, and whether beneficiaries should receive free choice of plan. We recommend that a centralized enrollment system be used. The advantages seem to dominate the disadvantages from many perspectives.

We also discussed the issue of free choice of plan. Clearly, free choice by beneficiaries offers many potential advantages. However, free choice raises potentially troublesome problems for an HES. If the number of persons desiring MTF enrollment does not match the capacity of the MTFs, then some balancing system must be used. Maintaining a spirit of free choice, we have shown how financial incentives can be structured to achieve such a balance and discussed how such incentives affect the appearance and the actuality of equity among enrollees.

Free choice of enrollment also raises the potential problem of patient mix. If those enrolling in an MTF offer a mix of illness and disease that does not adequately prepare and maintain the medical skills of the MTF staff, then free choice may conflict with the important readiness mission of the MTFs. But the results in Sec. II show that such concerns may be groundless. *Under the current incentive structure of the MTF/CHAMPUS system*, a system of "quasi-enrollment" already takes place. Many patients within current catchment areas already are "enrolled" in terms of their behavior. And a set of people—some within and some outside of catchment areas—are effectively "enrolled" in a civilian plan. Some patients use both sources of care—MTF and civilian—and their choice of enrollment could importantly affect MTF outcomes. But as the simulation in Sec. II showed, the net changes on MTF visits and hospitalizations would not be large even under very different assumed enrollment choices of this crossover group of persons who now use both medical care systems.

Determining the actual outcomes of enrollment would be an important parameter to measure in any future demonstration of the HES concept.

V. CHANGES IN THE MILITARY HEALTH SERVICES SYSTEM

Under an HES, the MHSS would have to select health plan options, enroll beneficiaries in these options, and provide health care directly within the military treatment facilities. To achieve the full benefits of the HES, these tasks must be done efficiently while maintaining standards of accessibility and quality in the beneficiaries' health care benefits.

The first requirement for an HES is a mechanism for tracking and enrolling beneficiaries. Once the enrollment process has taken place and identified the enrolled population to be served by the MTFs, serving these populations places some additional requirements on resource allocation and management within the MTFs.

Each MTF must be assured adequate resources for supplying normal health care services to its enrolled patients. The overall resource budget must cover the provision of services within the MTF and the procurement of supplemental services from other MTFs, from other government providers, or from the civilian community. Even with adequate data and experience upon which to base reasonable predictions, the enrollees' use of sophisticated services and even more ordinary services will be subject to uncertainty. Until an HES has been implemented, the risk is exacerbated by the lack of data and experience. The MTFs are each too small to bear the full risk. Similarly, the MTFs would need protection against unanticipated personnel diversions for support of military operations and other disruptions in resource availability. In many cases, these disruptions are a feature of military medicine and their elimination would be undesirable. Instead, the MTFs must be able to turn to other sources of care, at times with little or no warning.

How much protection the MTFs would need depends on the degree of flexibility they could exercise in resource management and the time it takes to activate alternative arrangements. Some temporary shortfalls might be overcome by transfers of resources from other budget accounts or from other uses. Other shortfalls might dictate purchase of services from outside the MTF, and a workable contracting system could allow the MTFs to keep their costly fee-for-service purchases to a minimum.

The procedures put in place to allocate resources to the MTFs should embody incentives to manage these resources efficiently. The

procedures to protect the MTFs from adverse outcomes should not counteract these incentives; the risk protection procedures should not protect against the consequences of inefficiency.

Finally, if the MHSS were to adopt enrollment, the system must continue to assure the quality of care in the MTFs and from other providers with whom the MTFs or the MHSS have contracted.

The military medical system and its beneficiaries cannot benefit fully from enrollment unless the system makes some significant changes, especially in the areas of resource planning and management. In evaluating the feasibility and desirability of implementing an HES, we have considered what changes would be needed to enroll the beneficiaries, manage the MTFs as full-service health care providers, and assure quality of care.

To implement an efficient HES, the military health services system would need to make the following changes:

1. Develop an enrollment management system to track family moves and changes, record plan enrollment, and handle premium and deductible payments.
2. Create a standby insurance plan with automatic reenrollment of MTF enrollees in case of mobilization.
3. Revise medical resource requirements determination methods, based on enrolled populations.
4. Specify transfer prices for referrals within the military system.
5. Create a budget to replace required resources not actually assigned to the MTFs or diverted for operational support.
6. Establish an internal reinsurance plan to finance unusually expensive MTF patients.
7. Resolve remaining uncertainties in personal services contracting and set adequate remuneration levels.
8. Raise the MTFs' civilian authorizations ceilings.
9. Redesign current data systems to produce data appropriate for population-based planning.
10. Design ongoing education programs for MTF administrators and military beneficiaries.

We have not researched thoroughly the existing legal authority for these changes or determined the need for new legislation. However, several of the changes listed above would clearly require legislative approval, including the standby insurance plan, the replacement budget, increases in civilian authorizations, and changes in personal services contracting provisions. The MTF reinsurance fund and changes in the resource requirements determination process will

necessitate service regulation changes and may also need legislative approval.

ENROLLMENT ACTIVITIES

To adopt health enrollment, DoD must establish an enrollment mechanism and an administrative agency to conduct the actual operations of enrollment. A number of functions must be conducted by this agency, some of which do not exist currently within DoD. Almost certainly, a complete enrollment system would require a computer network and software not currently available. The DEERS system provides some of the needed capability, and CHAMPUS provides other capabilities, but the requisite combinations do not appear currently available in any single organization.

An analog organization exists within the federal government—the FEHBP—under the direction of the Office of Personnel Management. This office performs most of the functions required to make FEHBP work (except communicating directly with employees), and it has total geographic coverage for the United States. This same breadth of geographic coverage would be needed to conduct the HES enrollment operations, not only because of the wide dispersion of retirees, but also for active duty personnel in recruiting, operating reserve units, and performing other diverse tasks.

Tasks To Manage Enrollment

Whatever organization is chosen or formed to conduct the HES enrollment, it must perform a number of complex and computer-intensive tasks, many of which are tightly interrelated.

The first set of tasks we call "family tracking." The closest analog to this activity currently is DEERS, but DEERS does not possess some capabilities that would be needed in a true family-tracking system for HES enrollment. Notably, the family tracking would have to maintain a list of eligibility for a particular plan (not just the geographic location of an individual), and would need a way to accommodate changes in enrollment across plans, even if there had been no change in geographic location of an individual. These tasks require additional data elements in the DEERS data base, new software, and assurance that DEERS can *accurately* track beneficiaries' residences, continuing eligibility, and plan choices as changes occur.

Second, the open enrollment system itself must be established. This system provides information to nonactive duty persons concerning

options within their area (including local HMOs, etc.) and allows them to move from one plan to another on a predetermined basis. Most commercial health plans will not accept open enrollment except at predetermined times of the year (e.g., the month of March), to minimize self-selection of sickly persons into the best-coverage insurance plans.

Third, if premiums will be charged to nonactive duty persons for high-option plans alone, or for all plans available for nonactive duty, then the enrollment system must be able to calculate premiums for individuals, send bills, maintain accounting systems for each eligible person, and disperse payments or refunds to persons who move from one MTF to another. This implies a whole set of financial management capabilities not currently present in DEERS or CHAMPUS but common in FEHBP and in many private health care organizations operating for business and labor unions in the private sector.

Fourth, if copayments are used in any form where cumulative expenditures help determine the copayment status of the individual, then the enrollment system must be able to keep track of copayments by individuals and families, and send on-line reports to medical providers about the payment status of each person. For example, if an annual deductible is chosen, or even if a flat copayment structure is used (as currently under CHAMPUS) but with a stop-loss feature to protect families against excessive financial risk, then the information system must track cumulative expenses paid by families. While this task sounds complex (and it is), it has become a standard feature of many commercial insurance plans, and it is certainly feasible, if so desired.

Standby Insurance

For the nonactive duty persons enrolled in the MTF, the HES will need a standby health insurance plan for use in the event of mobilization or other loss of major parts of the military medical resource base. Upon mobilization, the enrollment system would automatically reenroll all MTF nonactive duty enrollees in one of the alternative plans. Similarly, the dependents of mobilized active duty personnel would be enrolled in a non-MTF plan. The simplest arrangement would add these beneficiaries to a fee-for-service insurance plan, just as beneficiaries currently being served by the MTFs automatically fall back on CHAMPUS under mobilization. However, an HES would allow the MTFs to take additional steps toward arranging for transferring their health care responsibilities to local civilian providers. With a known population to provide for, agreements with local HMOs or other provider groups to smooth the transfer might be feasible. In all other

respects, mobilization planning for the benefits mission remains unchanged.

A close analog exists within HMOs, whereby they provide standby health insurance for their enrollees in the contingency that the person becomes ill or injured in an area away from the HMO's service area. In fact, one logical way to arrange for military beneficiaries' standby coverage is through commercial contracts with the same sorts of insurance carriers as used by the HMOs for their standby plans.

Beneficiary Education

If an HES were implemented, military beneficiaries would have to be reeducated about their health care benefits. Unless they understand the enrollment process, the concept of choosing a single option for each enrollment period, and any changes in cost sharing, they will not be able to respond rationally to the program changes. Extensive beneficiary education would have to be undertaken before and during implementation to prevent beneficiaries from basing enrollment decisions on the current system.

ALLOCATION AND MANAGEMENT OF MTF RESOURCES

The military treatment facilities currently operate in an environment that differs significantly from the environment under an HES. Of course, although DEERS now allows DoD to estimate the population in any given area, the MTFs still have no idea how many beneficiaries they are serving, nor who they are. In sizing the hospitals' and clinics' physical plants, no consideration was given to the retired population they might serve. Under these circumstances, resource allocation is naturally based on the the number of visits, inpatient days, and other services the facility has delivered, rather than the patients it has served.

CHAMPUS was designed specifically to fill in gaps left by the MTFs, either geographical gaps or fluctuations in time. If an MTF has to curtail a service, it can shift some nonactive duty patients to CHAMPUS and minimize the transfers it must arrange to other military or civilian providers for active duty patients. The MTF may curtail a service for several reasons: (1) it loses providers, temporarily or permanently; (2) civilian hiring, equipment purchases, or other procurement is slowed by red tape, low pay rates, or authorization ceilings; or (3) demand for the service rises. Since CHAMPUS pays fee-for-service rates for the resource(s) missing in the MTF *and for resources*

available in the MTF, the ability to replace the missing resource should lead to a more efficient use of the MTF's resources.

If, under an HES, resources were allocated to match each MTF's enrolled population, adjusting for important facility and community characteristics, patient referrals between MTFs would necessitate resource transfers. Such a system of transfer prices does not currently exist.

MTF management in the HES environment is probably sufficiently different to warrant an investment in management training programs. In addition, the management information systems now being implemented throughout the military medical system may need some revision before they can fully support an HES.

Resource Requirements Determination Methods

The three military Services use similar methods, based on historical work load, for determining the resource requirement to support each of their MTFs. With this method, the work load each facility accomplishes in one fiscal year determines its personnel and O&M budget for the succeeding year. Facility and investment equipment budgets are based on a list of approved projects or purchases, each justified by potential work load, replacement requirements, and other considerations. In basing personnel requirements on historical work load, this approach assumes that each facility can and should continue to perform the same work load.

Under an HES, the MTF enrolls a patient population, based on its fixed resources and provides, directly or indirectly, all health care services to this population. The resources required by the MTF should depend on the number, age, and sex of its enrollees, in addition to any resources required to meet the MTF's readiness or operational missions.

In Sec. VI, we discuss methods for setting individual MTF's enrollment targets and determining the appropriate resource levels to serve these enrolled populations. Before an HES can be fully implemented, appropriate methods need to be developed and calibrated to base resources on the number of enrollee months per year at each MTF and, potentially, on a variety of other factors, such as the age/sex composition of enrollees, facility size, major capital equipment, and the presence of training programs. Thus, for example, the enrolled population would drive a requirement for providers, who would in turn carry a derived requirement for support staff, equipment, and other resources.

The Air Force has developed a population-based requirements model for physicians and nonphysician providers, called PRISM. We

consider in Sec. VI PRISM's potential for serving as a prototype method for staffing MTFs under an HES.

Transfer Pricing

As we have just described, an HES requires each MTF to be responsible for all services provided to its enrolled population and allocates the resources necessary to provide these services. When the MTF refers a patient to a second MTF or uses the other MTF's ancillary services, the first MTF must transfer adequate resources to pay for the services. Currently, referrals within the MHSS are free to the referring facility; the referral facility receives additional resources in response to the additional work load it performs. Although it might be feasible to reflect expected referrals in the per-enrollee resource allotments, instituting transfer prices would give the referring MTF commanders more flexibility and also more accountability for their referral actions. Cost data from the Uniform Chart of Accounts (UCA) could provide an initial source of data for developing transfer prices. The UCA system would permit the estimation of transfer prices by clinical or ancillary service, for inpatient and outpatient care, and by facility type (for example, clinic, small or large hospital, teaching center). In theory, price schedules could be tailored for each facility; where a choice exists, facility-specific prices would encourage referrals to the most efficient provider. However, from our interviews, we doubt that the UCA cost estimates are sufficiently accurate to support facility-specific price schedules. If necessary, a more detailed pricing scheme could be developed over time.

To ensure an adequate referral base for the teaching programs, transfers to the medical centers might be subsidized. At least some civilian teaching hospitals have budgets for subsidizing the care of patients they want to attract for their teaching programs. With an HES, subsidizing all referrals to the teaching hospitals might be unnecessary. Instead, following the civilian example, each teaching center could be given a budget to be used at its discretion to attract the patients needed to fill out its case mix. Such a budget would permit the Services to determine the amount they devote to the teaching subsidy and still give the hospitals the flexibility to gain the most from the subsidy.

Below, we propose a budget to "replace" personnel who, while required to serve an MTF's enrollees, are not actually assigned to the MTF. In a reversal of the replacement budget approach, the medical centers could turn in some or all of the payments they receive for referrals in return for additional military personnel.

Protecting the MTFs Against Risk

Under an HES, the MTFs run two significant risks. The first is the risk of having their actual resources fall short of the resources required to serve their enrollees. The second is the risk of the MTFs' enrollees presenting abnormally costly health care needs. In implementing an HES, provision must be made for protecting the MTFs against both sources of risk.

Resources Risk. We believe that, under an HES, a replacement budget is needed to supply required resources not actually provided to each MTF. This budget could be held by the DoD or by each Service.

Currently, MTFs routinely face temporary shortages in personnel and delays in equipment purchases. Equipment breakdowns can usually be overcome quickly, so most delays occur for new equipment. Usually, this just means that the facility has to continue referring out services that the new equipment would allow the MTF to provide in-house. In general, therefore, equipment nonavailability does not seriously interrupt service delivery.

In contrast, temporary personnel shortages can be quite disruptive. These shortages often occur when replacements for transferred personnel are delayed in arriving. Since many military transfers take place during the summer, the MTFs may suffer severe shortages for one or more months. For example, the commander at one facility we interviewed expects to be without half of his obstetricians during two months this summer. Delaying routine care will help the obstetrics/gynecology service through this period but will also create a backlog for the remainder of the year.

Temporary shortages also arise when personnel are required to support military operations. Recent examples include the deployments in Grenada and Beirut. Last fall, one of the Navy hospitals we visited lent one of its three orthopedic surgeons and supporting personnel to an aircraft carrier for three months. Although, short of a major mobilization, the medical personnel assigned to operational support may not account for a large proportion of the total, the MTFs to which they are normally assigned may be unable to absorb their loss.

These temporary shortages currently fall on top of other, more persistent personnel shortages. Almost all of the facilities we interviewed are staffed below their required levels of support personnel—nurses, enlisted technicians, or both. This chronic shortage of support staff can limit operating schedules, prohibit in-house provision of complex (and costly) services, and potentially decrease physician productivity. Prohibitions against shifting resources across budgets and end-strength ceilings on civilian employment limit the commander's ability to

reprogram resources to overcome or minimize the effects of these and other shortages.

Under the current system, when an MTF must curtail services, CHAMPUS fills in on a fee-for-service basis for most nonactive duty patients. The new Joint Health Benefits Program, recognizing that it is usually cheaper to replace the missing resource than pay the CHAMPUS bill, can now contract with civilian providers to provide services in an MTF. While this program is generally being used to obtain needed physicians, we have learned of an instance where CHAMPUS is contracting with a nursing registry to staff additional ICU/CCU (Intensive Care Unit/Cardiac Care Unit) beds. In another innovative use of this program, an MTF has obtained agreements with civilian obstetricians to provide prenatal and postnatal care in their private offices but deliver the babies in the MTF. These arrangements are similar to the ones MTFs would want to pursue under an HES, although the MTF, rather than CHAMPUS, would pay the bills.

The replacement budget outlined here offers, under an HES, the same benefits as the Joint Health Benefits Program now does but with fewer restrictions or limits. Under an HES, if an MTF were to receive consistently inadequate resources, it would have to decrease its enrolled population, resulting in added costs under alternative health plans. A replacement budget would allow the MTF to maintain its target enrollment by purchasing contract services.

To understand how this replacement budget would work, consider a facility with an enrolled population requiring 40 physicians and a support staff of 40 nurses and 100 technicians. However, an inadequate supply of military physicians leaves the MTF short by 2 physicians, and a reprogramming of medical enlisted personnel to meet shortages in other specialties leaves the MTF without 10 technicians. In addition, the facility deploys a physician, nurse, and technician for three months to support units in the field. The MTF would receive additional O&M funds for hiring civilians to replace the missing military personnel—the replacement budget. At the same time, unless these additional civilians are to be hired on personal services contracts, the ceiling on civilian authorizations may have to be increased. While the amount budgeted to replace the MTFs' missing resources in each fiscal year may not cover all shortfalls, it should prevent significant interruption of the MTFs' ability to serve their enrollees.

In general, MTFs would want to replace missing support staff by hiring civilians. In this case, the replacement budget would cover the pay of a civil service employee in the support specialty. Similarly, if a civilian physician could be hired to practice in the MTF, the MTF

would get funds to pay him; the rate could be based on civil service or contract pay rates.

Short-term physician shortages may not be overcome in-house. If not, the MTF will have to pay the capital costs for replacement services. The costs of replacing the missing physician's outpatient work load can be fairly easily computed from schedules of usual and reasonable charges, recognizing that the MTF can probably absorb some of the work load with its remaining providers. Replacement funds for inpatient care might be provided only for the missing physician's share of nonelective admissions.

The replacement budget for chronic personnel shortages resembles the supplemental care budget for services the facility cannot support. In both cases, the size of the budget may depend on whether the facility is supporting some care in the shortage area. Thus, an understaffed orthopedic department may, with adequate support, still provide many of the complex cases, keeping down the cost of supplemental care. Obviously, the MTF without any orthopedic capacity cannot do this. Where some capacity exists, funds to replace or supplement the missing capacity might be set somewhat lower to encourage efficient tradeoffs between cases.

If an HES were implemented, and if MTFs could use the money they save in a year by more efficiently replacing or supplementing their services, the budgets could be based on actual experience. Before implementation can proceed, however, estimates of the resources MTFs would be given to procure additional services are needed. Very likely, these estimates will require at least limited experience with an HES.

Patient-Related Risk. Protection against the risk of unusual demands from the MTFs' patients is a standard health system reinsurance problem. DoD should operate a reinsurance program to protect MTFs against the risks of having too many MTF enrollees requiring kidney dialysis, neonatal intensive care, and other such costly services.

Under this system, any individual MTF facing more-than-expected use of these services (most of which could be "bought" from other MTFs or from other sources) would file a claim to the reinsurance program to recover its expenditures on these services. An alternative approach would transfer to the reinsurance program expenditures on patients whose utilization exceeds defined length of stay or cost parameters. To provide adequate oversight and prompt claim processing, these claims would be processed at the next level of command above the MTF (Health Services Command in the Army, a Regional Command in the Navy, the responsible operational command in the Air Force).

CHANGES TO PROMOTE EFFICIENCY

Several other changes in resource management would be necessary for the MHSS to operate an HES efficiently. We have found that the limited flexibility across budgets, the ceilings on personnel, the slow process for acquiring investment equipment, and inadequate personal services contracting procedures prevent MTFs from fully using the resources they do have. Under an HES, management inflexibility could force the MTF to purchase supplemental services for its patients, often from civilian providers. The DoD-wide budget for these purchases will increase in proportion to the inefficiency within the MTFs.

Currently, an MTF can shift almost no resources between its investment equipment and O&M budgets, both dollar budgets. These restrictions are intended to prevent the acquisition of new equipment at the expense of basic maintenance and supply purchases. However, an MTF responsible for delivering day-to-day services to a clearly identified patient population must stock adequate supplies and maintain its equipment in working order. Under an HES, the MTFs should be allowed to shift funds between dollar budgets, with the requirement that the higher-level command must approve purchases of equipment costing more than a specified amount.

The replacement budget described above provides flexibility between personnel and dollar budgets. However, for this flexibility to be realized, the MTFs must be given higher civilian authorization ceilings and adequate personal services contracting procedures. If an MTF's patients cannot get the services they require, they will reenroll in a non-MTF plan. Therefore, under an HES, the alternative to additional civilian employees is a higher supplemental care budget.

The legislation regarding personal services contracting was rewritten recently. However, there remains some uncertainty regarding several issues, including the ability to contract with physician groups and provision of malpractice coverage. These issues should be resolved in a manner that facilitates contracting.

A common concern during our interviews was that low pay rates for civil service and contract personnel, especially physicians, would prohibit the MTFs from bringing in needed personnel and would force the MTFs to substitute more expensive fee-for-service care. Even the current fee limit of $40 per hour for physician professional service contracts may be too low to attract needed specialists in some areas. Under an HES, the false economy of placing ceilings on pay rates and civilian employees would quickly become apparent in even larger increases in the MTFs' supplemental care budgets.

Data Systems

HMOs typically begin as small organizations requiring a minimum of automated data. As they grow, reliance on decentralized management of day-to-day operations limits the need to invest in expensive management information systems. The MHSS is neither small nor decentralized, so its ability to enroll beneficiaries and plan for specified enrolled populations under a fully implemented HES would depend on access to automated data systems.

With the TRIMIS, UCA, USM (Uniform Staffing Methodology), and DEERS systems, DoD has started to implement the systems that would support a well-run HES. However, these systems are currently fielded in only a few MTFs and they do not always provide compatible information. We were able to see how most of these systems operate in the hospitals that we visited. They collect a large amount of detailed, valuable data. However, because the hospitals can retrieve these data only in fixed formats and are still learning the data systems, we found only limited evidence that the data were being used to manage the hospitals.

Implementation of an HES would at the outset require that an enrollment system, but not necessarily the other information systems, be fully fielded. Current reporting systems, redesigned to track the services provided to each component of the MTF's enrolled population, would adequately support planning under an HES for the short run. As the automated systems became available, the quantity and quality of the information would increase, facilitating the planning process. However, DoD should review these systems to be certain that they provide information consistent with an HES. For example, as discussed above, the development of a transfer pricing scheme might require more detailed definitions of services than now used in UCA.

Management Training

We anticipate the need to retrain hospital commanders and administrators in the management of an HES. In changing the goals of the MTF from the achievement of target work loads to the servicing of a patient population, an HES would place additional burdens on the MTF's managers to maintain a smooth, appropriate flow of services. Managers used to relying on the issuance of Certificates of Nonavailability when their services are interrupted would have to learn instead how to develop mechanisms for trading off among patient demands and supplementing their facilities' capacities. Utilization review, which is rarely emphasized under the current work-load-based resource allocation system, would become a more valuable tool under an HES.

Most of the MTFs we visited procure supplemental services without negotiating price agreements. Moreover, procurement activities are often handled by the local contracting office without direct MTF involvement in the financial arrangements. These arrangements appear to be far less sophisticated than would be desirable under an HES. At a minimum, MTF commanders and administrators would need additional involvement in the procurement process.

ASSURING QUALITY OF CARE IN AN HES

Instituting an HES to cover active duty dependents, retirees, and dependents of retirees or deceased retirees requires consideration of two quality-of-care issues. First, in what way might an HES change what is now done within the military direct care system for Quality Assurance (QA) and Risk Management (RM)? Second, does the military acquire some degree of responsibility for the quality of care obtained through any non-MTF plan that beneficiaries might choose in preference to an MTF and, if so, what might the military need to do to exercise that responsibility?

QA in the Armed Services can be broadly defined as formal activities that attempt to ensure an optimal level of quality of medical care within the resources available to an MTF. RM is a corollary effort aimed at avoiding fiscal (medicolegal) liability owing to potentially compensable adverse events in patient care. The military operates its joint QA/RM programs only for the direct care system; it makes no provisions for equivalent oversight or intervention for patients who obtain care in the civilian sector through CHAMPUS.

The principal QA activities are driven by requirements of the Joint Commission on the Accreditation of Hospitals (JCAH), largely as articulated in JCAH (1981). For example, MTFs typically have a number of QA/RM committees that meet periodically and issue reports to the MTF commander. These committees include: utilization review, tissue (pathology) review, pharmacy and therapeutics, blood utilization, infection control, credentials review, and an executive committee.

New Activities

QA/RM activities have been undergoing substantial change and improvement in the last year or two. Among the issues addressed are the following: bringing greater consistency into the programs across the three Services and designating QA/RM coordinators at all levels of medical command; incorporating outpatient-only MTFs more fully into

QA/RM programs; documenting program activities better to enhance accountability at both the MTF and the Surgeon General level; improving credentials review; measuring health care provider performance against specific norms, such as procedure-specific mortality rates; and testing or phasing in an "occurrence screening" program, designed to provide early identification of hospital-based adverse events and patterns of substandard care. These activities have begun only in the last few months, and thus the programs can be said to be in some flux.[1]

Quality of Care for Persons Enrolled in the MTF

At this juncture, implementing an HES would not appear to require major changes in present QA/RM programs. Development of those programs will continue regardless of any decisions about a possible HES. For instance, efforts to introduce greater consistency or rigor into the credentialing process seem desirable irrespective of any movement toward a health enrollment program. As another example, QA/RM for personal services contracting or the "shared-provider" concept must be solved regardless of actions taken with regard to an HES.

Credentialing and Malpractice Liability. The credentialing process is an important element of the QA program. Essentially, credentialing involves granting provisional clinical privileges to new personnel and reviewing each permanent provider's privileges annually; it is done at the MTF level. Where an HES would lead the MTFs to add full-time or part-time physicians to their staffs, the new physicians should be carefully credentialed.

Some aspects of credentialing differ among the Services, such as specificity of clinical privileges, mechanisms for dealing with new providers who fail to demonstrate acceptable ability to function at the required level, and the period of time that "provisional" or "conditional" privileges are given. Various reforms prompted by Tri-Service Working Groups are underway.

Credentialing applies to any military or civilian physician employed in an MTF; hence, essentially the same requirements for prior qualifications and periodic review of performance are applied to all types of physicians who practice in an MTF. In theory the procedures to separate or terminate a provider's position in an MTF do not differ by the type of physician (i.e., military or civilian), but anecdotal reports

[1] [illegible] has contracted with the Health Data Institute of Newton, Massachusetts, [illegible], Florida, and [illegible] a state-of-the-art system to assess the quality of medical care provided by military hospitals and ambulatory facilities. Because this study is still underway, it is unlikely to influence QA activities any time soon.

differ as to the relative difficulty of refusing to give full privileges to, or separating or terminating, a civil service physician and a military physician. Steps short of separation or termination include extended surveillance of the provider's practice of medicine, curtailment or suspension of privileges for some period of time, requirements for further training or remedial training, and other forms of disciplinary action. The process of releasing a physician from active duty or the equivalent for a civil service physician can take well over a year, once the physician has completed a probationary period of one year. Therefore, a thorough review of each new physician's credentials would be needed under an HES to avoid tying up the MTF in costly separation actions.

Liability for malpractice cases rests with the military for all care provided in an MTF, and the military's liability extends to care provided by both military and civilian physicians. Practitioners who would provide care under contract must provide their own coverage.

Currently, few contract physicians provide care at MTFs, so the usual credentialing and termination procedures rarely need to be exercised. Until recently, most outside contracting was for nonpersonal services such as radiology and CAT scans. The ability to terminate a contract of this sort for quality-of-care reasons depends greatly on the provisions of the contract, and the Services appear to vary in their use of provisions that permit easy termination. The Navy, for instance, has had experience with writing contracts for radiology services that could be ended with relative ease in the event of poor performance.

With new legislation to facilitate personal services contracting in the MTFs, satisfactory quality-assurance procedures for contract physicians will need to be developed regardless of whether an HES is implemented. However, an HES program may require at least some MTFs to engage in considerably more contracting for various services than they have heretofore. In addition, if these services are rendered "off-site," the MTF has little direct way to monitor quality of care. Consequently, the MTFs should be given mechanisms to ensure quality of care for patients treated by providers with these types of contracts.

Such mechanisms might include specific provisions in contracts regarding the minimum qualifications or certification that must be maintained by the institution in the case of a hospital or other facility or by all professionals who are involved in rendering care to the patient in question (e.g., board certification to be held by all members of a group practice). Other contract provisions might specify technical requirements, such as the quality of radiology films, legibility of patient records, timeliness of reports of results or test interpretations returned to the MTF, and so forth. Yet other provisions might call for direct communication between an MTF primary care or "gate keeper"

provider and the specialist or consultant to whom a patient had been referred under such contracted arrangements.

The MTFs can draw upon the considerable civilian sector familiarity with contracting among various types of providers and institutions. Some HMOs, for example, acquire much of their services through contract arrangements; these, especially for so-called IPA (Independent Practice Association) HMOs, may explicitly require that providers participate in, or at least allow, a wide variety of UR (Utilization Review) and QA activities. The Services might draw on such examples to establish prototype arrangements for their own use.

If the MTFs can contract with large institutions (e.g., tertiary medical centers, large HMOs), these institutions are likely to have ongoing QA programs that would include care delivered to military beneficiaries. All contract providers have good incentives to deliver high quality care if contract arrangements with an MTF constitute an appreciable portion of their patient population, for fear of loss of those contracts. This may become a more potent factor as the number of specialists in rural areas continues to mount secondary to the anticipated "oversupply" of physicians within the next decade or so.

Utilization Review. If an HES engenders changes in the military's systems for determining the need for different resources and for acquiring and allocating those resources, and if external forces continue to drive up the costs of medical care (especially hospital care), then the Services may wish to investigate the institution of more rigorous UR activities than are now in place. These might include, for instance, considerably tighter preadmission review or concurrent review of the need for inpatient care at specific percentiles of normative diagnosis/age/sex-specific lengths of stay. Although, as we discuss elsewhere, UR has more to do with cost control than with quality of care per se, nonetheless there is an overlap that might become more significant in the HES than is now the case.

Quality of Care for Persons Enrolled in Non-MTF Plans

The Services have no direct involvement in quality-of-care concerns in the CHAMPUS program. CHAMPUS has its own division of quality assurance, which gives particular attention to mental health and to prescription drugs (especially those for mental health conditions). Special review cases are turned over to the American Psychiatric Association/American Psychology Association or the Colorado Medical Foundation. Much of this activity might be more accurately considered UR than QA, because CHAMPUS has no way to identify or investigate poor care that does not come to light through the screening procedures

of its fiscal intermediaries. HMOs that are participating in the current CHAMPUS demonstration project must maintain a full QA program.

Patients who are dissatisfied with their care in the fee-for-service system are free to change providers, file complaints with local medical societies or designated CHAMPUS offices, institute malpractice suits, or undertake other such remedies as are open to nonmilitary patients generally; they can also attempt to obtain care from a local MTF. Claim denials and other problems can also be appealed or reported to CHAMPUS.

Currently, therefore, the Services have no liability for malpractice problems arising from care obtained by patients through CHAMPUS, even if the patient has been "disengaged" to CHAMPUS because of the nonavailability of a particular service at a particular MTF. The question of whether the Services are liable in cases in which care has been purchased on behalf of a patient at a civilian facility (i.e., not through CHAMPUS) remains ambiguous.

One interpretation of the conditions of an HES is that the military continues not to have responsibility for the quality of care obtained through non-MTF plans. This interpretation rests on the provision in the HES concept for beneficiaries to choose from two, and perhaps more, health plan options. Consequently, full access to care and free choice of providers are maintained. This approach should, therefore, minimize the Services' responsibility for quality of care and liability in the event of poor care.

Another interpretation would recognize that the Services take on the responsibility of allowing only certain plans to participate in the HES (e.g., if they certify that only specific HMOs or PPOs will be included in the program or select only one or two carriers to underwrite a standard national plan); then arguably they also acquire a QA responsibility. Hence, it seems plausible to expect that selection of alternative plans to participate in the HES would be based in part on quality-of-care considerations. For example, HMOs might be required to be federally qualified and to have documented, ongoing QA programs. Procedures and criteria used by the Office of Personnel Management to administer the civilian FEHBP could serve as analogs for systems that the Services might establish.

Consideration might nonetheless be given to a variety of complaint, grievance, and appeal mechanisms. For example, a "patient ombudsman" from the local MTF or HES regional office might be available to intercede or mediate in cases when patients believed they had been poorly treated or subjected to discrimination. Obviously, patients who are dissatisfied with care in the fee-for-service sector can change providers, perhaps with the assistance or advice of such an ombudsman.

HMOs often maintain active grievance offices of their own, to which enrollees could take complaints directly. In special cases involving significantly substandard care, consideration might be given to allowing beneficiaries to disenroll from an HMO before the beginning of the next "open enrollment season."

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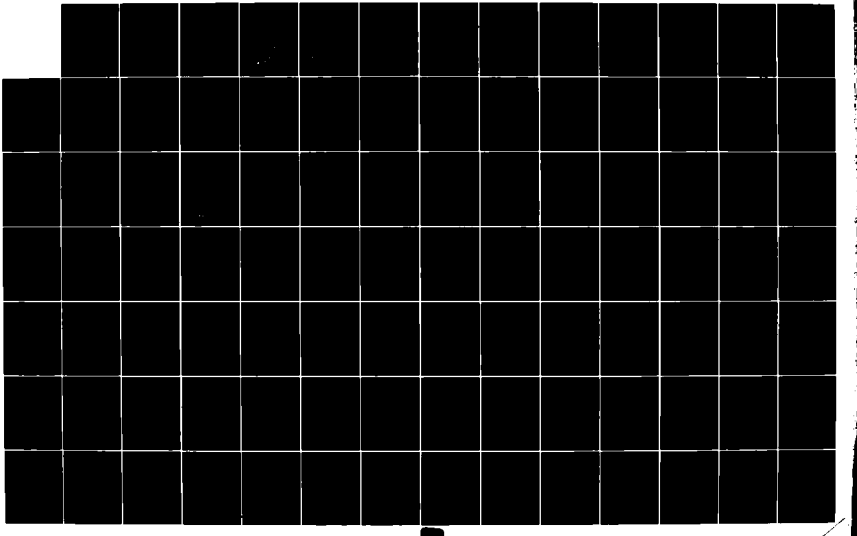

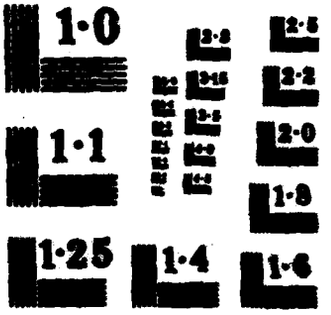
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VI. SETTING ENROLLMENT TARGETS

Establishing appropriate enrollment targets is central to the success of a health enrollment system. Targets set too low result in unnecessary resource expenditure and increase system costs. Assuming reasonable MTF efficiency, increased costs occur with underutilization of MTFs because individuals not enrolled in the MTF must be enrolled in another plan. Targets set too high may reduce quality of care and may lead to attrition of membership through dissatisfaction with the MTF care system.

To attempt to identify targets that neither undersubscribe nor oversubecribe the MTFs, the Services would have to rely on current data on beneficiary utilization rates and MTF productivity factors. Both should change with the implementation of an HES. Even if change were not expected, the data systems used under the current system cannot accurately describe beneficiary utilization and MTF productivity.

These data shortcomings argue against full and immediate implementation of an HES. They do *not* argue against implementing an HES in a limited number of areas to gather further information. With some actual experience under an HES and the collection of appropriate data on utilization and productivity for an enrolled population, the MHSS could develop the targeting parameters needed to plan adequately for full implementation.

Our evaluation of the feasibility of setting enrollment targets was guided by a general enrollment targeting model, described below. More specifically, we assessed the feasibility of transforming the Air Force's PRISM into a targeting model. We found that although PRISM could suffice as a starting point for assigning people in a demonstration, it could not support a full HES implementation without substantial modification. For a demonstration to provide information for modifying PRISM, it should vary the resource/enrollment ratios sufficiently to observe utilization and health outcome responses to different resourcing levels.

A GENERAL STRUCTURE FOR AN ENROLLMENT TARGETING MODEL

To evaluate the feasibility of targeting enrollment under an HES, we developed a general model that could be used to target enrollment levels for each MTF, based on the resources currently available to the MTF and the resources it could purchase from other sources. The model assumes that these additional resource purchases would be made on a per unit basis at a fixed price within the military or the community. Our approach assumes that the MTF can attract as many enrollees as the model targets and that the enrollees will represent a random selection of the MTF's eligible population.

This prototype model takes the form of a simple linear programming model. For each MTF, the model determines the number of MTF enrollees and non-MTF enrollees and the amount and mix of additional resource purchases made by the MTF. These quantities are selected to minimize total costs within the area. The model imposes one constraint for each resource category to insure that adequate resources are provided for each enrollee either from MTF resources or from purchased services. Enrollment is limited to the number of beneficiaries within the area, and anyone not enrolled in the MTF is enrolled in the non-MTF plan.

The model could easily be extended to include referrals and transfers into and out of the MTF. This extension would require the development of transfer prices by resource category and estimates of the amounts of care that should be referred out and referred in. Another extension could establish enrollment targets for each military beneficiary category.

The approach we have posed determines enrollment targets for the available resources in the individual MTFs and ignores central resource allocation issues that would reconfigure the system based on peacetime costs. We chose to pursue a decentralized option because we were not convinced that peacetime costs were the sole criterion surrounding system configuration, and we preferred to concentrate our focus on the need for and development of adequate utilization measures. Our formulation could be embedded within a central resource allocation model.

This enrollment targeting model requires estimates of each MTF's capacity, enrollee utilization rates, the total number of beneficiaries eligible to enroll in each MTF, and costs. The first step categorizes the set of resources that are used by enrollees; that is, outpatient physician services by specialty, outpatient ancillary services, inpatient physician and ancillary services, and hospital services. For each resource category, the model requires a measure of the MTF's capacity and the

expected use of that resource for an individual enrollee. Of course, use would vary with the copayment plan chosen (see Sec. III). It is well established that medical utilization also varies as a function of age and sex. In Sec. II, we presented evidence that it may also vary as a function of the enrollee's military status, that is, active duty, active duty dependent, retiree, retiree dependent, or survivor. Therefore, the expected use of each resource per enrollee would equal the weighted average of the use of each age, gender, and military status group. The weights depend on the composition of the beneficiary population eligible for enrollment in the MTF.

Finally, cost data must be developed. The model selects the enrollment target that, given the MTF's initial personnel and other resources, minimizes the total cost of providing health benefits to all beneficiaries in the area. Therefore, the model requires reasonable estimates of the costs of providing services to MTF enrollees, including purchases from outside sources, and the costs of enrolling the remainder of the population in non-MTF plans.

Existing data systems were not designed to collect the types of data required to support an enrollment targeting analysis. These systems are most deficient in their ability to measure the total use of each medical resource by enrollees with different demographic characteristics and military service affiliations. Without an enrollment system, keeping track of who uses the system for what portions of their care is difficult. For this reason, the data present an incomplete picture of the total care received by different types of beneficiaries. When DEERS is fully operational, the MTFs will have a more complete picture of their potential beneficiary population. However, DEERS will not solve the problem of knowing what portion of the beneficiaries' total care is sought within the military health care system. The problem of defining system participation is not unique to the military. Although periodic surveys of users provide much useful evidence, the problem may only be resolvable with an HES.

In several additional ways, the current data systems fall short of the requirements for an HES. The outpatient data systems do not contain sufficient detail either on the beneficiary or the type of service received. Some of this may change with the introduction of the TRIMIS outpatient scheduling system (TRIPAS—TRIMIS Patient Appointment and Scheduling). However, TRIPAS does not appear to have been designed to produce data on treatment patterns and patient utilization profiles.

The TRIMIS inpatient and ancillary systems similarly will provide detail for each MTF on [illegible] but may not provide complete patient profiles over time.

Data on the amount and types of care purchased in the civilian sector are particularly lacking. CHAMPUS data provide a partial picture but it is incomplete. Patients relying on other insurance and those with expenses below their CHAMPUS deductible do not file claims. A 1977 Rand survey for the Air Force found that only 30 percent of retirees residing within 50 miles of nine Air Force bases and using civilian care had used CHAMPUS to pay for their last visit.[1]

Other data systems such as the UCA and the USM report only aggregate data and are just now undergoing data validation checks.

As a consequence, we feel that the establishment of a demonstration and evaluation project that incorporates variations in resource levels would greatly assist in the successful design of an HES. The evaluation should incorporate quality-of-care and patient satisfaction concerns as well as cost and acceptability issues.

MEDICAL CARE USE PATTERNS

We anticipate that the pattern of medical care use would change under an HES for two reasons. First, as we discussed in Sec. III, the MTF enrollees' utilization would be expected to decline if cost sharing were introduced. Second, the incentives for providers to undertake various treatment patterns differ markedly under an HES from current incentives.

Currently, an MTF's output is measured in units of service. Most, if not all, resource allocation is based on past levels of output. Additional resources are obtained by increasing (temporarily) the work load of existing resources. By contrast, in an HES, resources would be assigned based on the number of enrollees and their expected, rather than actual, utilization. The MTF gets no additional resources for providing more visits, hospital days, and ancillary services except for unusually extended and expensive cases.

The patterns of medical practice and case management would change over time in response to the different incentive structures. Anecdotal information acquired during the course of our interviews suggests that the case management practices in some MTFs may be more conservative and significantly more resource intensive than those observed in the civilian sector. Some of the differences may arise from different needs within the military and may be desirable. We observe, however, that the same modes of practice may be adopted for nonactive duty beneficiaries, for whom it is less clear that this is warranted.

[1]Jolly (1980) describes this survey.

While the detailed data needed for enrollment targeting are not currently available, we have made some gross utilization comparisons between the military Services, the civilian sector, and HMOs. We did this to gain a better understanding of where we might draw upon other systems for data and experience that are otherwise lacking in the military. Health maintenance organizations with their well-defined, enrolled membership potentially offer the greatest similarity to a health enrollment system and therefore the richest comparison for what may ultimately be achieved. Enrollment targets under an HES should be readjusted to reflect changing utilization, allowing time to reorient practitioners and to understand the implications of new incentive structures and how desirable outcomes are achieved.

In Appendix B, we describe in detail the utilization comparisons we made. Table 3 summarizes our findings. To obtain the actual military

Table 3

COMPARISON OF ACTUAL MILITARY USE RATE AND THAT PROJECTED FROM CIVILIAN DATA: CONUS CATCHMENT AREA POPULATION, FY82

User	Actual Military Rate	Projected Civilian Rate
Outpatient visits		
Active duty	9.6[a]	3.4
Active duty dependents	7.8	5.0
Retirees, survivors, and dependents	4.5	4.8
Hospital days/1000		
Active duty	1216	558
Active duty dependents	951	629
Retirees, survivors, and dependents	868	1280

SOURCES: RAPS; Office of CHAMPUS (1982); NCHS (1982); PRISM civilian outpatient visit rates.

[a]Army and Air Force active duty personnel only. The Navy figure of only 2.2 visits per year apparently does not include shipboard visits.

rates, we calculated the total utilization of MTF outpatient and inpatient services and services for which CHAMPUS claims were filed. We divided that sum by the number of beneficiaries living in CONUS 40 mile catchment areas. Civilian rates were projected for each age/sex group from national civilian data and averaged by beneficiary type. Active duty family members show much heavier utilization patterns than their civilian counterparts do. The observation that active duty dependents share their sponsors' high use rates reinforces the supposition that physicians tend to adopt one style of practice for all patients. On the other hand, consistent with findings from the 1978 utilization survey and Rand survey data from the same period, the low utilization of retired beneficiaries reflects their wider use of out-of-system care.

These military use rates appear even more striking when compared with HMO use data collected in 1981 by the Department of Health and Human Services.[2] Only 10 percent of the HMOs reported more than five physician encounters per member per year, and only 6 percent reported more than 700 hospital days per 1000 members.

The disparity between utilization patterns observed in military and civilian settings suggests that an HES could substantially alter the military medical use patterns. Unless the beneficiaries' and providers' reactions to an HES were first calibrated in a demonstration, enrollment targeting under an HES would be subject to considerable uncertainty.

ESTABLISHING PRELIMINARY ENROLLMENT TARGETS

While DoD does not have the data to support the type of model outlined earlier in this section, the Air Force's PRISM provides data that can be used to develop enrollment targets for a demonstration, but not for a full implementation of an HES. In Appendix C, we approximate these calculations for DoD as a whole and for three prototype facilities. Essentially, our method inverts PRISM calculations to determine enrollment capacities, given fixed staffing resources (PRISM calculates desired staffing, given the enrollment targets). Our calculations do not incorporate any of PRISM's refinements, and can, at best, be considered approximations. The method can be used to establish sensible, systematic enrollment targets for further study. The procedure does not establish "optimal" targets and costs have not been incorporated. Below we identify some of the limitations of using PRISM for

[2] We could not adjust the HMO data for differences in age/sex composition. However, the HMO population is unlikely to differ significantly from the relatively young and healthy military population.

establishing targets. We also indicate some uncertainties and their potential effects. A well-designed demonstration and evaluation program could remove some of these uncertainties.

The first column of Table 4 displays our calculations for the estimated maximum number of enrollees that could be treated by military physicians within each medical specialty. These figures range from 2.3 to 8.6 million enrollees, indicating that the current mix of providers differs markedly from PRISM's desired mix. Since providers in some specialties substitute for those in others, these capacity figures need to be viewed with some discretion. In general, the surgical specialties appear to be in shorter supply than the primary care and obstetrical services.

With such a wide range of enrollment capacities, a reasonable target is difficult to establish. The estimated family practice enrollee capacity exceeds the size of the entire catchment area population of approximately 6.3 million persons. Based on the projected adequacy of family practice staffing, one strategy might be to enroll all beneficiaries in the catchment areas and plan to purchase or contract for a significant amount of care, particularly in the surgical specialties. This strategy would require that, in both internal medicine and surgery, over one million visits be added; in other words, 17 percent of all visits would be supplemental care visits.

The second and third columns in Table 4 show the amount of supplemental care needed for a more conservative target of five million enrollees. At the lower enrollment target, excess capacity occurs in family practice. This excess capacity could potentially be used to provide the more straightforward care in other specialties such as internal medicine, dermatology, and allergy. These PRISM-based estimates also indicate that the pediatrics and obstetric/gynecology work loads can be treated within the MTFs, excepting only the most complex cases. Even without the inclusion of some simpler specialty work load in the family practice work load, supplemental visits represent only 8 percent of the work load. Allergy and otolaryngology are the only services with less than half the "desired" capacity.

Inpatient needs are not modeled directly in PRISM. It does not directly consider inpatient referral needs or constraints imposed by facility capacity or equipment deficiencies. Only the physician specialties that are staffed from patient utilization rates are included; we could not establish capacity figures for ancillary physicians (radiologists, pathologists, anesthesiologists, etc.).

Several examples demonstrate the importance of some of the assumptions embodied in PRISM. First, strong assumptions regarding the behaviors of different beneficiary groups have been incorporated

Table 4

ESTIMATED ENROLLEE CAPACITIES USING PRISM MEASURES OF USE AND PRODUCTIVITY: TOTAL ALL MILITARY SERVICES[a]

Specialty	Max. No. of Enrollees	Supplemental Care as % of In-House Care (5 mil. Enrollees)	No. of Supplemental Visits
Family practice[b]	6,772,655	- 26	--
Pediatrics[c,d]	5,323,683	- 6	--
Internal medicine[c]	4,485,000	+ 11	309,000
Surgery	3,146,667	+ 59	750,600
Urology	3,113,208	+ 61	200,000
Ophthalmology[e]	4,626,804	+ 8	36,200
Optometry	8,573,196	--	--
Otolaryngology	2,455,738	+104	465,600
Orthopedics[f]	3,555,155	+ 41	280,300
Podiatry	4,163,077	+ 20	54,400
Dermatology	3,526,326	+ 42	316,840
Ob/gyn[d,g]	5,126,679	- 2	--
Allergy[h]	2,350,000	+113	--
Neurology[h]	3,850,000	+ 30	--
Total suppl. visits			2,412,940
Percentage of all visits			8

[a]Fifteen percent of all manpower is overseas and has been eliminated from the analysis. Physicians in administrative and nonpatient care positions are not considered. Civilian providers and physicians in training are not included. Manpower figures come from Washington Headquarters Services (1983).

[b]Physicians in aviation medicine and undersea medicine spend half time in nonpatient care activities and half time in family practice. All physicians' assistants are assumed to be in primary care. Independent duty corpsmen are not included.

[c]Half of all pediatric and internal medicine care performed in MTFs with fewer than 100 beds.

[d]Nurse practitioners are allocated half to pediatrics and half to ob/gyn.

[e]One-third of the work load must be treated by ophthalmologists, two-thirds by optometrists.

[f]Three-quarters of the work load must be treated by orthopedists, one-quarter by podiatrists.

[g]200 total midwives are assumed.

[h]Allergy and neurology provider ratios are one to 50,000 enrollees and are consequently invariant to assumptions regarding work load changes.

into the calculations. Relatively little evidence exists to identify the better assumptions, and good arguments can be made for alternative behavioral responses. As a baseline for comparison, PRISM assumes that active duty personnel use more than twice the amount of outpatient care that comparable civilian populations use. PRISM also assumes that active duty dependents use 30 percent more care, but retirees and their dependents use medical care at the same rate as the civilian population. The available data on retirees and their dependents are the least complete, but there is no reason why the retirees should be the only beneficiary group to resemble their civilian counterparts.

To test the effects of these assumptions, we studied how supplemental visits needed for different enrollment targets would change with the behavioral assumptions. We considered two polar cases. Both hypothesize that retirees and their dependents actually behave like active duty dependents when enrolled in an MTF. In one case, we assumed that both groups use 30 percent more care than comparable civilian populations and in the other that use matches a comparable civilian population's use. The first case is consistent with the absence of copayments, whereas the second would be expected with the introduction of a significant copayment. More than double the number of supplemental visits are needed for the first case in contrast to the second. As a percentage of total visits, supplemental care increases from 13 to 21 percent with a high enrollment target and from 7 to 12 percent with a lower target.

PRISM was developed to establish desired staffing patterns and does not consider substitutability among providers. Since we invert the logic of PRISM, to ask about the capability of a group of providers, we confront this omission. PRISM distributes utilization across physician specialties according to data on civilian specialty utilization that may be inappropriate for the MTFs. The results in Table 4 suggest that PRISM distributes a larger portion of the primary care work load to specialists in internal medicine and pediatrics than would be consistent with current MTF staffing patterns. We looked at the effect of assumptions about subetitutions in our three prototype facilities, and found that more liberal substitution could reduce the need for supplemental visits to one-half or even one-third of the originally modeled levels. We cannot comment on the advisability or adequacy of a particular specialty mix, but we present this analysis to emphasize the need for better information to use in targeting enrollment populations and estimating the MTF resources required to care for the enrollees.

We have not considered how the military residency programs could be incorporated in a targeting model. Residents impose additional

responsibilities on a facilities' regular physicians, reducing their ability to deliver patient care, but the residents also deliver patient care. The net effect of the residents' activities needs to be assessed and incorporated into a fully operational HES.

Referral capacities could be incorporated into our method, once accurate estimates of the referral work load by specialty have been established.

PLANNING FOR THE LONG RUN

Carrying out the MTF-level calculations would provide the first step in a series of analyses that would help determine the most appropriate allocation of resources across MTFs and the choice of optimal number of MTF enrollees.

The allocation of manpower across MTFs can be assisted by noting where particular specialties are in comparative excess and where they are in the greatest shortage. (Since physicians and other providers are paid different amounts across the country, this comparison should account not only for the amounts of manpower, but their relative cost in the private sector.) This should provide the first step in increasing the efficiency of the available MTF provider resources.

Next, this approach allows a direct calculation for the added supplemental care resources needed to enroll, say, an additional 1000 people into a given MTF. In the PRISM environment, we again remind the reader, only manpower resources are considered as constraints. In a more complete model, space and other resources should also enter this calculation. The choice of adding enrollees in the MTF versus non-MTF plans can center on the added supplemental care (or providers) needed versus the costs of the non-MTF plan. As MTF enrollment is expanded further, more of the added care will have to be purchased in the private market and, eventually, space and other resources will become binding constraints. At this point, the optimal enrollment of the MTF will have been reached. But until the MTF's physical capacity is approached, it will likely be cheaper for the HES to enroll further numbers of people into the MTF, reducing non-MTF enrollment commensurately.

VII. ISSUES AFFECTING DESIRABILITY OF AN HES

POTENTIAL GAINS FROM AN HES

To assess the desirability of an HES, DoD must consider effects on cost, access by active duty and other enrollees, quality of care, effects on readiness, operational support, ability to conduct special programs, and effects on medical training programs. Choices of copayment, target enrollment, health allowances and premiums, and the generosity in providing resources all can affect each of these areas of concern.

The potential gains from developing an HES arise in several ways. These include:

- Better basis for planning and managing the MTF system.
- Improved incentives for resource management.
- Enhanced quality of care.

We discuss each of these in turn.

Improved Planning and Management

Enrollment provides a basis for planning and for staff evaluation that cannot meaningfully exist in the current environment. Nobody knows how many people are under the care of any individual MTF currently. DEERS estimates of the number of people in a catchment area differ from estimates of the service area population provided to us by MTF commands. In many cases, the MTFs held more than twice as many active records for outpatient care than DEERS assigned to catchment areas.[1]

In this environment, only one basis for planning and evaluation of performance is feasible—counts of activities performed by the MTF. Thus, resource allocation in the military medical care systems is typically driven by historical activity loads. MTFs gain more resources by recording more visits, hospital days, pharmaceutical prescriptions

[1]This is not necessarily an accurate indicator of the size of the active patient load in an MTF. Ambulatory records are commonly kept in the MTF until inactive for two or three years; then the records are sent to central warehouses. Thus, any MTF may have more "active" records than active patients. This phenomenon is exacerbated if the MTF cannot accurately find and remove all "dead" records.

dispensed, etc. The incentive structures imposed on MTF commanders are incompatible with careful and well-reasoned delivery of care in an efficient way to the widest possible population.

We do not believe that the MTFs are (necessarily) poorly managed at present. On the contrary, we observed considerable evidence that MTF commands respond in their decisionmaking to the incentives posed to them. And we anticipate that, if faced with different incentives to care for a given group of enrollees, they will be able to respond equally well.

In addition, evaluation of hospital commanders and their staffs would become much more direct under an HES as we have proposed. Basically, each command would be endowed with the same matchup of resources and enrollees. In this environment, appropriate measures of MTF performance abound: Do patients willingly enroll? Is the turnover rate of enrollees low or high? And similarly, within any command, the task of evaluation of individual providers should also become easier. Under the current structure, both commanders and their staff are evaluated on the basis of visit-counts and comparable targets. Unfortunately, clinic visits, prescriptions, hospital days, and procedures are not the desired final product of a medical organization. Rather, these activities are inputs into the process of healing sick people and maintaining the well-being of healthy people. The proposed HES refocuses the organization to these tasks, rather than providing incentives to maximize the numbers of reported visits and so forth.

Patterns of Medical Care

One can readily observe the logical consequences of the current system. Although we gathered only informal indicators, we feel confident that a more formal study would provide similar indications of how current MTF staffs have responded to the present incentives. For example, we were told in the MTFs we visited that a customary length of stay for a normal obstetric delivery would be four or more days (looking across the range of hospitals we sampled). Current practice in the private sector suggests that a two to three day stay is appropriate. Similarly, we found considerable variation in the rate of revisitation suggested for patients under treatment for chronic illness (such as diabetes or hypertension), sometimes with such revisits occurring monthly for a patient under stable control. This rate exceeds common civilian

practice. The prescription rates we observed commonly in MTF facilities appeared also to exceed civilian rates by large factors.[2]

It is possible, of course, that the extra medical care provided in the MTFs produces higher quality care than the civilian sector. But the evidence from Rand's Health Insurance Experiment suggests that little if any extra health is gained from the additional visits consumed on full coverage insurance plans. And each medical encounter also runs the risk of hospital-based infection or other treatment-related disease.[3] On net, the casual evidence we have been able to gather in our visits to MTFs suggests that a different style of medical care would emerge from an HES—one with more appropriate attention on the patient and less on the production of countable medical encounters. This may also induce better patient triage systems, such as commonly found in civilian HMOs.

Enhanced Quality of Care

Quality of care should also rise under an HES, if for no other reason than an improvement in continuity for some patients. As our evidence in Sec. II shows, the amount of "crossing over" between systems is significant, but not as large as anecdotal evidence might have suggested. Nevertheless, the enhanced continuity arising from the enrollment process should, if anything, increase quality of care.

The other side of the quality-of-care coin is the likely necessity for MTFs to rely more heavily on contract, rather than uniformed, providers. Our studies have convinced us that the mechanisms in place in the MTFs now to monitor quality of care and individual providers could function well in the HES environment.

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[2]Determining the prescribing rate per person treated per year in the MTFs is not literally possible, of course, since nobody knows how many patients are being treated. But we commonly observed prescription rates as high as 8 to 12 per year per person thought to live in the catchment area. Since significant numbers of persons within each catchment area never use the MTF for care (see Sec. II), these rates likely understate the annual rates of prescriptions filled by MTF users. Of course, the apparently high rate of prescribing may simply indicate that the patient load in an MTF exceeds that shown in the RAPS system by considerable amounts. The comparable civilian rate is approximately four prescriptions per person per year. See Kasper (1982).

[3]See Kane (1980) for a discussion of doctor-induced illness.

STUDY CONCLUSION: AN HES DEMONSTRATION IS MERITED

These and other considerations suggest to us that the potential gains from conversion of the military health care system to an HES offer enough promise to merit further study and analysis, preferably including a demonstration or experiment. We cannot know until more evidence is in whether the potential gains more than offset the potential and predictable costs, but we also recognize that a demonstration may fail where a fully implemented system would succeed.

Further, there can be no definitive statement on the desirability of the HES concept without specifying the HES structure more completely. For many of the issues, further study is needed before making appropriate choices. We feel confident, however, that the gains that could emerge from an HES make further study desirable. In considering an HES, DoD must make a number of determinations about organizational structure, cost, and equity/efficiency tradeoffs. We cannot make such judgments for DoD, but we do provide evidence on how important such decisions appear, and we assess (crudely) the consequences of several prototype choices.

SYSTEMWIDE COSTS OF AN HES

Our analysis suggests that four critical variables will alter the total costs of an HES greatly. The crucial choices include:

- How many people should the MTFs enroll?
- What copayment structure should the nonactive duty enrollees face?
- What health allowance should be provided to enrollees?
- What insurance premiums should enrollees pay?
- How should resources be added to MTFs as enrollment changes?

We have noted that the target enrollment specified for the MTF system could markedly alter the system's total cost and access. We described in Sec. VI our studies on alternative ways to reach the target assignments.

We have also provided evidence in Sec. III about the cost consequences of various copayment plans for nonactive duty beneficiaries. In that discussion, we also introduced the concept of a health allowance and showed how it could offset the effects of copayments, if desired by DoD.

Before increasing the target enrollment for the MTF system, one must consider eventual firm limits that will be reached at each MTF. Inpatient bed capacity represents one eventual constraint, but it is unlikely that inpatient beds will ever be the most binding constraint, given the large capacity held in reserve for wartime casualties. Other capital constraints, e.g., ambulatory clinic space, may be fairly binding, but these can be augmented more easily through temporary quarters or rental of commercially available office space, or through expansion of outlying clinics under the control of MTFs. Staff constraints may also be important, particularly with the Congressionally imposed restrictions on overall military authorizations and civilian employment. Contracting for provider services provides one way to augment staff even when such constraints bind. And finally, adding more patients will always require additional "consumable" supplies, such as x-ray films, food, pharmaceuticals, bandages, and disposable equipment. And within most (if not all) MTFs, supplemental care must be purchased for those services that the MTF cannot provide.

Each of these possible constraints (possibly excepting inpatient capacity) can be relieved by spending more money, but we cannot meaningfully discuss increases in the MTF patient load without also talking about the level of additional financial resources supplied to the MTF for each additional patient. At a minimum, one could supply the "consumables," with any difference in demand from the new population buffered through queuing by patients, greater work effort by providers, or changes in the patterns of medical practice allowing more patients to be seen (on a long-term basis). In subsequent simulations, we will describe this as the "low incremental budget" plan.

Alternatively, one could provide more complete financial support for added patients, ranging eventually to long-run incremental cost of new patients. Expanding MTF enrollment with such matching resources is described in subsequent simulations as a "full incremental budget" plan.

We are now in a position to simulate the total costs of an HES and to show how important aspects of an HES vary along with these cost-affecting decisions. Our purpose here is to illustrate the consequences of these major policy choices, not to provide highly accurate cost and outcome predictions. Indeed, it is impossible to predict with certainty the costs of an HES, if for no other reason than we have no empirical basis by which we could measure gains in efficiency in the MTFs arising from the change to an HES. And similarly, we have no empirical basis to know how the style and quality of medical care might change under an HES. Thus, what we provide are only illustrative estimates of costs under a variety of assumptions. At the same time, we can

address how the assumed choices affect other important outcomes that blend together to determine the desirability of an HES.

To assess how these choices affect total HES costs, we have conducted a simulation, bringing together a variety of data from different sources. Briefly, we have used data from Rand's Health Insurance Experiment to predict the costs of providing care under various insurance plans (full coverage, 25 percent copayment with a catastrophic cap, and a $250 per person deductible in 1984 dollars). These data show total costs and insurer costs on an age- and sex-specific basis for these plans. We then assess the mix of people most likely to enroll in an MTF, using historical data on patterns of use. Costs of the non-MTF enrollees are calculated by combining these two sources of information. Appendix D provides the computer program used in this simulation.

We presume in making this simulation that those persons now using the civilian sector would continue to enroll there, and those using the MTF system would continue to prefer enrollment there. As we expand MTF enrollment (parametrically) in our simulation, we first "enroll" active duty, then those nonactive duty persons currently "quasi-enrolled" in the MTF, then those predominantly using the MTF, then those predominantly (but not exclusively) using the civilian sector, and finally (as MTF target enrollment expands sufficiently) those persons now currently using the civilian sector alone. This exercise is carried to this extreme only to point out how far enrollment at the MTFs would have to expand to reach that group of people not currently using the MTF system at all. As we "enroll" each of these groups into the MTF in our simulation, we use the observed age/sex mix of the nonactive duty population (matched to estimated costs for each of those groups) as a basis for calculating the added non-MTF health costs to DoD.

The total costs under each insurance plan were estimated from original Health Insurance Experiment files. Separately, we calculated the proportion of all total costs paid by the insurer under each of these three plans.[4] Naturally, for the full-care plan, 100 percent was paid by the insurer. For the 25 percent copayment plan and the $250 (1984 dollars) individual deductible plan, the fraction paid by the insurer was identical (by coincidence)—95 percent. This exceeds the 75 percent that one might expect because of the stop-loss feature of the insurance plans, whereby the patient received 100 percent coverage after total payments during the year exceeded a predetermined amount. (The

[4] We would like to thank Arleen Leibowitz and Emmett Keeler, both senior research-ers at The Rand Corporation, for assistance with these estimates.

cost consequences of providing this catastrophic protection are not large, as discussed in Sec. III.) We adjusted total expenses on the two copayment plans by the 82 percent factor to estimate the actual costs that would be incurred by DoD to provide such insurance coverage to non-MTF beneficiaries.

To these costs, we add costs of operating the MTF system. We parametrically vary the number of persons enrolled in the MTF. As we increase the number of enrollees, we add to the MTF budget to purchase additional resources and supplemental care. (Other parts of the MTF budget do not vary greatly with patient load, including equipment replacement, fuel, electricity, janitorial services, etc.). Our low incremental budget does not add new staff as more people are enrolled in the MTF. This represents one extreme choice that DoD might make (albeit an unlikely one). In these simulations, we add $50 per enrollee per year above the assumed base-case enrollment of the MTFs.

In the other case—the full incremental budget—increased assumed enrollment causes dollar budgets to be augmented by the average variable cost observed in the military health care system ($350 per person). This is the most pessimistic assumption we might make regarding overall cost of the HES; it assumes that no efficiency gains arise from the change in structure and incentives.

In all cases, we must assume some base level of "equivalent" MTF activity. This choice must necessarily be arbitrary, since the true value cannot be observed. We have selected four million persons for our base case simulations. The portrait we portray is not sensitive at all to this choice, although (of course) individual numbers do vary as we alter this assumption. Our purpose, recall, is to show how costs vary with decisions about the structure of the HES. For these purposes, our assumption about the current "equivalent enrollment" is not critical.

The third parameter we vary in the simulations is the "net premium" charged to HES enrollees—any health allowance provided minus any premium charged to the enrollees. If the health allowance is positive and no premium is charged, the net premium is negative, and if a large premium is charged, relative to the health allowance, the net premium becomes increasingly positive. Of course, as discussed above, the premium or health allowance structure can vary by rank, and by beneficiary class (active duty dependent vs. retiree, for example) at the discretion of DoD. We report here only the consequences of an average per enrollee.

An average net premium of $100 per enrollee (to pick but one example) need not be achieved by charging that identical premium for each person. For example, given the current mix of adults and children in the nonactive duty population, a $100 average could be achieved with premiums of (approximately) $120 for adults and $50 per child.

We provide tables, each with a number of entries specifying total HES costs (in billions of 1983 dollars). For example, to determine the cost of one possible HES configuration, consider the case of a 25 percent copayment, with five million people enrolled into the HES, under the assumption that full incremental resources are added as enrollees are added, and that a net premium of $100 is charged to the single enrollee. This combination (25 percent copayment, high incremental budget) is shown in Table 6b. At the row for $100 net premium, for five million enrollees, we find a predicted total HES cost of $5.4 billion. Similarly, the simulated cost is $7.3 billion for a full coverage plan with no premium and no health allowance (net premium is zero), with four million MTF enrollees, and the low incremental budget, as shown in Table 5a.

These simulations assume that no private insurance is held by individuals enrolled, and therefore that no benefits are paid by private insurance. If such private plans do pay benefits, total HES costs fall dollar for dollar (assuming the private plans legally must be the primary payer). Thus, the data in these tables could overstate HES costs by $0.5 billion to $1 billion or more on some plans, but the incentive to continue to purchase that private insurance vanishes under many potential configurations of the HES embodied in these tables.

With this in mind, we can see how well the simulations track actual experience in FY83. For the current system, the copayment structure facing beneficiaries is a mixture of no copayment (in the MTFs) and a 20 percent or 25 percent copayment (in CHAMPUS). The current "net premium" is zero. Although we cannot know with certainty, the current number of "equivalent" enrollees is probably about 4 to 5 million. Using a 4.5 million midpoint, the total costs simulated in Tables 5 and 6 (for full coverage and 25 percent copayment) are $6.9 and $6.1 billion, respectively. Actual costs of operating the MTFs in the Continental United States plus CHAMPUS costs were about $5 billion and $1.2 billion (respectively), for a total of $6.2 billion. Thus, the simulation numbers appear to be at least roughly on target. The difference between actual and simulated can be readily accounted for by the treatment of private health insurance benefits in the simulation.

The primary purpose of these forecasts is to show the general sensitivity of HES costs to the various choices open to DoD. While it is possible to make more accurate cost predictions when specific details of any planned HES are known, we could not conduct such high-precision cost estimates in the time and scope of this study. The numbers provided in these tables should be used only to address the question of sensitivity of costs to various decisions. Further study and demonstrations along some

Table 5

ILLUSTRATIVE COSTS FOR AN HRS: LOW INCREMENTAL BUDGET[a]
(8 billions 1983)

Net Premium[b] ($ per Enrollee)	Millions of MTF Enrollees		
	4.0	5.0	6.0
	5a. Zero Copayment Plan[c]		
-200	$8.6	$7.8	$7.1
-100	7.9	7.2	6.4
0	7.3	6.5	5.7
100	6.6	5.8	5.1
200	5.9	5.2	4.4
	5b. 25% Copayment Plan[d]		
-200	$7.7	$7.1	$6.6
-100	7.0	6.5	5.9
0	6.3	5.8	5.3
100	5.7	5.1	4.6
200	5.0	4.5	3.9
	5c. $250 Deductible Plan[e]		
-200	$7.5	$7.0	$6.5
-100	6.8	6.3	5.8
0	6.2	5.7	5.2
100	5.5	5.0	4.5
200	4.8	4.3	3.8

[a]Low incremental budget adds $50 per person per year for each enrollee beyond 4 million persons.

[b]Net premium = (premium - health allowance) per person. See Sec. III for complete discussion.

[c]Full coverage for basic plan services for nonactive duty persons.

[d]25 percent copayment for basic plan for nonactive duty persons, subject to catastrophic cap.

[e]$250 per person deductible, $500 per family maximum.

Table 6

ILLUSTRATIVE COSTS FOR AN HBS: FULL INCREMENTAL BUDGET[a]
($ billions 1983)

Net Premium[b] ($ per Enrollee)	Millions of MTF Enrollees		
	4.0	5.0	6.0
6a. Zero Copayment Plan[c]			
-200	$8.6	$8.1	$7.7
-100	7.9	7.5	7.0
0	7.3	6.8	6.3
100	6.6	6.1	5.7
200	5.9	5.5	5.0
6b. 25% Copayment Plan[d]			
-200	$7.7	$7.4	$7.2
-100	7.0	6.8	6.5
0	6.3	6.1	5.9
100	5.7	5.4	5.2
200	5.0	4.8	4.5
6c. $250 Deductible Plan[e]			
-200	$7.5	$7.3	$7.1
-100	6.8	6.6	6.4
0	6.2	6.0	5.8
100	5.5	5.3	5.1
200	4.8	4.6	4.4

[a]Full incremental budget adds $350 per person per year for each enrollee beyond 4 million persons.

[b]Net premium = (premium - health allowance) per person. See Sec. III for complete discussion.

[c]Full coverage for basic plan services for nonactive duty persons.

[d]25 percent copayment for basic plan for nonactive duty persons, subject to catastrophic cap.

[e]$250 per person deductible, $500 per family maximum.

of the central issues would be needed before the most accurate possible cost predictions could be made.

While these tables address the issue of costs only on the surface, they allow considerable intuitive exploration of the consequences of various HES configurations. For example, consider how one could assess the consequences of introducing a 25 percent copayment, rather than a full coverage plan for nonactive duty persons. We will assume that four million people are enrolled into the MTFs on the zero coinsurance plan and the net premium is $100 per person. Overall costs would fall by $0.9 billion (e.g., $6.6 billion to $5.7 billion, taken respectively from Tables 5a and 5b). The costs fall both because of lower utilization by nonactive duty persons, and also because part of the financial burden has shifted from the DoD budget to nonactive duty individuals.

But the lower visit rates that we could predict with such copayments allow additional enrollment into the MTF with the same resource base. Roughly, if total enrollment is four million (1.5 million active duty and 2.5 million nonactive duty) with zero copayments, then introducing a 25 percent copayment should cause patient demand to fall by 12 to 13 percent (arising from a 20 percent decline in demand for five-eighths of the population). This would allow expansion of the enrollment to approximately 4.5 million without adding new resources. Interpolating between data points shown, this causes the simulated cost of the HES to fall to $5.4 billion (interpolating between $5.7 and $5.1 billion in Table 5b). Thus, the net effect on costs from introducing the 25 percent copayment would better be represented by a savings of $1.2 billion ($6.6 billion vs. $5.4 billion). This exercise, in effect, holds constant the work load in the MTF, by adjusting the target enrollment up as use per person (nonactive duty) falls in response to the copayment.

The increased financial load on nonactive duty persons arising from this introduction of a 25 percent copayment (with catastrophic cap) may be viewed as unacceptable without providing an offsetting increase in the health allowance. The cost consequences of increasing the health allowance (i.e., decreasing the net premium) are found by moving up the relevant column in Table 5b. Thus, for example, DoD might choose to offset the 25 percent copayment with a reduction of $100 in the net premium. The cost to DoD would then increase from $5.4 to $6.1 billion, still $0.5 billion lower than the case with no coinsurance payments and a net premium of $100 per enrollee. Thus, the financial consequences of providing offsetting payments can be learned.

The implications for recruiting and retention, and the training cost consequences of the differential turnover in the active duty force may be even more important financially than the incremental budget costs.

We have not assessed the financial implications of copayments and health allowance combinations beyond the health care system itself. Formal models of retention behavior could estimate the consequences for various combinations of choices.

Similarly, the decision about how rapidly to add new resources into the MTF (as enrollment targets change) can also be assessed. To consider but one example, suppose a 25 percent copayment plan were chosen, with zero net premium, but that 5.5 million people were to be enrolled into the MTFs. If resources are added to the MTF at the full incremental rate, then the system cost (interpolating between two entries in Table 6b) would be $6.0 billion. By contrast, if the low incremental budget were used, the cost would be $5.5 billion (interpolating between two entries in Table 5b). The decision to reduce costs by $0.5 billion would, of course, imply increased tightness in the MTFs, longer patient queues, greater delays to appointment, less availability of medical personnel and other resources, and (presumably) reduced quality of care. A carefully planned demonstration would help DoD understand better the implications of such decisions.

CONCLUDING SUMMARY

Enrolling DoD health beneficiaries into an HES offers promise of improvement in a number of areas. With a clearly defined population base, planning and management in MTFs should improve. The incentive structure under an HES should also promote a better focusing of care provided, since the incentives will point toward care of patients, rather than accumulation of counts of activities. Quality of care should increase, if for no other reason than from enhanced continuity of care for the population currently using both MTFs and CHAMPUS care.

The final desirability of an HES cannot be known completely from existing data. How the altered incentives will change patterns of medical treatment and use of care must be observed in a demonstration before the actual outcomes could be understood.

Before an HES could be used universally in DoD, the system must be specified more completely. This would include choice of copayments, premiums, offsetting health allowance, target enrollment into the MTFs, and the rate at which new funds were added to the MTF in response to increased enrollment.

VIII. DIMENSIONS OF AN HES DEMONSTRATION

DoD does not possess sufficient information to structure an HES for full benefit. We have concluded that a demonstration of the HES concept would allow DoD to better evaluate the concept, allowing important design parameters to be tested before any final choice is made. Such a demonstration should be carefully designed to provide variation in the important characteristics of the HES, and data gathering should be anticipated to answer questions we have been able to address only partially.

A demonstration adequate for resolving the remaining questions would take a year to plan. Each site should operate an HES for two years, with data for evaluating the MTFs being collected during the second year and final analysis of the demonstration taking another year. The number of sites would depend on the parameters to be varied. Of course, the sites should include a spectrum of MTFs. Several sites within the same geographic region should be included to test systems for transferring patients among MTFs. To supply answers to questions about the feasibility and desirability of an HES, a demonstration should vary:

1. The targets for MTF enrollment, given the MTFs' resource levels.
2. The net premium, after subtracting any health allowance.
3. If desired, the copayment level.

The sites should be added to the demonstration sequentially so that planning for succeeding sites can reflect the enrollment responses at the first sites. We expect that the beneficiaries will alter their enrollment choices in response to changes in the net premium. The net premium structure at each site should be designed to achieve the enrollment target for that site but, until the first sites are underway and yield data on beneficiary response to the net premium levels, estimating this response will be difficult. Sequential implementation across the sites will allow the demonstration to achieve different enrollment/resource combinations.

Evaluation of the demonstration should monitor the following:

1. The beneficiaries' enrollment decisions.
2. Medical care utilization by specialty and by diagnostic and procedural category in MTF and non-MTF plans, including supplemental care for MTF enrollees.
3. Third-party insurance held by participating families before, during, and after the demonstration, and the effects of changes in third-party coverage on DoD costs.
4. Productivity of MTF resources, referral patterns, and treatment patterns.

EXPERIMENTAL VARIATION IN A DEMONSTRATION

We were unable to answer finally the question of whether an HES would be desirable because we could not determine how enrollment decisions and medical care utilization would vary with the conditions of the HES. A demonstration that did not vary these conditions could not necessarily resolve the desirability issue. At a minimum, a demonstration should allow its evaluators to observe the MTFs operating under different resource constraints and the beneficiaries making choices under different financial incentives.

Level of MTF Target Population

Significant variation in MTF target population should be introduced into the demonstrations. Improved planning models can be used to set a base target, but such models must be calibrated against actual activities in the MTFs. Thus, some MTFs should be faced with targets substantially greater—perhaps 10 to 20 percent—than the models assume they can handle with their resources. Similarly, some MTFs should be targeted 10 to 20 percent lower than the models suggest. We offer the 10 to 20 percent range of variation only as an example. The actual variation in a demonstration should be based on a more detailed inspection of available data on MTF and civilian HMO provider productivity than we could make.

Financial Incentives To Enroll

In Sec. II, we described the types of enrollment that we would anticipate if nothing else changed in the MTF system. But the very purpose of the HES is to introduce change. Thus, it would also appear desirable to evaluate a range of financial incentives to join the MTF (or non-MTF) plans. In effect, the net premium per person (as

discussed in the simulations of Sec. VII) should vary in the demonstrations. Since the net premium could vary family by family in a demonstration, nothing prevents DoD from achieving considerable experimental variation in the net premium structure within each demonstration site. If so desired, the beneficiaries participating in the demonstration could be compensated with lump-sum payments if they are given a less desirable financial package. Again, further design is called for before the demonstration is undertaken.

Particular attention should be paid to the types of persons choosing MTF enrollment. Modeling to predict enrollment, such as begun in Sec. II, should be based on data gathered in the demonstration. And the medical care used by MTF and non-MTF enrollees should be monitored to learn if our (crude) predictions about patient load and patient mix would continue to stand up under the more complex world posed by the demonstration HES.

Copayment Levels

DoD may also wish to experiment with different copayment structures in the basic plan offered during a demonstration. We would place lower priority on this demonstration feature than others, however. Considerable scientific and experimental evidence already exists to show the effects of copayments on health care use (Newhouse et al., 1981). Attempting to replicate that information in an HES would confound understanding of other important design issues. Thus, DoD should carefully consider whether existing studies would suffice for initial planning, despite their not including military persons in the sample.

If a single copayment level were chosen, that level should be greater than the current level of zero. Introducing a significant copayment would allow verification of the assumption that nonactive duty beneficiaries would respond as civilian users do to copayment and would provide experience in integrating copayments and transfer payments for MTF referrals.

CHOICES OF NON-MTF INSURANCE PLANS

DoD would likely wish to develop an entire set of alternative non-MTF plans when and if a complete HES operates. However, during an interim demonstration, a more simple choice might be useful. DoD should investigate the opportunity to use the FEHBP system as the alternative insurance plan set for any demonstrations of an HES. The

only changes needed would be modifications of the contracts held with certified FEHBP insurance plans and HMOs in the areas used for demonstration, and these changes could be limited in duration if desired. We would anticipate ready agreement from private insurance carriers and HMOs to participate in such a demonstration, particularly if the prospect arose of a larger, permanent relationship between the HES and such carriers.

DoD will need a mechanism to administer the basic plan during a demonstration as well. Two choices are open. First, CHAMPUS could set up a special section to administer this system and use the demonstration period to gain experience for any permanent HES. Currently, CHAMPUS administers two insurance plans—one for active duty dependents and another for nonactive duty households. Administering a demonstration basic plan should not prove difficult for CHAMPUS if given sufficient time and resources. The alternative would find DoD contracting with a private carrier or administrative-service-only firm to administer the demonstration basic plan. This choice would seem more logical if DoD planned toward an eventual private administration of the basic plan in an HES (as the current FEHBP system is administered by private companies and supervised by the Office of Personnel Management of the government).

ORGANIZATIONAL AND FINANCIAL PLANNING

The HES concept relies on a system of transfer payments among MTFs, providing both the transfer of funds when one MTF provides care for another's patients and appropriate incentives for MTF commanders on both sides of the patient transfer. A demonstration should evaluate the feasibility of creating a transfer pricing scheme with the desired incentives. If DoD or each Service wishes to emphasize the value of transferring complex teaching patients to medical centers within the MTF system, then the transfer payment system should provide appropriate financial incentives for such transfers.

Several financial changes must be put in place before demonstrating an HES. A mechanism to provide for and administer the replacement budget concept must be developed. For full effectiveness, this budget must flow rapidly and automatically to MTFs, even after sudden changes in manning levels. (For example, if a Naval MTF loses an orthopedic surgeon and supporting staff to an aircraft carrier, the replacement budget must provide sufficient funds to replace the services rendered by that physician and staff.) Rules must be set in place that establish the conditions for replacing the person on a temporary

basis (the lower cost amount) versus purchasing the equivalent services in the private sector (a higher cost amount).

Similarly, a reinsurance plan must be developed, protecting the MTF against unusually costly patients. We view the proper design of this reinsurance scheme as important in preserving financial incentives for MTF commanders and staff. A plausible basis on which to administer the plan is one of accumulated expenses on each patient: Catastrophic expenses to the MTF (e.g., above $25,000 per patient) would invoke insurance payments. But this plan requires some basis of costing out current care. The same system used for transfer payments seems appropriate.

Similarly, charges must be determined for services rendered in the MTFs. One scheme would establish a copayment structure comparable to the one faced by enrollees in the basic fee-for-service option. For example, if the insurance plan required enrollees to pay 25 percent of all costs, subject to a catastrophic cap, the civilian market will provide the set of prices for each service against which the copayment will be assessed. To achieve comparability, a similar set of prices must be employed in the MTFs and MTF enrollees charged the same 25 percent. Again, the system designed for transfer prices could be employed as a basis for charging patients. An alternative scheme would charge a flat fee for all MTF services, as civilian HMOs do. This second scheme is easier to administer.

Under either MTF pricing scheme, DoD would maintain MTF prices equal across regions (or nearly so), providing extra incentives for enrollees to join the MTF in those regions where local care was extremely expensive. And in contrast, in those regions where local care was relatively inexpensive, more enrollees would choose the civilian option. On net, this should provide DoD with useful information about cost-minimizing transfers of resources across MTFs.

DoD will also need authority to administer the health allowance, if such a mechanism is employed. We believe that the health allowance usefully serves two purposes. It resolves problems of fairness (degradation of benefits issues), and it provides a management tool to help balance demand and supply for MTFs. But the latter function requires some DoD flexibility in administering the health allowance. Thus, enabling legislation for the health allowance should include a band of allowable payments from DoD to enrollees, constrained at the top end by overall budgetary concerns and at the bottom end by minimal "fairness" payments.

DATA SYSTEMS

No HES could operate well under existing data systems available to the MTFs and to DoD. The system cannot track individuals sufficiently well, and many MTFs cannot usefully gain access to the current DEERS system. Before a demonstration of an HES could begin operation, each site used as a test would have to have in place a functioning enrollment system. While a manual system could probably accommodate single-site demonstrations, a much preferred choice would introduce an interconnected computer-based system linking together the enrollment information of each MTF and the central non-MTF enrollment authority.

The most logical basis for such a system is the current DEERS system. This system would have to be augmented in several ways to perform the functions needed for an HES enrollment. First, it would have to incorporate information about plans in which individuals were enrolled. If individuals reenrolled in a different plan, the system must adjust automatically and immediately, and similarly if individuals relocate and a change of plans is required. (Some non-MTF plans will offer national coverage, and no reenrollment would be needed. Such plans will likely prove popular among mobile families.)

If the HES plan allows copayments, and if there is a charge for premiums, then the system must accommodate information about accumulated payments by individuals. For example, if the plan chosen has a 25 percent coinsurance subject to a 5 percent of income cap, then the enrollment data system must provide information about the income cap and must accumulate annual expenditures to be sure the cap has not been exceeded. Depending upon the financial collection system chosen, this information must be provided to the MTF at the time care is provided, so it can collect or arrange for the appropriate treatment of copayments. If care is acquired off-site, the system must accommodate any payments made by the patient there (and determine if they accumulate toward the expenditure cap). These systems are common in commercial insurance plans. It should be possible for the DoD to contract for development of such a system or incorporation of these concepts into DEERS, if copayments are used.

The demonstration site MTFs also should have installed all TRIMIS data systems and automated UCA and USM systems. Early in the planning stages, the data management schemes and reporting software embedded in these systems should be evaluated for their ability to support an evaluation of the demonstration.

AN ALTERNATIVE CHOICE: PHASED IMPLEMENTATION

As discussed in Sec. I, if DoD has concluded that the concept of an HES is desirable, then in lieu of a demonstration, DoD could proceed with a phased implementation of the HES. Hence, we wish to point out the steps that DoD could take to proceed with phased implementation. As will be obvious, these steps largely replicate the activities that we feel necessary to undertake before a realistic demonstration of the HES concept could proceed.

- Augment DEERS to provide capability for carrying further information about individuals (such as insurance plan chosen in an HES) and accumulation of expenditure information by families in case income-related copayments or catastrophic caps are chosen.
- Establish mechanisms in MTFs for collection of copayments.
- Devise a formal model for determining population-based utilization rates.
- Develop capacity measures for individual MTFs.
- Devise improved contracting forms for supplemental care.
- Develop a system to provide replacement budgets for MTFs.
- Develop a system to provide a reinsurance system to replace the current ad hoc "unfunded requirements" system.
- Develop a set of medical care prices that could be used (a) for inter-MTF transfers, (b) for sharing agreement with the Veterans Administration, (c) for billing civilian insurers if Congress so authorizes, and (d) to provide a basis for charging beneficiaries if copayments are chosen.
- Relax civilian hiring restrictions.

Some of these steps would prove desirable for efficient and effective operation of the MTF system even as currently designed.

Appendix A

TECHNICAL METHODS USED TO ANALYZE HSUS DATA

THE DATA SOURCE

The data used in this analysis derive from responses to the HSUS, a pretested, self-administered survey conducted by the DoD during summer 1978. Respondents reported their household and individual characteristics as of the response date, their attitudes toward sources of health care, and their ambulatory and inpatient utilization during the preceding 12 months.

The survey was submitted to a simple random sample of all active duty personnel, military retirees, and survivors of deceased military personnel residing in the Continental United States. Nearly 6500 survey instruments were mailed, yielding approximately 4500 usable responses.

Each response included data not only for the military sponsor (if living), but for all of his or her dependents who were eligible for MHSS care.[1] Thus, the usable responses covered about 12,000 eligible individuals.

A previous study (Office of Planning and Policy Analysis, 1979) compared the HSUS demographic findings with those from an alternative data source. The HSUS sample contains a slightly higher proportion of active duty spouses and a slightly smaller proportion of active duty singles than the alternative data source. The HSUS sample also contains a slightly smaller proportion of respondents from the highest income groups, and larger families appear to be slightly overrepresented in the HSUS sample. The differences are small enough overall to suggest that the HSUS sample is fairly representative of the total 1978 beneficiary population.

The survey characterized sources of health care as military, civilian, Veterans Administration, U.S. Public Health Service, or other. Some

[1]Some documents pertaining to this survey use the term "sponsor" to mean the individual to whom the survey was sent, such as the spouse of active duty or deceased individuals. In this report, however, "sponsor" means the individual whose military affiliation resulted in MHSS eligibility.

questions asked respondents about the source each family member generally used for treatment and advice, and other questions asked for sources actually used for visits and inpatient care. Though we have not directly compared these data with alternative information for 1978, the HSUS responses appear internally consistent and similar to what would be expected on the basis of health care and expenditure patterns seen in other data from military information systems. We believe the survey responses on *sources* of care are reasonably accurate and representative.

The HSUS data possibly understate *levels* of use, especially numbers of ambulatory visits per capita. Incomplete recall is one likely explanation. Lacking comparative data on 1978 MTF and civilian use levels, we could not test the hypothesis that recall error is randomly distributed with respect to eligibility categories or sources of health care. However, comparisons among the eligibility categories and sources of care showed no signs of anomalous results; for example, the data met our expectation that older adults would have more use than younger ones. We have designed the analysis of utilization data to yield valid conclusions despite underreporting, provided it is randomly distributed among individuals and sources of care.

After examining the HSUS data on *types* of ambulatory visits, we declined to use them in the analysis. The survey asked respondents to categorize visits as "regular, emergency, obstetric, or other." Though sensible patterns are seen in the total visits data, we could not discern patterns in the individual types of visits. We suspect that respondents found it difficult to distinguish among the types of visits (e.g., is a visit for an infant with a fever an "emergency" visit?), and may even have found it difficult to enter the data correctly, given the physical layout of this section of the survey instrument.

SAMPLING FOR ANALYSIS

Analysis was done on two types of observations: individuals and household or family groups. In both types of analysis, observations were deleted if any of the following occurred: The sponsor's military status was missing, data were coded for the sponsor but his status was coded as "deceased," the family reported more than one spouse, or there was more than one sponsor in a family and the marital status did not indicate both sponsor and spouse being military members. Records with missing "relationship to sponsor" codes were also deleted, so there could have been some families with children that were analyzed as sponsor-and-spouse-only households because the children's records had

missing relationship codes. The original data file had 11,970 individual records, and the above criteria limited it to approximately 11,500 persons or about 4300 families (the vast majority of deletions being due to missing "relationship to sponsor" codes).

Dependent parents (of which there were about 150 in the sample) were not included in our analyses. We judged that this short-term feasibility study could not properly monitor any special behavior patterns among dependent parents, and that they were few enough in number to be omitted without jeopardizing the study's general conclusions.

A few further deletions were made in the individual-level analysis for obvious out-of-range ages after taking account of the person's indicated relationship to sponsor. Depending on the particular table or calculation, further observations were deleted if necessary variables had missing values.

In any calculation involving numbers of ambulatory medical visits in the last 12 months, a response was coded as missing (rather than zero) if the variable indicating zero visits was not flagged. Since the visits data contained only positive numbers, there was no way to distinguish zero visits from nonresponses without this flag variable. The same procedure was used for calculations involving numbers of hospital admissions, since these data were also only positive responses with a corresponding variable to flag those with no hospital admissions in the last year.

TABULATION RESULTS

Tables A.1 through A.4 provide supporting documentation for the "Basic Findings from Tabulations" portion of Sec. II. The data for those tables are unweighted.

QUASI-ENROLLMENT CLASSIFICATION

Table A.5 describes the criteria by which we assigned each 1978 HSUS respondent to one of 14 quasi-enrollment classifications, and Table A.6 shows how respondents were distributed among the classifications. As the tables indicate, the classifications were then grouped for the simulation analysis reported in Sec. II. Data from a demonstration HES program might show different MTF enrollment rates among the 14 classifications. For simulation purposes, however, entire groups were assumed to enroll with one health care source or another.

Table A.1

PERCENTAGE OF ACTIVE DUTY HOUSEHOLDS CITING DIFFERENT USUAL SOURCE COMBINATIONS, BY SERVICE BRANCH

Usual Source Patterns	Marines	Navy	Army	Air Force	All Branches
All dependents cite MTF	79.0	80.9	81.9	88.7	83.6
All dependents cite civilian	14.5	13.4	10.0	5.3	9.6
Other responses	6.6	5.7	8.1	6.1	6.8
Number in sample	76	157	259	247	739

SOURCE: Authors' calculations from unweighted 1978 HSUS data, excluding dependent parents.

NOTE: Excludes households with only one member and those that did not report a usual source for all members, and active duty households having no spouse.

Table A.2

PERCENTAGE OF NONACTIVE DUTY HOUSEHOLDS CITING DIFFERENT USUAL SOURCE COMBINATIONS, BY SERVICE BRANCH

Usual Source Patterns	Marines	Navy	Army	Air Force	All Branches
All dependents cite MTF	43.9	35.6	41.9	49.0	42.6
All dependents cite civilian	37.7	43.9	36.6	33.1	37.5
Other responses	18.4	20.5	21.5	17.9	19.9
Number in sample	212	551	670	641	2074

SOURCE: Authors' calculations from unweighted 1978 HSUS data, excluding dependent parents.

NOTE: Excludes households that did not report usual sources for all members and single-parent families, but includes single-person households.

Table A.3

PROXIMITY OF ACTIVE DUTY AND NONACTIVE DUTY HOUSEHOLDS TO MTFs, BY SERVICE BRANCH

Service Branch	% of Spouses Within 30 Min of an MTF	
	Active Duty	Nonactive Duty
Marines	79	56
Navy	82	62
Army	68	58
Air Force	89	60

SOURCE: Authors' calculations from unweighted 1978 HSUS data, excluding dependent parents.

In Sec. II's simulations, the observations were weighted to account for differing survey nonresponse rates by Service branch and sponsor status. Since the distribution of ambulatory visits by type of facility (MTF, civilian, Veterans Administration, other) was used to assign individuals to the quasi-enrollment classes, persons not responding to the visits questions could not be classified. Therefore, for ambulatory visits calculations, the actual response rate consisted of the overall survey response rate multiplied by the visits questions response rate. The reciprocal of this adjusted response rate was used to weight the yearly number of ambulatory visits to estimate the total effects on MTF demand. The same procedure was used to calculate an appropriate weight for inpatient data; there was often a higher nonresponse rate to the questions on hospital usage.

For the hospitalization data, a nonresponse was counted only when both the number of admissions and number of inpatient days were missing with no flag indicator of zero admissions. Since we wished to retain as much inpatient data as possible, the following imputation procedures were used for partially missing hospitalization data:

- Thirty-four respondents had hospital admissions but did not report the number of days spent in the hospital; they were assigned the sample's average number of hospital days per admission (7.8 days) for each of their indicated admissions.
- Fifty-six respondents indicated number of inpatient days but not the number of admissions; they were assigned one admission for each type of facility in which they had spent some days

Table A.4

PERCENTAGE OF NONACTIVE DUTY PERSONS WITH ALTERNATIVE VISIT PATTERNS, BY SERVICE BRANCH AND USUAL-SOURCE RESPONSE CATEGORY

	Navy		Marines		Army		Air Force		
Visits Pattern	With Usual Source	Without	With Usual Source	Without	With Usual Source	Without	With Usual Source	Without	Total
All to MTF	40.1	38.2	46.3	47.4	47.5	49.8	52.1	51.8	47.3
More to MTF than elsewhere[a]	8.0	10.7	8.6	8.8	8.0	9.2	8.9	5.5	8.4
All to civilian source	38.1	35.1	32.8	26.3	28.8	22.9	27.1	26.6	30.5
More to civilian than elsewhere[a]	5.3	5.3	5.6	5.3	5.7	8.4	4.4	7.3	5.3

Table A.4—continued

Visits Pattern	Navy		Marines		Army		Air Force		
	With Usual Source	Without	With Usual Source	Without	With Usual Source	Without	With Usual Source	Without	Total
Other pattern	8.5	10.7	6.7	12.3	9.9	9.6	7.4	8.7	8.5
Total percent[b]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of persons[c]	1553	131	676	57	2146	249	2215	218	5251

SOURCE: Authors' calculations from 1978 HSUS data, excluding dependent parents.

[a]More of the person's visits were to the indicated source than to any other single source, but not all visits were to the indicated source.

[b]Detail may not add to total due to rounding.

[c]Unweighted number of nonactive duty respondents in each category. All respondents described in this table had at least one reported ambulatory visit.

Table A.5

QUASI-ENROLLMENT CATEGORIES FOR MHSS ELIGIBLES

Group	Classification	Description
Active duty	0	All active duty sponsors
MTF-reliant	1	Usual source = MTF and all visits to MTF (visits > 0)
	2	No usual source, but all visits to MTF (visits > 0)
MTF-preference crossovers	3	Usual source = MTF and most visits there (visits > 0)
	4	Usual source = MTF but zero visits
	5	Usual source = MTF but *not* most visits there (visits > 0)
	6	No usual source but most visits to MTF
Civilian-preference crossovers	7	Usual source = civilian and most visits there
	8	Usual source = civilian but zero visits
	9	Usual source = civilian but *not* most visits there (visits > 0)
	10	No usual source but most visits civilian
Civilian-reliant	11	Usual source = civilian and all visits there (visits > 0)
	12	No usual source but all visits civilian (visits > 0)
Infrequent users	13	No usual source and zero visits
All others	14	Not grouped because of lack of usual source, reliance on "other" source, or neither civilian nor MTF-reliant visits pattern

(e.g., an allowable maximum of four admissions if they had some inpatient days in all four facility types). Of these 56 persons, 48 had spent 10 days or less in the hospital.

Table A.7 lists our calculated ambulatory and hospital visits response rates and weights. For example, retired Army families had a survey response rate of 84.3 percent and an ambulatory visits response rate of 97.1 percent in the coded data; thus, their ambulatory visits response rate was $0.843 \times 0.971 = 0.819$, and the weight assigned their visits was $1/0.819 = 1.22$. By using the survey and questions' response rates by Service branch and sponsor's military status to generate weights, we are assuming that the nonrespondents are randomly distributed in the population with respect to health care use and sources of care.

Table A.6

PERCENTAGE DISTRIBUTION OF ELIGIBLES AMONG QUASI-ENROLLMENT CLASSIFICATIONS, BY SERVICE BRANCH: 1978

Classification	Army	Navy	Marines	Air Force	All Branches
0 (Active duty)	18.2	15.0	17.2	12.2	15.6
1	29.1	24.4	28.6	31.1	28.5
2	5.2	3.5	3.7	5.6	4.8
Subtotal: MTF-reliant	34.5	27.9	32.3	36.7	33.3
3	3.9	4.3	4.6	4.8	4.3
4	6.0	5.6	4.6	6.2	5.8
5	4.6	5.1	4.8	5.3	5.0
6	0.9	0.9	0.9	0.6	0.8
Subtotal: MTF-preference crossovers	15.4	15.9	14.9	16.9	15.9
7	1.7	1.5	1.2	1.2	1.4
8	2.9	4.4	2.9	2.8	3.2
9	2.6	2.7	1.6	2.5	2.5
10	0.7	0.6	0.4	0.7	0.6
Subtotal: civilian-reliant	7.9	9.2	6.1	7.2	7.7
11	11.8	17.7	16.8	14.2	14.4
12	3.4	3.9	2.9	3.5	3.5
Subtotal: civilian-preference crossovers	15.2	21.6	19.7	17.7	17.9
13 Infrequent users	4.0	5.6	4.5	5.6	4.9
14 All others	5.1	4.7	5.2	3.7	4.6
Total:[a]	100.0	100.0	100.0	100.0	100.0

SOURCE: Authors' calculations from weighted 1978 HSUS data, excluding dependent parents.

[a]Detail may not add to totals due to rounding.

Table A.7

RESPONSE RATES AND CORRESPONDING WEIGHTS

Beneficiary Category	Survey Response Rates	Ambulatory Visits[a]		Hospital Admissions[a]	
		Sponsor	Dependent	Sponsor	Dependent
		Question Response			
Active Duty					
Army	0.394	0.951	0.959	0.931	0.969
Navy	0.470	0.972	0.978	0.972	0.959
Marines	0.498	0.981	0.944	0.955	0.936
Air Force	0.650	0.980	0.963	0.963	0.962
Retired					
Army	0.843	0.971		0.957	
Navy	0.828	0.969		0.943	
Marines	0.752	0.987		0.934	
Air Force	0.820	0.980		0.950	
Survivors[b]					
Army	0.625	0.932		0.888	
Navy	0.625	0.956		0.887	
Marines	0.625	0.952		0.895	
Air Force	0.625	0.932		0.939	
		Calculated Weights			
Active Duty					
Army		2.67	2.65	2.73	2.62
Navy		2.19	2.18	2.19	2.22
Marines		2.05	2.13	2.10	2.15
Air Force		1.57	1.60	1.60	1.60
Retired					
Army		1.22		1.24	
Navy		1.25		1.28	
Marines		1.35		1.42	
Air Force		1.24		1.28	
Survivors[b]					
Retired					
Army		1.22		1.24	
Navy		1.25		1.28	
Marines		1.35		1.42	
Air Force		1.24		1.28	
Survivors[b]					
Army		1.72		1.80	
Navy		1.67		1.80	
Marines		1.68		1.79	
Air Force		1.72		1.70	

SOURCE: Survey response rates from Office of Planning and Policy Analysis (1979); other calculations by the authors from 1978 HSUS data.

[a]Separate response rates and weights for sponsors and dependents were used only for active duty families.

[b]The survey response rate for survivor beneficiaries was not given separately by service branch.

SIMULATION ANALYSIS

The simulation analysis in Sec. II uses weighted data to compute the MTF utilization changes that would have occurred if some crossover users had received all their care from MTFs and others had received all care from civilian providers. For each simulation assumption, the MTF utilization changes are measured as percentages of the utilization levels shown in Table A.8.

Table A.9 reports the detailed percentage changes computed for individual crossover groups, in the aggregate and for the MTFs operated by the three Military Departments of DoD. The scenario results reported in Sec. II represent combinations of the component changes from Table A.9. For example, the Universal Enrollment scenario assumes that all the crossover groups enroll in the MTF, so the total increase in MTF inpatient days in all Service branches is 15.9 + 10.6 + 20.1 = 46.6 percent.

Table A.10 shows the composition of each quasi-enrollment group in terms of the fraction of each group's individuals whose sponsors were in various eligibility categories. These data were used in the Sec. II analysis to assess the effects of a priority enrollment system for active duty dependents.

THE ENROLLMENT CHOICE MODEL

According to the preliminary model, an individual's quasi-enrollment decision is explained by the variables described in Table A.11. We stratified the survey sample into: (a) nonactive duty adults: retired sponsors and their spouses; (b) active duty spouses: female spouses of active duty sponsors; and (c) children: all dependent children.[2]

Using the data for the sample in each stratum, we applied a maximum likelihood polytomous logit technique, also known as conditional logit. This is a regression-like statistical procedure in which the dependent variable can assume one of several discrete values. In our model, there were three possible alternatives: MTF-reliant, civilian-reliant, or any other quasi-enrollment classification.

We used STATLIB (Brelsford and Relles, 1981) statistical software in estimating our equation. The general form of the equation for the probability of an individual choosing a particular alternative is:

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[2]Individuals, such as male active duty spouses and surviving spouses, who did not satisfy any of the stratification criteria, were omitted from the test analysis.

Table A.8

1978 HSUS REPORTED HEALTH CARE UTILIZATION

Type of Use	Aggregate Number	Service Branch		
		Army	Navy and Marines	Air Force
Ambulatory visits	47,231	18,484	15,330	13,417
Inpatient stays	1,774	799	506	469
Inpatient days	13,160	6,359	3,902	2,898

SOURCE: Authors' calculations from HSUS data, weighted for nonresponse and excluding dependent parents.

$$p_i(j \mid X_{ij}) = e^{\beta_j X_i} / \sum_{k=i}^{j} e^{\beta_k X_k}$$

where i indexes people, j (or k) indexes alternatives, J is the total number of alternatives possible, X is the vector of explanatory variables, and β is the vector of regression coefficients. Each coefficient shows how a change in variable X_j affects the probability of choosing alternative j relative to some other.

Letting c(1), c(2), ..., c(n) denote the outcome choices of the n individuals, the log likelihood function of the vector of coefficients is:

$$\log L(\beta) = \sum_{i=1}^{n} \log p(i, c(i)).$$

The polytomous logit procedure finds the estimated coefficients that maximize this function.

Tables A.12, A.13, and A.14 present the complete estimated polytomous logit equations. The large-sample standard error of an individual coefficient is shown, and its significance is demonstrated by its t-statistic. Variable names with a suffix of ".M" indicate the coefficients affecting the probability of being in an MTF-reliant quasi-enrollment group, and the suffix of ".C" pertains to coefficients for the civilian-reliant group. (All other groups was the omitted outcome category.) All equations converged in five or six iterations.

Table A.9

SIMULATED MTF CASE LOAD EFFECTS OF 1978 HES, IN AGGREGATE

Simulated Assumption	Percentage Change in: Visits	Inpatient Stays	Inpatient Days
All Service Branches			
MTF enrollment by MTF-preference crossovers	+13.3	+16.9	+15.9
MTF enrollment by civilian-preference crossovers	+ 8.4	+12.2	+10.6
Civilian enrollment by civilian-preference crossovers	- 4.9	- 2.5	- 2.3
MTF enrollment by all other group	+ 6.2	+12.9	+20.1
Civilian enrollment by all other group	- 2.5	- 3.7	- 2.4
Army			
MTF enrollment by MTF-preference crossovers	+12.9	+15.3	+14.0
MTF-enrollment by civilian-preference crossovers	+ 7.8	+10.7	+ 6.8
Civilian enrollment by civilian-preference crossovers	- 4.0	- 1.3	- 1.1
MTF enrollment by all other group	+ 7.2	+12.9	+21.3
Civilian enrollment by all other group	- 3.3	- 5.8	- 3.7

Table A.9—continued

Simulated Assumption	Percentage Change in: Visits	Inpatient Stays	Inpatient Days
Navy and Marines			
MTF enrollment by MTF-preference crossovers	+15.3	+21.3	+13.8
MTF-enrollment by civilian-preference crossovers	+ 9.6	+13.8	+12.6
Civilian enrollment by civilian-preference crossovers	- 5.5	- 2.8	- 3.1
MTF enrollment by all other group	+ 6.1	+16.0	+22.0
Civilian enrollment by all other group	- 2.4	- 2.0	- 1.3
Air Force			
MTF enrollment by MTF-preference crossovers	+11.6	+14.6	+22.9
MTF enrollment by civilian-preference crossovers	+ 7.9	+12.9	+16.1
Civilian enrollment by civilian-preference crossovers	- 5.5	- 4.4	- 3.9
MTF enrollment by all other group	+ 5.0	+ 9.5	+14.7
Civilian enrollment by all other group	- 1.5	- 1.9	- 1.3

SOURCE: Authors' calculations from HSUS data, weighted for nonresponse and excluding dependent parents.

Table A.10

SPONSOR'S STATUS DISTRIBUTION WITHIN QUASI-ENROLLMENT GROUPS: 1978

Group[a]	% of Group's Eligibles Whose Sponsors Are: Active Duty	Retired	Deceased	All Sponsors[b]
MTF-reliant	54.7	39.2	6.1	100.0
MTF-preference crossover	40.8	46.0	10.1	100.0
Civilian-preference crossovers	23.6	65.3	11.1	100.0
Civilian-reliant	11.0	73.1	15.8	100.0
Infrequent users	14.1	76.8	9.0	100.0
All others	21.9	65.1	13.0	100.0

SOURCE: Authors' calculations from weighted 1978 HSUS data, excluding dependent parents.

[a]Group A excluded because all its members are active duty sponsors.

[b]Detail may not sum to totals due to rounding.

The DIFFGRP variable was not included in the equation for active duty spouses, since they were assumed to choose the source of care for their children as well as themselves; accordingly, the sources used by other family members would not be exogenous to the active duty spouse's choice of source. Other variables were excluded from a particular sample's equation either because of previously demonstrated nonsignificance (AGE for active duty spouses, FEMALE for children) or irrelevancy (e.g., ADUTY for retired adults).

Table A.11

EXPLANATORY VARIABLES IN THE PRELIMINARY QUASI-ENROLLMENT MODEL

Label	Description
M, C	Intercept term for the probability of membership in the MTF-reliant or civilian-reliant groups, respectively
AGE	Individual's age, in years
TRAVTM	Travel time to the nearest MTF, in minutes
INCOME	Family income
EDUCATION	Educational attainment of the individual (for adults) or of the active duty or retired spouse (for children)
OTHERINS	Dummy variable = 1 if household has any insurance other than CHAMPUS
NONWHITE	Dummy variable = 1 if individual is nonwhite
KIDS	Dummy = 1 if the individual's household includes one or more dependent children
DIFFGRP	Dummy = 1 if at least one other family member (aside from the active duty sponsor) is in a different quasi-enrollment group from the individual in question
ADUTY	Dummy = 1 if the sponsor is on active duty
FEMALE	Dummy = 1 if the individual is female
NAVY, MAR, AF	Dummy = 1 if the sponsor's branch is the Navy, Marines, or Air Force, respectively

Table A.12

POLYTOMOUS LOGIT FOR QUASI-ENROLLMENT FOR ACTIVE DUTY FEMALE SPOUSES

SAMPLE SIZE	729
SUM OF WEIGHTS	729
NUMBER OF PARAMETERS . . .	20
LOG LIKELIHOOD	-575.8587

VARIABLE	COEFFICIENT	ESTD STD DEV	T
1 M	3.2016D-01	5.8113D-01	0.5509
2 C	-3.0028D+00	1.1869D+00	-2.5300
3 TRAVTM___.M	-2.1439D-02	5.0567D-03	-4.2398
4 INCOME___.M	3.8706D-06	1.0792D-05	0.3587
5 EDUCATION.M	1.1546D-02	4.2775D-02	0.2699
6 OTHERINS_.M	-9.6762D-01	2.5151D-01	-3.8472
7 NONWHITE_.M	3.9109D-02	2.0368D-01	0.1920
8 KIDS_____.M	5.6106D-01	2.0431D-01	2.7462
9 NAVY_____.M	-6.7166D-02	2.2827D-01	-0.2942
10 MAR_____.M	3.3379D-01	2.9523D-01	1.1306
11 AF_____.M	2.0327D-01	1.9776D-01	1.0279
12 TRAVTM___.C	6.6590D-03	3.5521D-03	1.8746
13 INCOME___.C	2.2533D-05	2.1207D-05	1.0625
14 EDUCATION.C	1.0085D-02	8.8598D-02	0.1138
15 OTHERINS_.C	9.1548D-01	3.8305D-01	2.3899
16 NONWHITE_.C	-4.8043D-01	4.8427D-01	-0.9921
17 KIDS_____.C	7.5085D-02	3.9555D-01	0.1898
18 NAVY_____.C	6.2205D-01	4.4157D-01	1.4087
19 MAR_____.C	7.5052D-01	5.6153D-01	1.3366
20 AF_____.C	-3.7986D-02	4.6395D-01	-0.0819

ITERATION 6, LOGLIK=-575.859, CONVERGED

Table A.13

POLYTOMOUS LOGIT FOR QUASI-ENROLLMENT FOR RETIRED ADULTS

SAMPLE SIZE 2379
SUM OF WEIGHTS 2379
NUMBER OF PARAMETERS . . . 26
LOG LIKELIHOOD . . . . . -2319.2444

	VARIABLE	COEFFICIENT	ESTD STD DEV	T
1	M	1.6380D-01	4.1035D-01	0.3992
2	C	-3.1831D+00	5.4136D-01	-5.8798
3	AGE_____.M	4.4285D-03	5.3887D-03	0.8218
4	FEMALE___.M	-1.4976D-01	1.0195D-01	-1.4689
5	TRAVTM___.M	-1.0955D-02	1.4229D-03	-7.6990
6	INCOME___.M	-1.6048D-06	4.6523D-06	-0.3450
7	EDUCATION.M	1.5496D-03	2.1946D-02	0.0706
8	DIFFGRP__.M	1.4542D-02	9.7758D-02	0.1488
9	OTHERINS_.M	-5.4623D-01	1.0815D-01	-5.0508
10	NONWHITE_.M	-1.8462D-01	1.4133D-01	-1.3063
11	KIDS_____.M	1.4053D-01	1.0745D-01	1.3079
12	NAVY_____.M	-4.1685D-02	1.2917D-01	-0.3227
13	MAR_____.M	2.2118D-01	1.7056D-01	1.2968
14	AF_____.M	2.1002D-01	1.1347D-01	1.8508
15	AGE_____.C	1.1748D-02	7.0651D-03	1.6629
16	FEMALE___.C	1.0103D+00	1.3598D-01	7.4297
17	TRAVTM___.C	6.0135D-03	9.8371D-04	6.1130
18	INCOME___.C	1.3369D-05	5.3336D-06	2.5065
19	EDUCATION.C	2.0415D-02	2.7428D-02	0.7443
20	DIFFGRP__.C	-1.5081D-01	1.2302D-01	-1.2259
21	OTHERINS_.C	5.2338D-01	1.3347D-01	3.9213
22	NONWHITE_.C	-5.4640D-01	2.0657D-01	-2.6451
23	KIDS_____.C	2.9663D-01	1.3870D-01	2.1386
24	NAVY_____.C	1.6772D-01	1.5628D-01	1.0732
25	MAR_____.C	3.3839D-02	2.2134D-01	0.1529
26	AF_____.C	-9.1328D-02	1.4678D-01	-0.6222

ITERATION 5, LOGLIK=-2319.24, CONVERGED

Table A.14

POLYTOMOUS LOGIT FOR QUASI-ENROLLMENT FOR CHILDREN

SAMPLE SIZE 2668
SUM OF WEIGHTS 2668
NUMBER OF PARAMETERS . . . 24
LOG LIKELIHOOD . . . . . -2340.4360

	VARIABLE	COEFFICIENT	ESTD STD DEV	T
1	M	1.2845D+00	3.1771D-01	4.0430
2	C	-1.9833D+00	4.5265D-01	-4.3816
3	AGE_____.M	-4.0192D-02	9.2265D-03	-4.3562
4	TRAVTM___.M	-2.0769D-02	2.1602D-03	-9.6142
5	INCOME___.M	7.8381D-06	5.2412D-06	1.4955
6	EDUCATION.M	-4.9176D-03	2.2248D-02	-0.2210
7	DIFFGRP__.M	-4.3888D-01	9.0597D-02	-4.8443
8	OTHERINS_.M	-6.5132D-03	1.2641D-01	-0.0515
9	NONWHITE_.M	-2.3401D-01	1.0814D-01	-2.1639
10	NAVY_____.M	-2.9604D-01	1.2216D-01	-2.4234
11	MAR_____.M	-2.5196D-02	1.6075D-01	-0.1567
12	AF_____.M	1.3034D-01	1.0768D-01	1.2104
13	ADUTY____.M	3.8505D-01	1.0926D-01	3.5243
14	AGE_____.C	-3.3822D-02	1.3721D-02	-2.4651
15	TRAVTM___.C	7.8115D-03	1.3720D-03	5.6934
16	INCOME___.C	1.9959D-05	6.6615D-06	2.9962
17	EDUCATION.C	6.1886D-02	3.2254D-02	1.9187
18	DIFFGRP__.C	-6.4322D-02	1.3534D-01	-0.4753
19	OTHERINS_.C	2.4393D-01	1.6690D-01	1.4615
20	NONWHITE_.C	-5.2740D-01	1.7708D-01	-2.9783
21	NAVY_____.C	4.3615D-01	1.7643D-01	2.4721
22	MAR_____.C	1.8369D-01	2.4132D-01	0.7612
23	AF_____.C	2.2716D-01	1.6456D-01	1.3804
24	ADUTY____.C	-1.2306D+00	1.8935D-01	-6.4991

ITERATION 6, LOGLIK=-2340.44, CONVERGED

Appendix B

MEDICAL USE PATTERNS IN THE MILITARY

We calculated the use of MTF and CHAMPUS-financed health care services by military beneficiaries living in MTF catchment areas. We then compared this utilization with that of HMO populations and comparable age/sex civilian populations.

In Table B.1 we present some HMO utilization statistics that were taken from the 1981 HMO Census. These show that 67 percent of the HMOs had annual per capita visit rates between three and five, 10 percent had rates in excess of this amount, and 23 percent were lower. Inpatient days per thousand members are reported for 181 HMOs: 56 percent had rates between 300 and 500 days per year; an additional 20 percent were between 500 and 600 days; 15 percent were over 600 days; and 8 percent were under 300 days. Luft (1981) reviews the literature on comparisons between HMOs and fee-for-service plans and concludes that HMOs appear to attain their cost savings by controlling inpatient utilization. Outpatient utilization rates were, if anything, higher than those of fee-for-service plans.

In Tables B.2 and B.3 we present inpatient statistics for each of the three military Services along with estimated civilian rates for a population with the same age/sex composition as observed in the military Service branch inpatient catchment areas. The civilian inpatient rates for each age/sex group are drawn from National Center for Health Statistics (1982). The direct care statistics were obtained from RAPS for FY82. The CHAMPUS figures were obtained from the CHAMPUS 40 mile radius reports (Office of CHAMPUS, 1982a).

Two clear patterns emerge from these data. First, unless the catchment area beneficiary population is severely understated, active duty persons and their dependents currently use inpatient services within all three military Service branches much more extensively than their civilian counterparts. Since aggregate manpower numbers for the active duty population are well known, higher use is the probable conclusion. It is important to observe that the higher use pattern appears for both active duty persons and in their dependents, which reinforces the supposition that physicians tend to adopt one style of practice for all patients. The second observation is that retirees, survivors, and their dependents appear to be obtaining or financing care outside of the

Table B.1

SELECTED HMO STATISTICS

	Physician Encounters per Member per Year					
Statistic	1-1.9	2-2.9	3-3.9	4-4.9	5-5.9	6-6.9
Number of HMOs	4	29	61	36	13	1
Percent	3	20	42	25	9	1

	Hospital Days per Thousand Members per Year					
Statistic	100-299	300-399	400-499	500-599	600-699	700-799
Number of HMOs	16	51	51	36	16	11
Percent	8	28	28	20	9	6

SOURCE: Office of Health Maintenance Organizations (1981).

Table B.2

COMPARISON OF MILITARY AND CIVILIAN HOSPITAL DAYS FOR AGE/SEX STANDARDIZED BENEFICIARY POPULATION, BY SERVICE BRANCH: FY82

Statistic	Active Duty	Dependents of Active Duty	Retirees, Survivors, and Dependents	Total
		Army		
Direct care[a]	938,080	522,665	687,691	2,148,436
CHAMPUS[b]	--	230,301	242,441	472,742
No. of beneficiaries[a]	564,452	814,861	893,598	2,272,911
Patient days/1000	1662	924	1041	1153
Civilian age/sex adjusted value[c]	562	628	1292	873
		Navy		
Direct care[a]	428,864	281,264	342,517	1,052,645
CHAMPUS[b]	--	258,046	276,360	535,206
No. of beneficiaries[a]	557,396	596,072	792,329	1,945,797
Patient days/1000	823	906	781	816
Civilian age/sex adjusted value[c]	523	635	1303	875

Table B.2—continued

Statistic	Active Duty	Dependents of Active Duty	Retirees, Survivors, and Dependents	Total
		Air Force		
Direct care[a]	458,870	450,265	527,557	1,411,692
CHAMPUS[b]	--	187,933	281,754	469,687
No. of beneficiaries[a]	404,599	619,887	1,032,795	2,057,281
Patient days/1000	1134	1030	784	914
Civilian age/sex adjusted value[c]	601	623	1252	935

[a]RAPS Service branch totals, inpatient catchment areas.

[b]Office of CHAMPUS (1982a).

[c]Calculated for RAPS inpatient military Service branch populations by age/sex category using civilian use rates from National Center for Health Statistics (1982).

Table B.3

COMPARISON OF MILITARY AND CIVILIAN ADMISSION RATES FOR THE MILITARY AGE/SEX STANDARDIZED BENEFICIARY POPULATION, BY SERVICE BRANCH: FY82

Statistic	Active Duty	Dependents of Active Duty	Retirees, Survivors, and Dependents	Total
		Army		
Direct care[a]	111,090	127,837	87,533	326,460
CHAMPUS[b]	--	28,284	23,366	51,650
No. of beneficiaries[a]	564,452	814,861	893,598	2,272,911
Admissions/1000	197	192	124	166
Civilian age/sex adjusted value[c]	90	118	157	126
		Navy		
Direct care[a]	67,346	78,163	49,669	195,178
CHAMPUS[b]	--	26,228	23,736	49,964
No. of beneficiaries[a]	557,396	596,072	792,329	1,945,797
Admissions/1000	121	175	93	126
Civilian age/sex adjusted value[c]	83	120	157	125

Table B.3—continued

Statistic	Active Duty	Dependents of Active Duty	Retirees, Survivors, and Dependents	Total
		Air Force		
Direct care[a]	75,193	106,302	74,354	255,849
CHAMPUS[b]	--	23,899	27,668	51,567
No. of beneficiaries[a]	404,599	619,887	1,032,795	2,057,281
Admissions/1000	186	210	99	149
Civilian age/sex adjusted value[c]	94	116	153	130

[a]RAPS Service branch totals, inpatient catchment areas.

[b]Office of CHAMPUS (1982a).

[c]Calculated for RAPS inpatient military Service branch populations by age/sex category using civilian use rates from National Center for Health Statistics (1982).

military health care system, since their use rates are substantially below those of a comparable civilian population. This is consistent with findings from the 1978 HSUS and earlier Rand research for the Air Force, which showed that many retirees had insurance other than CHAMPUS.

It is somewhat more difficult to compare the HMO rates with the military and civilian projections, since we cannot standardize the HMO rates to the same population. We can observe that, even if the HMO populations were as young as the active duty personnel and their dependents (omitting all retirees and their dependents), civilian rates appear to fall at the high end of the HMO spectrum. Military rates are higher still.

Table B.4 presents outpatient visit statistics. The per capita visit rates are calculated using the military Service inpatient catchment area populations, that is, beneficiaries residing within 40 miles of an MTF. We do this because CHAMPUS reports visit data using this definition. The total ambulatory catchment area population is 1 percent larger (20 mile radii around each MTF or clinic) with slightly more active duty persons and their dependents and fewer retirees and their dependents. The projected per capita civilian rate for either overall catchment area population is 4.5, so this assumption makes little or no difference in the calculations. The civilian rates come from the Air Force's PRISM data base. PRISM uses higher use rates for active duty personnel and their dependents. It projects active duty use at 2.31 times the civilian rate and active duty dependents at 1.32 times the civilian rate. We include projected per capita visit rates using the PRISM-adjusted rates.

The patterns we observe here are consistent with the observations on inpatient utilization. Active duty persons and their dependents use medical services at higher rates than their civilian counterparts and retirees and their dependents appear to be obtaining care outside the system. Some caution is necessary when comparing these visit rates. The military figures include visits for audiology, speech pathology, diet therapy, and orthopedic appliances, whereas the PRISM civilian rates seemingly do not. Our next observation is that either the Navy counts visits very differently for active duty members or their rates are far below the other Services and below expected rates. Our supposition is that this is a counting or data problem, since active duty dependents for the Navy use health care at high rates.

In Table B.5 we look at CHAMPUS work load as a proportion of the total amount of care provided to beneficiaries residing within 40 miles of an MTF. A much larger proportion of the inpatient work load is handled by the CHAMPUS program than is true for the oupatient work load. This is consistent among the three military Services. Since

Table B.4

COMPARISON OF MILITARY AND CIVILIAN OUTPATIENT VISIT STATISTICS FOR BENEFICIARY POPULATION, BY SERVICE BRANCH: FY82

Statistic	Active Duty	Dependents of Active Duty	Retirees, Survivors, and Dependents	Total
		Army		
Direct care[a]	5,287,370	5,337,361	4,221,343	15,067,017
CHAMPUS[b]	--	186,718	338,480	525,198
No. of beneficiaries[c]	564,452	814,861	893,598	2,272,911
Per capita visits	9.4	6.8	5.1	6.9
Civilian age/sex adjusted rate[d]	3.4	5.0	4.8	4.5
PRISM rate[e]	7.9	6.6	4.8	6.2
		Navy		
Direct care[d]	1,220,630	5,326,852	3,519,983	10,067,465
CHAMPUS[b]	--	394,512	472,873	867,385
No. of beneficiaries[c]	557,396	596,072	792,329	1,945,797
Per capita visits	2.2	9.6	5.0	5.6
Civilian age/sex adjusted rate[d]	3.3	5.0	4.8	4.4
PRISM rate[e]	7.6	6.6	4.8	6.2

Table B.4—continued

Statistic	Active Duty	Dependents of Active Duty	Retirees, Survivors, and Dependents	Total
		Air Force		
Direct care[a]	4,019,444	4,448,942	3,403,473	11,871,859
CHAMPUS[b]	--	217,526	438,697	656,223
No. of beneficiaries[c]	404,599	619,887	1,032,795	2,057,281
Per capita visits	9.9	7.5	3.7	6.1
Civilian age/sex adjusted rate[d]	3.4	4.9	4.8	4.6
PRISM rate[e]	7.9	6.5	4.8	5.9

[a]RAPS Service branch totals.

[b]Office of CHAMPUS (1982a).

[c]RAPS inpatient catchment area population. The inpatient catchment areas population is used instead of the outpatient because CHAMPUS collects data in this manner. This could understate military per capita use rates and possibly age the beneficiary population by including more retirees. It is then a conservative per capita comparison for the military.

[d]Civilian rates applied to RAPS inpatient catchment area population.

[e]PRISM projected military rates increase utilization for active duty persons and their dependents.

Table B.5

CHAMPUS WORK LOAD AS A PERCENTAGE OF MILITARY-FINANCED CARE: BENEFICIARIES WITHIN 40 MILE RADIUS OF MTFs

Type of Care	Dependents of Active Duty	Retirees, Survivors, and Dependents
	Army	
Admissions	18	21
Hospital days	31	26
Outpatient visits	3	7
	Navy	
Admissions	25	32
Hospital days	48	45
Outpatient visits	7	12
	Air Force	
Admissions	18	27
Hospital days	29	35
Outpatient visits	5	11

Certificates of Nonavailability are required for inpatient care and not for outpatient care, this suggests that much of the CHAMPUS inpatient work load may, in fact, be for services that are unavailable altogether within the MTFs, constrained by existing facilities or staff, or too complex to be treated at local facilities. To the extent that a quasi-enrollment system currently exists, as is suggested in Sec. II, a health enrollment system may not substantially reduce the amount of care obtained in the civilian sector. It may, however, facilitate better planning and as a consequence allow the MTFs to procure these services in a more cost-effective manner.

Luft (1981) reports physician staffing levels (physicians per thousand members) for 10 plans. These range from 0.73 to 1.062 or 1370 patients per physician down to 942 patients per physician. For the civilian population as a whole, the number of people per physician is 526.

Table B.6 is reproduced from Applied Management Sciences (1976). It displays population per provider ratios by medical specialty. These

Table B.6

RANGE OF SELECTED REQUIREMENTS RATIOS, BY PROFESSION

(Population per professional)

Profession	Need-Based Ratio	Professional-Judgment-Based Ratio	Demand/Productivity-Based Ratio	HMO-Based Ratio
All MDs	596	534-724	547-989	651-1,495
Primary care	752-1,585	1,264	2,000	1,177-1,730
Allergy		25,000		40,000-250,000
Anesthesiology		8,457-14,000	10,764-17,544	25,641-55,556
Cardiology		25,000-77,000		
Dermatology		40,000-50,000		32,258-333,333
Gastroenterology		50,000		
Neurology		60,000-77,000		107,000-125,000
Neurosurgery		77,000-125,000	162,000	100,000-135,000
Ophthalmology		20,000		24,400-125,000
Orthopedic surgery		20,000-35,000	28,000	27,000-76,900
Otolaryngology		25,000-33,000	70,400	25,600-62,500
Pathology		17,400-33,000		19,700-111,111
Pediatrics		10,000		4,300-18,200
Pediatric surgery			780,227	
Plastic surgery		50,000-150,000		
Psychiatry		4,800-14,300		12,500-38,500

Table B.6—continued

Profession	Need-Based Ratio	Professional-Judgment-Based Ratio	Demand/Productivity-Based Ratio	HMO-Based Ratio
Pulmonary disease		100,000		
Radiology		7,400-20,000		14,400-100,000
Thoracic surgery		100,000-200,000		
Urology		21,300-50,000		25,600-90,900
Dentistry		1,559	1,423-2,983	
Optometry	4,132	7,145	7,092	
Pharmacy			8,071-8,390	
Podiatry		27,778-40,000		
RNs		313-214	214-318	
LPNs		388		
Nurse anesthetists			8,080-10,204	

SOURCE: Applied Management Sciences (1976).

are drawn from the health planning literature and are classified into four groups: need-based ratios, professional-judgment-based ratios, demand/productivity-based ratios, and HMO-based ratios. The first group is based on morbidity or disease incidence and prevalence and is intended to represent some ideal in which all disease conditions requiring treatment are treated. The second group reflects health manpower experts' opinions or aggregate assessments on the manpower situation. Demand/productivity ratios incorporate assumptions regarding the demand for services and provider productivities and may integrate factors affecting these such as health insurance, population composition, and use of support personnel. The last groups represent HMO staffing patterns. It is particularly interesting to note that within this group, ratios may differ by a factor of 10, revealing that there is apparently little consensus even within this group. The HMO-based group tends to have higher population per professional ratios than the other groups, though in some cases the demand/productivity ratios are higher. Comparisons are difficult and subject to many pitfalls resulting from definitional and area differences. We present these data to demonstrate that the problem of identifying adequate ratios is difficult and fraught with peril even outside the military health care system.

Appendix C

USING PRISM TO TARGET ENROLLMENT FOR A DEMONSTRATION

Data from the Air Force's PRISM model can be used to establish sensible, preliminary enrollment targets for an experiment. PRISM combines civilian data on outpatient use rates by medical specialty for different age/sex groups with the overall utilization propensities by beneficiary category from the Air Force's biometrics data. PRISM models only outpatient care; provision for inpatient physician services is handled through the outpatient productivity or capacity measures. For example, surgeons and internists with substantial inpatient responsibilities are modeled with low outpatient capacities thus reflecting time devoted to inpatient care. A shortcoming arises from this approach if inpatient needs are not truly proportional to outpatient visits, an untested assumption at best. Another limitation is that the measures were based on current practice patterns, which refer significant numbers of inpatients care to the community and CHAMPUS. Not all types of providers are modeled directly in PRISM. Some specialties are staffed at the ratio of one provider per 50,000 beneficiaries. Ancillary services, radiology, pathology, and anesthesiology are handled separately. Several assumptions regarding staffing plans within a medical service are embodied within the model. For example, within the mental health category, one social worker and one psychologist are planned with each psychiatrist. In orthopedics, a podiatrist is planned for every orthopedist and in ophthalmology, two optometrists are planned for each ophthalmologist. Tables C.1 and C.2 display some of the PRISM data that were used in our examples.

PRISM productivity figures are compared in Table C.3 to fee-for-service and prepaid group practice measures reported by Held and Reinhardt (1980) for selected specialties. In family practice, the assumed PRISM productivity figure exceeds that for prepaid group practices. Productivity figures for prepaid group practices are below those observed in the fee-for-service system. PRISM figures are comparable to the prepaid group practice figures. The PRISM figures are assumed to include allowances for readiness training and personnel transfers.

Table C.1

PRISM CIVILIAN VISIT RATES

Specialty	Age 0-4	5-14	15-17	18-24	25-44	45-64	65+
Males							
Family practice	2.370	1.190	1.190	1.820	1.620	2.020	2.730
Pediatrics	3.550	1.770	1.770	--	--	--	--
Internal medicine	.100	.050	.050	.230	.416	.857	1.419
Surgery	.200	.100	.100	.241	.283	.406	.501
Urology	.040	.020	.020	.036	.077	.134	.248
Ophthalmology	.200	.100	.100	.188	.150	.277	.508
Otolaryngology	.240	.120	.120	.086	.107	.148	.182
Orthopedics	.210	.110	.110	.172	.176	.198	.150
Obstetrics/ gynecology	--	--	--	--	--	--	--
Dermatology	.090	.050	.050	.211	.128	.139	.163
Mental health	.070	.040	.040	.125	.253	.124	.026
	7.070	3.550	3.550	3.109	3.210	4.303	5.927
Females							
Family practice	2.070	1.040	1.040	1.970	1.612	2.770	2.890
Pediatrics	3.110	1.560	1.560	--	--	--	--
Internal medicine	.090	.050	.050	.280	.558	1.176	1.508
Surgery	.170	.090	.090	.298	.379	.557	.531
Urology	.030	.020	.045	.045	.103	.184	.262
Ophthalmology	.170	.090	.233	.233	.201	.381	.538
Otolaryngology	.210	.110	.110	.106	.144	.204	.193
Orthopedics	.190	.100	.100	.212	.235	.272	.159
Obstetrics/ gynecology	--	--	--	1.700	2.268	.050	.020
Dermatology	.080	.040	.040	.261	.172	.190	.172
Mental health	.060	.030	.030	.155	.339	.170	.027
	6.180	3.13	3.298	5.260	6.011	5.954	6.300

Table C.2

PRISM PROVIDER CAPACITIES, IN VISITS PER YEAR

Family practice:	
Physicians	5160
Physicians' assistants	5760
Pediatrics	4080-4800[a]
Internal medicine	2400-3600[a]
Surgery	2700
Urology	3000
Ophthalmology	3300
Optometry	3600
Otolaryngology	4200
Orthopedics	3300
Podiatry	3300
Obstetrics/gynecology	2880
Midwives	3600
Nurse practitioners	4800
Dermatology	6480

[a]PRISM assumes that physicians in these specialties see fewer patients in Air Force hospitals operating more than 100 beds.

METHODOLOGY

We next consider in greater detail how the PRISM data might be used to establish enrollment targets. In effect, we run PRISM backward to determine the population servable with a given provider staff. Our method only approximates PRISM, since we have not incorporated all of its detail. We use the age/sex/beneficiary structure from Office of Health Information Systems (1983) as a prototype population and ask how to set enrollment targets for this group using only military physicians and other PRISM modeled providers. The examples presented are illustrative and will overstate capabilities for the disaggregated system, since individual providers cannot be split among facilities to accommodate work loads requiring fractions of a full-time equivalent provider.

Endstrength numbers by specialty and provider type were obtained from Washington Headquarters Services (1983). Physicians in training and those in administrative or nonpatient care positions were omitted. We further decreased the totals within each specialty by 15 percent to allow for overseas staffing. Since PRISM productivity figures were

assumed to incorporate allowances for readiness training and personnel transfers, further reductions were not incorporated.

Several assumptions were necessary to complete the examples and these should be noted. We were unable to identify the number of nurse midwives, so we began with the assumption that 200 were available and allocated 15 percent overseas. All physicians' assistants, after removing the overseas allowance, are allocated to family practice. This may overstate family practice capability if physicians' assistants are employed extensively in other clinics. Physicians in aviation and undersea medicine were assumed to spend half of their time in nonpatient care activities but were assumed to be as productive as family practitioners when they were engaged in patient care. Nurse practitioners were allocated half to obstetrics/gynecology and half to pediatrics. Finally civilian providers were not included because information on their medical specialties was unavailable.

PRISM makes several additional assumptions about staffing different specialties which are incorporated. One-third of the ophthalmology work load must be treated by ophthalmologists and the remaining two-thirds may be handled by optometrists. Three-quarters of the orthopedics work load requires orthopedists, one-quarter may be assigned to podiatrists. Allergy and neurology are staffed at the rate of one physician per 50,000 enrollees regardless of any assumptions about subgroup utilization behavior. Different productivity rates are used for MTFs with fewer than 100 beds for internal medicine and pediatrics. We assume that one-half the work load is performed in small facilities, which may overstate capability within these specialties.

Visit capacities for each specialty are calculated by applying the PRISM provider capacity figures (from Table C.2) to the manpower

Table C.3

OFFICE VISITS PER WEEK, BY SPECIALTY

System	Family Practice	Internal Medicine	Pediatrics	General Surgery	Ob/gyn
Fee for service	113	72	111	61	96
Prepaid practice	96	68	81	52	69
PRISM	99	46-69	78-92	52	80[a]

SOURCE: Held and Reinhardt (1980).

[a]Assumes weighted combination of 0.385 MD, 0.385 midwife, and 0.231 nurse practitioner.

figures reached above. Next we convert these visit capacities in each specialty to enrollee capacities. The latter is dependent upon the demographic and beneficiary composition of the enrolling population.

Using this age/sex/beneficiary category structure, we calculate the expected visits per enrollee for the entire population. The visit rates by age/sex grouping come from Table C.1 for retirees and their dependents and survivors. Active duty visit rates are 2.31 times these figures, whereas active duty dependents' rates are 1.32 times as large. These ratios understate observed differences by beneficiary category. Let X_{jk} denote the population in beneficiary group k and age/sex group j, and let U_{ij} represent the civilian visit rate for age/sex group j and medical specialty i. Then the expected total visits to family practice, V_1 (where $i=1$), may be calculated by summing over the 16 age/sex groups as follows:

$$V_1 = 2.31 \sum_{j=1}^{j=16} U_{1j}X_{j1} + \sum_{j=i}^{j=16} U_{1j}X_{j2} + \sum_{j=1}^{j=16} U_{1j}(X_{j3} + X_{j4} + X_{j5}).$$

The expected total visits to each of the other specialties may be calculated in a similar fashion. The expected visits per enrollee to each specialty are then obtained by dividing through by the total population. These medical service visit rates are used to convert provider visit capacities into enrollment targets. Dividing the visit capacity within each specialty by the expected visit rate yields the desired enrollment target. The inability to deliver complex services in some facilities and the lack of necessary equipment or facilities could reduce desired target levels.

EXAMPLES

The first column of Table C.4 displays the results of our calculations for the estimated maximum number of enrollees that could be treated by military physicians within each medical specialty. These figures range from 2.3 to 8.6 million enrollees indicating that the current mix of providers differs markedly from PRISM's desired mix. Since providers in some specialties substitute for those in another, these capacity figures need to be viewed with some discretion. In general, the surgical specialties appear to be in shorter supply than the primary care and obstetrical services. This observation is consistent with other Rand findings on physician supply.

With such a wide range of enrollment capacities, a reasonable target is more difficult to establish. We observe that the family practice

Table C.4

ESTIMATED ENROLLEE CAPACITIES USING PRISM MEASURES OF USE: TOTAL ALL MILITARY SERVICES[a]

Specialty	Max. No. of Enrollees	% Supplement (Target=6,280,000)	No. of Supplemental Visits	% Supplement (Target=5 Mil.)	No. of Supplemental Visits
Family practice[b]	6,772,655	- 7%	--	- 26%	--
Pediatrics[c,d]	5,323,683	+ 18%	675,160	- 6%	--
Internal medicine[c]	4,485,000	+ 40%	1,077,000	+ 11%	309,000
Surgery	3,146,667	+100%	1,269,000	+ 59%	750,600
Urology	3,113,208	+102%	335,680	+ 61%	200,000
Ophthalmology[e]	4,626,804	+ 36%	160,360	+ 8%	36,200
Optometry	8,573,196	- 27%	--	--	--
Otolaryngology	2,455,738	+156%	699,840	+104%	465,600
Orthopedics[f]	3,555,155	+ 77%	528,620	+ 41%	280,300
Podiatry	4,163,077	+ 51%	137,600	+ 20%	54,400
Dermatology	3,526,326	+ 78%	592,040	+ 42%	316,840

Table C.4—continued

Specialty	Max. No. of Enrollees	% Supplement (Target=6,280,000)	No. of Supplemental Visits	% Supplement (Target=5 Mil.)	No. of Supplemental Visits
Ob/gyn[d,g]	5,126,679	+ 22%	635,480	- 2%	--
Allergy[h]	2,350,000	+167%	--	+113%	--
Neurology[h]	3,850,000	+ 63%	--	+ 30%	--
Total suppl. visits			6,110,780		2,412,940
Percent of all visits			17		8

[a]Fifteen percent of all manpower is overseas and has been eliminated from the analysis. Physicians in administrative and nonpatient care positions are not considered. Civilian providers and physicians in training are not included. Manpower figures come from Washington Headquarters Services (1983).

[b]Physicians in aviation medicine and undersea medicine spend half time in nonpatient care activities and half time in family practice. All physicians' assistants are assumed to be in primary care. Independent duty corpsmen are not included.

[c]Half of all pediatric and internal medicine care performed in MTFs with fewer than 100 beds.

[d]Nurse practitioners are allocated half to pediatrics and half to ob/gyn.

[e]One-third of the work load must be treated by ophthalmologists, two-thirds by optometrists.

[f]Three-quarters of the work load must be treated by orthopedists, one-quarter by podiatrists.

[g]200 total midwives are assumed.

[h]Allergy and neurology provider ratios are one to 50,000 enrollees and are consequently invariant to assumptions regarding work load changes.

enrollee capacity exceeds the size of the entire inpatient catchment area population, so one strategy might be to enroll the entire population and plan to purchase or contract for a significant amount of care particularly in the surgical specialties. This strategy is used by HMOs, which establish their primary care physicians as gatekeepers to specialty care that may either be purchased or supplied. Column 2 of Table C.4 presents the increase in capacity that would be needed to supplement military providers if the entire inpatient catchment area population was the targeted enrollment. The numbers of visits represented by this work load appear in column 3. In both internal medicine and surgery, over one million visits must be supplemented and 17 percent of all visits would be supplemental visits.

If we reduce the enrollment target to five million enrollees, excess capacity occurs in family practice. This could potentially be used to substitute for deficiencies in other specialties. In addition, the pediatrics and obstetrics/gynecology work load can be treated within the MTFs, excepting only the most complex cases. Supplemental visits fall to 8 percent of the work load, while allergy and ENT are the only services with less than half the "desired" capacity.

PRISM makes some very specific assumptions about the behaviors of providers and beneficiary groups. We have already noted that retirees and their dependents receive care in unknown quantities outside the military health care system and face a different copayment structure. Suppose they respond like active duty dependents when enrolled in the MTF and their utilization increases to 1.3 times the civilian rate. This increase would be expected if copayments are reduced to zero. The number of supplemental visits increases 43 percent from six to nearly nine million under the high enrollment option and 58 percent under the lower enrollment option. Table C.5 displays service capacities and supplemental care under the behavioral assumption that retirees and their dependents use care in the same manner as active duty dependents within the same age/sex groupings. With the high enrollment option, even the family practice capacity has been exceeded and surgery, urology, ENT, and allergy services purchase more care than they provide.

Table C.6 displays the same data assuming that active duty dependents reduce their use to civilian levels. Active duty use remains at 2.31 times the civilian rate. In this case the supplemental visits fall and family practice has excess capacity even with the high enrollment option.

An important determinant of how to set enrollment targets is cost. With cost data we could calculate whether it is less expensive to purchase the estimated supplemental care or to enroll fewer beneficiaries

Table C.5

ESTIMATED ENROLLEE CAPACITIES USING PRISM MASURES OF USE AND PRODUCTIVITY, WHEN RETIREES BEHAVE LIKE ACTIVE DUTY DEPENDENTS: TOTAL ALL MILITARY SERVICES[a]

Specialty	Max. No. of Enrollees	% Supplement (Target=6,280,000)	No. of Supplemental Visits	% Supplement (Target=5 Mil.)	No. of Supplemental Visits
Family practice[b]	6,097,775	+ 3%	517,519	- 18%	--
Pediatrics[c,d]	4,991,394	+ 25%	970,320	+ 0.2%	6,480
Internal medicine[c]	3,844,286	+ 63%	1,705,000	+ 30%	809,000
Surgery	2,788,621	+125%	1,595,560	+ 79%	1,010,600
Urology	2,682,927	+134%	442,440	+ 85%	285,000
Ophthalmology[e]	4,080,000	+ 54%	242,000	+ 23%	101,200
Optometry	7,560,000	- 17%	--	- 34%	--
Otolaryngology	2,202,941	+185%	831,720	+127%	570,600
Orthopedics[f]	3,222,897	+ 95%	654,220	+ 55%	380,300
Podiatry	3,758,333	+ 67%	181,560	+ 33%	89,400
Dermatology	3,226,213	+ 95%	717,640	+ 55%	416,840

Table C.5—continued

Specialty	Max. No. of Enrollees	% Supplement (Target=6,280,000)	No. of Supplemental Visits	% Supplement (Target=5 Mil.)	No. of Supplemental Visits
Ob/gyn[d,g]	4,771,622	+ 32%	892,960	+ 5%	135,200
Allergy[h]	2,350,000	+167%	--	+113%	--
Neurology[h]	3,850,000	+ 63%	--	+ 30%	--
Total suppl. visits			8,750,939		3,804,620
Percent of all visits			21		12

[a]Fifteen percent of all manpower is overseas and has been eliminated from the analysis. Physicians in administrative and nonpatient care positions are not considered. Civilian providers and physicians in training are not included. Manpower figures come from Washington Headquarters Services (1983).

[b]Physicians in aviation medicine and undersea medicine spend half time in nonpatient care activities and half time in family practice. All physicians' assistants are assumed to be in primary care. Independent duty corpsmen are not included.

[c]Half of all pediatric and internal medicine care performed in MTFs with fewer than 100 beds.

[d]Nurse practitioners are allocated half to pediatrics and half to ob/gyn.

[e]One-third of the work load must be treated by ophthalmologists, two-thirds by optometrists.

[f]Three-quarters of the work load must be treated by orthopedists, one-quarter by podiatrists.

[g]200 total midwives are assumed.

[h]Allergy and neurology provider ratios are one to 50,000 enrollees and are consequently invariant to assumptions regarding work load changes.

Table C.6

ESTIMATED ENROLLEE CAPACITIES USING PRISM MEASURES OF USE AND PRODUCTIVITY, WHEN ACTIVE DUTY DEPENDENTS BEHAVE LIKE CIVILIANS: TOTAL ALL MILITARY SERVICES[a]

Specialty	Max. No. of Enrollees	% Supplement (Target=6,280,000)	No. of Supplemental Visits	% Supplement (Target=5 Mil.)	No. of Supplemental Visits
Family practice[b]	7,251,960	- 13%	--	- 31%	--
Pediatrics[c,d]	6,593,895	- 5%		- 24%	--
Internal medicine[c]	4,680,000	+ 34%	920,000	7%	184,000
Surgery	3,336,126	+ 88%	1,124,560	+ 50%	635,600
Urology	3,267,327	+ 92%	304,280	+ 53%	175,000
Ophthalmology[e]	4,931,868	+ 27%	122,680	+ 1%	6,200
Optometry	9,088,525	- 31%	--	- 31%	--
Otolaryngology	2,844,304	+121%	577,197	+ 76%	362,157
Orthopedics[f]	3,810,497	+ 65%	446,980	+ 31%	199,836
Podiatry	4,510,000	+ 39%	106,200	+ 11%	29,400
Dermatology	3,753,267	+ 67%	510,400	+ 33%	251,840

Table C.6—continued

Specialty	Max. No. of Enrollees	% Supplement (Target=6,280,000)	No. of Supplemental Visits	% Supplement (Target=5 Mil.)	No. of Supplemental Visits
Ob/gyn[d,g]	5,997,452	+ 5%	133,080	- 17%	--
Allergy[h]	2,350,000	+167%	--	+113%	--
Neurology[h]	3,850,000	+ 63%	--	+ 30%	--
Total supple. visits			4,245,377		1,844,033
Percent of all visits			13		7

[a]Fifteen percent of all manpower is overseas and has been eliminated from the analysis. Physicians in administrative and nonpatient care positions are not considered. Civilian providers and physicians in training are not included. Manpower figures come from Washington Headquarters Services (1983).

[b]Physicians in aviation medicine and undersea medicine spend half time in nonpatient care activities and half time in family practice. All physicians' assistants are assumed to be in primary care. Independent duty corpsmen are not included.

[c]Half of all pediatric and internal medicine care performed in MTFs with fewer than 100 beds.

[d]Nurse practitioners are allocated half to pediatrics and half to ob/gyn.

[e]One-third of the work load must be treated by ophthalmologists, two-thirds by optometrists.

[f]Three-quarters of the work load must be treated by orthopedists, one-quarter by podiatrists.

[g]200 total midwives are assumed.

[h]Allergy and neurology provider ratios are one to 50,000 enrollees and are consequently invariant to assumptions regarding work load changes.

in the MTFs and to enroll them in another plan. In theory we could solve for the breakeven point at which the amount of care that must be purchased for the last enrollee just equals the cost to enroll him in another plan. These solutions will be sensitive to whatever behavioral assumptions are made regarding use rates. PRISM's emphasis on outpatient utilization and the lack of data on inpatient needs and facility constraints limit the usefulness of pursuing such an exercise at this stage.

MATCHING RESOURCES TO ENROLLEES FOR EACH SERVICE

We have demonstrated a general methodology for the health resources of the entire DoD that derives the number of enrollees that could be treated with a given set of providers. While this approach uses strong assumptions, it could nevertheless prove useful in planning toward the correct enrollment levels of an HES.

The approach taken above presumes that medical manpower is the binding constraint in every case (rather than, say, facilities), and it presumes that medical manpower is fully fungible across all MTFs, independent of Service connection. The method could be applied readily to the more specific level of each military Service's resources. The number of enrollees that can be served for the same total set of resources should be somewhat smaller when the additional constraint that manpower resources cannot be adjusted across Services is added. The reader should be aware that the model used in this exercise (PRISM) was developed by the Air Force and may not reflect the staffing policies of the other Services. However, if the pattern of patient use is accurately reflected in PRISM data, the model could be adapted for the other Services.

SETTING ENROLLMENT TARGETS FOR INDIVIDUAL MTFS

The same approach can provide estimates of the patient capabilities of any individual MTF. By the same process, the staffing pattern of an MTF can be converted into achievable patient load. (We continue to assume in this exercise that no other constraints affect ability of the MTF to deliver care.) Logically, one could derive such estimates for each MTF, and then add up these capabilities within each Service and across Services. The totals should not match those found when the analysis was conducted at more aggregate levels, primarily because (at

the smaller level) the need to assign providers in whole-person increments may become an important constraint.

Aside from surveying each MTF individually, we have found no reliable data source allowing such an exercise to be conducted. No commonly published data show the provider staffing at each MTF. The information on current provider staffing we requested for this study differed significantly from the information supplied by the MTFs we interviewed. This is an additional detail of data collection that would enhance planning toward an HES.

We did, however, select three facilities, small, medium, and large, with one from each Service branch, as prototypes to explore our methods. The first problem we confronted concerned how to handle military medical providers not assigned to the facility but providing care within its catchment area. Air Force and Navy flight surgeons assigned to squadrons and Army Troop Medical Clinic providers are examples of personnel not assigned to an MTF but delivering care to its active duty personnel. All flight surgeons are included as half-time providers. General medical officers, physicians' assistants, and other PRISM-modeled providers from Troop Medical Clinics are considered. These resources are not under the MTFs' command but do handle work load that would otherwise present itself at the MTF. Since we could not separate the work load, we included both sets of resources. We recognize that this is another area that will have to be carefully reviewed within the context of a demonstration.

We obtained actual staffing from a small facility and used the age/sex/beneficiary structure for that facility as described in Office of Health Information Systems (1983a). The catchment area population is 12,700; active duty personnel account for approximately one-quarter of the population, while their dependents contribute an additional 40 percent to the totals.

Calculations for the first prototype facility are shown in Table C.7. Our first observation is that staffing within family practice is generous relative to other specialties according to the PRISM type calculations. This highlights a major limitation of our approach; we do not know how to incorporate provider substitutability, nor do we have accurate measures of the work load suited only to specialists. PRISM relies upon civilian use rates among specialties. In addition to medical needs, these civilian rates reflect the availability of different types of specialists within communities, and the relative importance of the two factors cannot be distinguished. The obstetrics/gynecology enrollee capacity is somewhat deceptive; the two physicians could presumably handle all births for more than twice as many enrollees as their visit capacity would indicate. Enrollment capacity appears understated, since this

Table C.7

FACILITY 1: ESTIMATED ENROLLEE CAPACITIES USING PRISM MEASURES OF USE AND PRODUCTIVITY

(Catchment area population 12,700)

Type of Care	Max. No. of Enrollees	Supplemental Visits (Target=12,500)	Supplemental Visits (Target=12,500) Substitution
Family practice	23,665	--	--
Pediatrics	5832	5488	--
Ob/gyn	8848	2377	--
Internal medicine	6250	3600	--
Surgery	6683	2350	2350
Urology	--	1313	1313
Ophthalmology	--	1163	--
Optometry	25,714	--	

Table C.7—continued

Type of Care	Max. No. of Enrollees	Supplemental Visits (Target=12,500)	Supplemental Visits (Target=12,500) Substitution
Otolaryngology	--	2363	1182
Orthopedics	--	3313	3313
Dermatology	--	2600	--
Allergy	--	.25FTE	--
Neurology	--	.25FTE	--
Total suppl. visits		24,567	8158
Percent of all visits		33	11

not devoted to deliveries could presumably be spent in outpatient care. Column 2 of Table C.7 presents the numbers of supplemental visits that would be needed, if the PRISM planned provider patterns are considered as absolute requirements and the enrollment target is set at 12,500. Under these conditions, family practice providers are underutilized and one-third of all visits would be acquired outside the facility.

If, instead, we make some assumptions regarding substitution capabilities of family practice providers, a different picture can be constructed. In column 3 we display supplemental visits needed if family practice providers can treat up to half the PRISM-estimated work load in pediatrics, obstetrics/gynecology, internal medicine, ENT, and all dermatology, neurology, and allergy. We further suppose that all eye care can be treated by optometrists. In this case, supplemental care drops to 11 percent and the number of types of specialists needed to supplement MTF care is greatly reduced.

In Table C.8, the same calculations are presented for a somewhat larger facility. Current staffing at this facility is more consistent with PRISM staffing patterns. Since this is an Air Force facility, the better agreement may not be coincidental. The larger catchment area, 44,300, may permit more of the work to be treated within the MTF. Since the current staffing did not differ as much from the PRISM staffing, the ability to substitute one type of provider for another has far less impact, reducing supplemental visits from 9 percent to 7 percent.

The catchment area for the third facility was markedly larger, 117,100, with one-third on active duty. Active duty persons and their dependents account for 80 percent of the catchment area population. Calculations for this group appear in Table C.9. In this case, an enrollment target is harder to establish, as the agreement between current staffing and the PRISM desired staffing is lower. In each of the first two examples, reasonable enrollment targets approximated the catchment areas. In this example, only a portion of the catchment area can be enrolled. For a target of 80,000, the PRISM-based estimates for supplemental visits are given in column 2. These constitute 14 percent of all visits but fall to 6 percent when substitutions among providers are included.

Table C.8

FACILITY 2: ESTIMATED ENROLLEE CAPACITIES USING PRISM MEASURES OF USE AND PRODUCTIVITY
(Catchment area population 44,300)

Type of Care	Max. No. of Enrollees	Supplemental Visits (Target=40,000)	Supplemental Visits (Target=40,000) Substitution
Family practice	41,190	--	--
Pediatrics	34,574	4520	1540
Ob/gyn	41,279	--	--
Internal medicine	25,352	8320	8320
Surgery	27,136	5120	5120
Urology	58,252	--	--
Ophthalmology	35,484	420	--
Optometry	58,065		

Table C.8—continued

Type of Care	Max. No. of Enrollees	Supplemental Visits (Target=40,000)	Supplemental Visits (Target=40,000) Substitution
Otolaryngology	44,920	--	--
Orthopedics	33,503	1280	580
Podiatry	50,769	--	
Dermatology	31,610	1988	1988
Allergy	--	.4FTE	--
Neurology	--	.4FTE	--
Total suppl. visits		21,648	17,548
Percent of all visits		9	7

Table C.9

FACILITY 3: ESTIMATED ENROLLEE CAPACITIES USING PRISM MEASURES OF USE AND PRODUCTIVITY

(Catchment area population 117,100)

Type of Care	Max. No. of Enrollees	Supplemental Visits (Target=80,000)	Supplemental Visits (Target=80,000) Substitution
Family practice	94,165	--	--
Pediatrics	72,987	6480	--
Ob/gyn	81,980	--	--
Internal medicine	41,459	20,080	--
Surgery	32,767	19,460	19,460
Urology	31,579	4600	4600
Ophthalmology	67,577	1217	--
Optometry	147,692	--	

Table C.9—continued

Type of Care	Max. No. of Enrollees	Supplemental Visits (Target=80,000)	Supplemental Visits (Target=80,000) Substitution
Otolaryngology	21,538	11,400	5279
Orthopedics	69,474	3000	3000
Dermatology	53,554	6400	--
Allergy	50,000	.6FTE	--
Neurology	50,000	.6FTE	--
Total suppl. visits		72,637	32,339
Percent of all visits		14	6

Appendix D

PROGRAM TO SIMULATE ILLUSTRATIVE COST OF DOD HEALTH ENROLLMENT SYSTEM

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20 REM THIS PROGRAM DERIVES TABLES FOR DOD HES STUDY
30 REM PROGRAMMED BY CHARLES E. PHELPS
40 MIX = .33: REM MIX= THE FRACTION OF INDIVIDUAL (VS FAMILY) ENROLLEES
50 J2 = 2 : REM NUMBER OF RESOURCE PLAN CHOICES
60 L2 = 7: REM NUMBER OF POPULATION GROUPS
70 K2 = 3: REM NUMBER OF COPAY GROUPS
80 M2 = 5: REM NUMBER OF ENROLLMENT GROUPS, 1=LEAST IN MTF ETC.
90 N2=10: REM NUMBER OF ALTERNATIVE NET PREMIUM. NET PREMIUMS MAY BE < 0
100 I2 = 7: REM NUMBER OF ALTERNATIVE MTF ENROLLMENTS
110 SIZE = 8.2E+06:  BASEDOL = 5E+09: BASESIZE=4E+06
120 DELTA(1)=50: DELTA(2)=350: REM INCREMENTS ALLOWED TO MTF FOR ENROLEES
130 AD = 1.578E+06
140 DIM MTF(I2), NETPRM(N2,2),PCT(L2,M2),COST(L2,K2),NONPPL(I2)
150 REM COST(,,) = HIS DERIVED COSTS FOR COPAY, AGE/SEX CELL
160 REM PCT(,,) = DOD PCTS. IN EACH AGE/ENROLLMENT CATEGORY CELL
170 REM NETPRM(,,) IS NET COST, FOR INDIVIDUALS THEN FOR FAMILIES
180 GOSUB 1000
190 FOR I = 1 TO L2: FOR J = 1 TO M2: READ PCT(I,J): NEXT J,I
200 DATA .0594, .0281,.0322, .064, .1447
210 DATA .0291, .015, .0153, .0335, .0711
220 DATA .0696, .0222, .021, .0336, .0579
230 DATA .0135, .0074, .0106, .0107, .0196
240 DATA .0414, .0209, .0335, .035, .0558
250 DATA .0148, .0034, .0041, .0039, .0069
260 DATA .007, .0024, .04, .0028, .0056
270 REM ACROSS EACH ROW, C, CX, OTHER, MX, M
280 REM ROWS ARE KIDS, FEM18-40, FEM41-65,M18-40,M41-65,F66+,M66+
290 FOR I = 1 TO L2: FOR J = 1 TO K2: READ COST(I,J): NEXT J,I
300 DATA 386, 290, 282
310 DATA 1150, 704, 633
320 DATA  636, 426, 295
330 DATA 1546, 991, 968
340 DATA 1240, 1017, 1017
350 DATA 0, 0, 0
360 DATA 0, 0, 0
370 REM COSTS OF BUYING NON-MTF CARE TO DOD, BASED ON HIS RESULTS
380 REM ACROSS EACH ROW, C=0, C=.25, D=$350.  DOD COST =0 FOR >65
390 TITLE$(1)="              ILLUSTRATIVE COSTS ($BILLIONS 1983)"
400 TITLE$(2)="              FOR HEALTH ENROLLMENT SYSTEM"
410 LABEL$(1)="                COPAY = 0 PLAN"
420 LABEL$(2)="                COPAY = 25% PLAN"
430 LABEL$(3)="                $250 DEDUCTIBLE PLAN"
440 TITLE$(4)="-------------------------------------------------------------"
450 TITLE$(5)="  NET                    TARGET MTF ENROLLMENT"
460 TITLE$(6) ="PREMIUM                      (MILLIONS)"
470 TITLE$(7)= "            3.0     3.5      4.0      4.5
            5.0      5.5      6.0"
480 FMT$= " ####         ###.#    ###.#    ###.#    ###.#    ###.#
            ###.#    ###.#"
490 BUDGET$(1)="                LOW INCREMENTAL BUDGET"
```

```
500 BUDGET$(2)="                    FULL INCREMENTAL BUDGET"
510 LABEL$(4) = "                   BASE ENROLLMENT = "
520 FOR J = 1 TO J2
530 FOR K = 1 TO K2
540 LPRINT TITLE$(1): LPRINT TITLE$(2)
550 LPRINT LABEL$(K)
560 LPRINT BUDGET$(J)
570 LPRINT LABEL$(4); AD
580 LPRINT TITLE$(4)
590 LPRINT TITLE$(5): LPRINT TITLE$(6): LPRINT TITLE$(4): LPRINT TITLE$(7):
        LPRINT TITLE$(4): LPRINT TITLE$(4)
600 FOR N = 1 TO N2
610 LPRINT: LPRINT
620 NETNET = NETPRM(N,1)
630 FOR I = 1 TO I2
640 MTFCOST= BASEDOL + (MTF(I) - BASESIZE)*DELTA(J)
650 NETTOT = NETNET*(SIZE - AD)
660 GOSUB 1130: REM CALCULATES NON MTF COST
670 PRINT NONCOST, MTFCOST, NETTOT
680 TOTL() = NONCOST + MTFCOST - NETTOT
690 TOTL(I) = TOTL(I)/1E+09
700 NEXT I
710 LPRINT USING FMT$; NETPRM(N,1); TOTL(1); TOTL(2); TOTL(3); TOTL(4);
        TOTL(5); TOTL(6); TOTL(7)
720 NEXT N
730 LPRINT TITLE$(4)
740 LPRINT CHR$(12)
750 NEXT K, J
760 END
1000 REM COMPUTES DESIRED NET PREMIUMS
1010 BASE=-400
1020 FOR I = 1 TO N2
1030 NETPRM(I,1) = BASE + 100*I
1040 NETPRM(I,2) = 2.4*NETPRM(I,1)
1050 NEXT I
1060 BASE1=2.5E+06: D=500000
1070 FOR I = 1 TO I2
1080 MTF(I) = BASE1 + D*I
1090 NEXT I
1100 RETURN
1110 REM SUBROUTINE TO COMPUTE NON-MTF COSTS
1120 NCOST = 0
1130 REM COMPUTES COSTS OF NONMTF PLANS
1140 M=1
1150 NONCOST=0: NONPL=0
1160 PT=0
1170 FOR L = 1 TO L2
1180 PT = PT + PCT(L,M)
1190 NEXT L
1200 NONPPL = NONPPL + PT*SIZE
1210 IF NONPPL < (SIZE - MTF(I)) THEN FRACT = 1
    ELSE FRACT = (SIZE - MTF(I) - NONPPL + PT*SIZE)/(PT*SIZE)
1220 PRINT FRACT
1230 FOR L = 1 TO L2
1240 NONCOST = NONCOST + PCT(L,M)*SIZE*COST(L,K)*FRACT
1250 NEXT L
1260 IF FRACT < 1 THEN RETURN ELSE M=M+1: GOTO 1160
1270 REM THIS IS THE LAST LINE OF THE PROGRAM LISTING
```

Appendix E

INTERVIEW PROTOCOL

BACKGROUND INFORMATION

1. How many beds could you operate without major renovation? How many beds are you operating now? Do you expect your operating capacity to be changed in the near future?
2. How many physicians and nonphysician providers are you authorized and how many do you have, by specialty? Which of these physicians are civilians? Have these numbers changed in the past two to three years?
3. How many support personnel are you authorized and do you have, by type? How many of these are civilians?
4. What is the total number of full-time-equivalent staff in the hospital?
5. Do you provide any services that differ from those usually found in a military hospital of this size?
6. How large is your eligible population: active duty, active duty dependents, retirees, retired dependents? How many *inpatient* and *outpatient* records do you maintain?
7. How many outpatient visits and inpatient admissions are you handling now, by beneficiary group and Service? How does this compare with your work load in FY82 and FY83?
8. How many Certificates of Nonavailability are you issuing, compared with recent years (by Service, FY83 and FY84 to date)? Do you deny many requests for such certificates?
9. If your work load or Certificates of Nonavailability have been changing, why?
10. What criteria do you use in deciding which patients are issued nonavailability certificates and referred to CHAMPUS, which patients are treated here, and which are transferred to another military facility?

IN-HOUSE RESOURCES: MANPOWER

1. How are your manpower requirements determined?
2. Once servicewide authorizations have been approved, from what level do you receive your authorizations?
3. When you have fewer available personnel than authorized, at what level is the shortage allocated?
4. Does the number of personnel assigned to your hospital systematically differ from your authorizations? If yes, why?
5. What would your priorities be for adding personnel: by category (physician, nurse, enlisted) and by specialty within each category? If possible, estimate how many you would like to add in each category to treat your current patient load?
6. Are you currently unable to fully utilize your physicians or adequately perform some standard ancillary services because you lack personnel? Space?
7. Under current procedures, could you demonstrate a requirement for the added personnel or space? (If not, why not?)
8. Assuming you could justify these additional positions, how long would it take to fill the positions?
9. How often do your physicians and support personnel rotate? Is the tour of duty similar across individuals?
10. Can you give examples of how this rotation interrupts the hospital's operations?
11. How much flexibility do you have in assigning personnel to different areas of the hospital? Can you give some examples of reassignments you have made here?
12. Are there staffing rules for the operating rooms, intensive care unit, and other units that limit this flexibility? Who issues the rules?
13. Are there changes you would like to see in the manpower and personnel system?
14. How many civilian personnel do you employ to deliver direct or indirect patient care (please specify the number of physicians, RNs, LVNs, ancillary service personnel, etc.)? Are all of these civil service employees?
15. Would you prefer more civilians or more active duty personnel?
16. How are you allocated civilian authorizations? What is the process for changing the number of authorizations?
17. How are civil service employees hired, reviewed, fired, and paid?

18. Do you have problems finding qualified civilians (physicians, others)?

CONTRACT PHYSICIAN QUESTIONS

Obviously, there are reams of questions in this arena you will think of yourselves—the following struck us as a basic starting point.

19. What are the services most commonly contracted out now? (Whatever the answer from a given base—is it the respondent's perception that their situation is typical or atypical?) What fraction of total amount of that service does the contracted provider(s) represent? For example, is a contract physician providing one-third, one-half, or all this service? Is 100 percent of need for that service thus being met? If the hospital has contract civilian personnel, how are personal service contracts written and managed?
20. What is a "contracted" physician? Where does the physician perform services (in MTF, in own office or hospital, or both)? With whom is the contract written (e.g., with a group practice or university or with an individual, or both)? If with a group/university, who decides which physician(s) from that group will provide the services to the military? Same physicians(s) all the time?
21. What kinds of contracts are written? (a) Length? (b) Provisional/temporary as well as permanent? (c) How specific as to what services and how many are to be delivered?
22. Who writes the contract? Who actually specifies what the physician will be expected to do, what qualifications will be required at the outset, what qualifications will be required to be met during the contract period? For instance, is the provider expected to show that he/she has acquired "n" units of continuing medical education credits?
23. What are the financial arrangements? Are they fee-for-service (e.g., so much paid for each CAT scan done or each x-ray film read), or salaried (e.g., so much paid per hour/day/year), or capitation (e.g., so much paid per patient seen), or what? What is the ceiling on reimbursement (about $50,000)?
24. How is provider/group identified? Are competitive bids taken? Who makes decisions if more than one provider is under consideration (e.g., the MTF commander, the department chairman, or a division chief—i.e., head of some subspecialty service)?

Does a potential contractee go through the same "credentialing" procedure as a military physician (or civil service physician) who is applying for specific clinical privileges? Does he/she (or the group in question) have to provide the same list of forms/information/recommendations as a military physician? Does the MTF Credentials Committee pass on any potential contracting physician/group? Are requirements even more strict (e.g., must hold a state license)?

25. QA problems: What are the mechanisms for *reviewing* a contract physician's work? If care provided onsite is MTF, is care included in all the QA/RM activities carried on routinely in the MTF including all the review mechanisms, etc., and annual review. Is anything else done, e.g., during any provisional period? If contracted service is provided outside the MTF itself, how is quality of care monitored? (For example, if radiology is done "downtown," how does the MTF know how well it is being done—does it get both interpretation and film? Does someone at the MTF review all or a sample of outside films?) If a contract provider gives "poor care," whatever that may mean, what does the MTF or QA/RM coordinator do about it now?
26. Contract termination problems: What leverage does the MTF have to terminate a contract—how easily/quickly can it be done? Can a potential contractee appeal somewhere if he/she is not given full privileges after a provisional/probationary period, or is a decision at that time the end of it? What if a contract physician passes the provisional period, is given full privileges, and then delivers poor care? Are the sanctions essentially "professional," in the sense of being related simply to reputation, or can a contract be broken?
27. Would people at the MTF have a sample (e.g., blank) contract that we could have? Or perhaps a copy of a real one?

IN-HOUSE RESOURCES: FACILITIES

1. Where in the hospital are your facilities least/most constraining? Is the problem one of square footage or of design?
2. Are there any facility projects now in the preplanning or planning stage?
3. Can you briefly describe the process for planning new construction and comment on how well this process responds to changing demands? What information on your facility

utilization do you supply regularly, for consideration of new projects?

4. Are you currently using space for purposes other than those for which it was designed? How difficult was it to reconfigure this space and how long did it take?

IN-HOUSE RESOURCES: OPERATION AND MAINTENANCE

1. How large is your O&M budget for FY84? FY83? What does this budget pay for? How does the FY84 budget compare with your request? If smaller, what will you do without?
2. How is O&M budgeted?
3. How is the Congressional authorization allocated among competing demands? Do you ever receive additional funds for general or specific use during the fiscal year?
4. Is management of the O&M budget complicated by delays in Congressional approval of the Appropriations Bill, or by other considerations?
5. Who in the hospital manages O&M funds? How much flexibility do they have to allocate these funds?
6. How are purchases from civilian suppliers made?
7. What kind of management information system do you have for tracking O&M funds?
8. Are there changes in the current O&M system that you would like to see?

IN-HOUSE RESOURCES: INVESTMENT EQUIPMENT

1. What is your budget for equipment, FY83 and FY84? What was your budget request for this fiscal year?
2. For what pieces of equipment do you currently have the greatest need? Are you curtailing any services because of a lack of equipment?
3. How do you obtain equipment (say, for replacement) not anticipated in your budget request?
4. How are equipment purchases proposed and by whom are they approved? How long does it usually take to obtain needed equipment?

5. Are you ever able to initiate the request for new equipment before the physician needing it arrives? What changes would make this possible?
6. Who actually purchases the equipment? Do you ever have problems with purchasing?

PROCUREMENT TO AUGMENT IN-HOUSE RESOURCES

1. Are you now obtaining (providing) any services from a Veterans Administration hospital?
2. If yes, what services and through what arrangements? If no, are you currently looking at a sharing arrangement?
3. How frequently do you use the AirEvac system—active duty, active duty dependents, retirees? Where are they sent and for what kinds of services?
4. What are the advantages and disadvantages of transferring patients through AirEvac?
5. Do you refer (with or without transport) patients to any closer military facilities? How many, for what services, from which beneficiary group?
6. To what extent do you rely on local civilian providers/facilities rather than other U.S. government facilities? Why?
7. Do you use more than one civilian hospital provider in each specialty? How did you select these providers?
8. Do you pay for civilian services on an item-by-item basis, or have you negotiated agreements on quantity, price, etc? If item by item, are there any obstacles to negotiating agreements?
9. Using all sources, how easy is it for you to obtain services when needed?

OPERATIONAL SUPPORT/READINESS/MOBILIZATION

1. In what specific ways is the hospital asked (or might it be asked) to provide operational support?
2. Can you tell us how much staff time is devoted to operational support—and to readiness training?
3. What is the schedule for these activities, and how much warning do you have for activities that will disrupt patient care?

4. Are there any other aspects of the base's mission that alter the services you are asked to provide or your ability to do so?
5. Would the active duty population on this base be redeployed under mobilization? If not, who would provide their health care?
6. Would local medical resources be adequate to receive your inpatients and absorb your nonactive duty work load, recognizing that reserve physicians would be called to active duty?

PROPOSED HEALTH ENROLLMENT PLAN

1. Do you think there is a "ghost population" of eligible beneficiaries in your catchment area who would use the military health care system for the first time under an HES?
2. Would you expect to have an excess or insufficient demand for enrollment in your treatment facility? What priorities would you use in enrolling nonactive duty persons?
3. If priority were given to active duty dependents, about how many retirees could you also enroll to fully utilize your facilities (assuming you could add personnel as needed)?
4. How would you expect your case mix to change under this system? Could you keep your surgeons busy if you saw fewer retirees?
5. Assuming you had no responsibility for obtaining health care for patients not enrolled in your facility, would you need additional administrative personnel to implement an HES? If yes, how many and for what purposes?
6. Would you anticipate problems in finding physicians or other medical staff to supplement your current staff? Can you anticipate what additional staff you would prefer to add (part-time or full-time)? For what services would you prefer to hire civil service physicians rather than contract with private physicians?
7. What services would you have to obtain from another facility? Would these be available from another military facility, or a Veterans Administration facility, or only from the civilian sector?
8. How would you handle fluctuations in your facility's capabilities because of rotation of military personnel, operational support requirements, etc.?
9. Does your administrative staff have the expertise to effectively operate an HES?

10. What changes in the current resource allocation system would be necessary under an HES? The procurement system?
11. What opportunities would a properly implemented HES give you to improve this facility's operation?
12. In the HES, we might suppose that the military acquires an added obligation to ensure quality of care wherever care is obtained, since to some degree the patient's freedom to choose a provider has been limited. If that supposition is correct, an additional burden might be placed on the MTF. Is this how the MTF interviewees perceive the problem? If that strikes them as an accurate view of the future if HES were implemented, what would they do about QA?

DATA COLLECTION METHODS

1. How do you collect and verify your work load counts? Have you found any differences in your methods and those of other facilities?
2. How do you collect and verify data for UCA and USM? By what method do you allocate your resources to the various cost centers? Do you use UCA or USM data?
3. What has been your experience to date with the DEERS and TRIMIS systems (lab, pharmacy, clinical records)? Do you use data from these systems in managing the hospital?
4. Do you receive reports from RAPS? If yes, what do you use them for?
5. Do you collect any additional information for your own (internal) use (e.g., patient access and satisfaction)?

QUALITY-ASSURANCE RELATED QUESTIONS

1. What are the major quality control problems encountered in the MTF—relating both to uniformed providers and any civilian/contract providers? Are they systematic across all providers or generally specific to a single provider? Are they medical in nature, or do they arise from ancillary services, or from other aspects of MTF operation?
2. Is continuity of care considered a quality control issue? Is it a problem for nonactive duty persons? Is any lack of continuity generated mainly by congestion in the appointments system, provider turnover, or other phenomena?

3. What, in general, would occur if a particular provider generated QA problems? Extended surveillance? Curtailment of privileges? Other? (If contract or civilian providers are used: Would the response to a QA problem differ if the provider were not on active duty?)
4. In the MTF, how many of the QA activities are aimed at a function (e.g., accurate filling of pharmacy orders, timely response to lab test orders, completeness of medical records), how many at an entire specialty or service/ward (e.g., rate of drug interactions in internal medicine, or rate of complications from certain surgical procedures), and how many at care given by specific providers? For example, are profiles of providers developed (e.g., to see if their use of certain drugs or procedures exceeds some screening criterion, or if their admission rates for short-stay hospitalizations or hospitalizations exceeding some specified length of stay are too high)? If so, are some providers monitored more carefully/thoroughly than others?
5. Would current quality review mechanisms work well under the proposed HES, especially if more use were made of external providers for medical care, therapy, laboratory or diagnostic studies, etc.?
6. What are their UR activities—described in terms of actual activities/programs (e.g., review of length of stay, review of medical necessity of admission)? What are reporting requirements? Would UR activities be changed under the proposed HES?

Appendix F

CHAMPUS HEALTH BENEFIT PLAN[1]

CHAMPUS EXCLUSIONS

General Conditions. In general CHAMPUS will not pay for the following services, supplies, and equipment:

- Those not medically necessary for the diagnosis or treatment of an illness, injury, or bodily malfunction or not provided in accordance with accepted professional standards.
- Those not reasonable or customary.
- Those paid for directly by another program.
- Those that neither the beneficiary nor any other person or organization has a legal obligation to pay for or provide.

Exclusions from Coverage. CHAMPUS will not pay for the following services, supplies, or equipment, or similar services, supplies, or equipment:

- Therapeutic absence from an inpatient facility that exceeds 72 hours.
- Acupuncture.
- Alterations to living spaces and permanent fixtures attached thereto even where necessary to accommodate installation of covered medical equipment or to facilitate access or regress.
- Camping, even though organized for a specific therapeutic purpose, e.g., a diabetic camp or a camp for emotionally disturbed children.
- Chiropractic services.
- Ritual circumcision.
- Christian Science service characterized as absent treatment.
- Colonic irrigation.
- Cosmetic surgery performed solely for psychiatric purposes.
- Services of pastoral, family, child, and marital counselors (covered pending final court determination of temporary injunction CA 75-0649, 6/9/75, U.S. District Court for the District of Columbia).

[1]Department of Defense (1979).

- Custodial and domiciliary care.
- Routine dental care and dental appliances.
- Donor service costs and fee for artificial insemination.
- Donor service costs and fee for organ transplant.
- Non-legend drugs.
- Electrolysis for cosmetic or esthetic purposes.
- Routine eye examination, refractions.
- Hearing aids and other auditory sensory enhancing devices.
- Homemaker or attendant services furnished to assist in meeting personal family and domestic needs, such as preparing meals, assisting in bathing and dressing.
- Routine immunizations and inoculations.
- Intern and resident charges other than those included as house staff and covered as a hospital service.
- Megavitamin psychiatric therapy.
- Orthomolecular psychiatric therapy.
- Orthopedic or other special footwear, devices to support the feet, or items that correct ordinary shoes, e.g., arch supports.
- Perceptual and visual training.
- Personal comfort items and amenities such as radio, television, and telephone service.
- Routine physical examinations and associated tests.
- Supplies or services for the treatment of obesity, if obesity is the sole condition being treated.
- Any item or services prohibited by law in the jurisdiction in which provided.
- Any item or services provided by immediate relatives of the beneficiary.
- Sex behavior modification.
- Sex change surgery (gender alteration).
- Services prescribed solely to induce a patient to stop smoking.
- Routine well-baby care.
- Autopsies.

BENEFIT	
Inpatient Hospital Services[a]	**CHAMPUS Basic Medical Program**
Semi-private allowance	For each confinement[b] of spouses and children of active duty members, pays hospital charges less $25 or $4.65 per day, whichever is greater. For each confinement of retired members and their spouses and children and surviving spouse and children of deceased active duty and deceased retired members, pays 75 percent of hospital charges.
Allowance toward private room	If private room medically necessary for each confinement[b] of spouses and children of active duty members, pays hospital charges as outlined above.
Inpatient hospital services (facilities of operating room, recovery room intensive care unit, and other treatment rooms; drugs and medicines use in the hospital when listed in official formularies	For each confinement[b] of spouses and children of active duty members, pays hospital charges as outlined above.
Maternity	Same as above.
Abortion	Same as above.
Nervous and mental	Same as above.
Sterilization (surgically induced)	Same as above.

[a]"Paid-in-full" benefits provided in member hospitals and overseas hospitals. If services are rendered in nonmember hospitals (other than overseas), benefits are provided at 80 percent of usual and customary charges for semi-private accommodations and 80 percent of charges for other covered hospital services.

[b]CHAMPUS does not restrict coverage to a specific number of days. Rather, coverage is continued so long as hospitalization is determined to be medically necessary and contributes to the active treatment of the patient. Coverage is terminated when care becomes custodial or domiciliary or can be provided in an outpatient setting.

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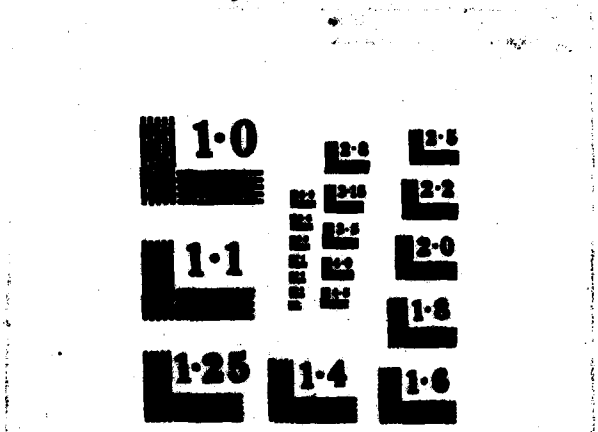
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BENEFIT	
Inpatient Hospital Services[a]	**CHAMPUS Basic Medical Program**
Dressings, ordinary splints, plaster casts, x-ray and laboratory examinations, electrocardiograms and electroencephalograms; basal metabolism examinations; renal dialysis; radiation therapy, physical therapy, anesthetics and oxygen and their administration; intravenous injections and solutions.	Same as above.
Surgery	Same as above.
Illness	Same as above.
Accidental injury	Same as above.
Physician's services (rendered to a hospital inpatient)	
In-hospital consultations (other than radiological)	Same as above.
Maternity	Same as above.
Inpatient physical therapy	Same as above.
Radiation therapy	Same as above.

[a]"Paid-in-full" benefits provided in member hospitals and overseas hospitals. If services are rendered in nonmember hospitals (other than overseas), benefits are provided at 80 percent of usual and customary charges for semi-private accommodations and 80 percent of charges for other covered hospital services.

BENEFIT	CHAMPUS Basic Medical Program
Inpatient Hospital Services	
Radiation therapy	For spouses and children of active duty members, pays 80 percent of allowable charges after annual deductible requirement has been met. For retired members and their spouses and children and surviving spouses and children of deceased active duty and deceased retired members, pays 75 percent of allowable charges after annual deductible. Annual fiscal year deductible is $50 for the first claimant or $100 for two or more members filing claims.
Cast and suture removal	Same as above.
Diagnostic x-ray and laboratory services (including EKGs, EEGs, and basal metabolism tests)	Same as above.
Accidental injury	Same as above.
Outpatient surgery (including fractures, dislocations, burns, renal dialysis, electroshock therapy, oral surgery and removal of impacted teeth)	Same as above. (However, dental coverage limited to treatment of oral disease or infection that is significantly complicating current medical or surgical condition under medical treatment.)
Sterilization (surgically induced)	Same as above.
Medical emergencies	Same as above.

BENEFIT	CHAMPUS Basic Medical Program
Outpatient Physicians' Services (Rendered in Hospital or Doctor's Office)	
Accidental injury	For spouses and children of active duty members, pays 80 percent of allowable charges after annual deductible require ment has been met. For retired members and their spouses and children and surviv ing spouses and children of deceased ac- tive duty and deceased retired members, pays 75 percent of allowable charges after annual deductible. Annual fiscal year deductible is $50 for the first claimant and $100 for two or more family members filing claims. NOTE: There are no limits under CHAMPUS as to where the treating physician may provide authorized services to be considered a coverable outpatient benefit.
Medical emergency	Same as above.
Outpatient (office) consultation	Same as above.
Outpatient psychotherapy	Same as above.
Diagnostic x-ray and laboratory services, (including EKGs, EEGs, EMGs and basal metabolism tests)	Same as above.
Outpatient surgery (including fractures, dislocations, burns, renal dialysis, electroshock therapy, oral surgery and removal of impacted teeth)	Same as above. (However, dental cover- age limited to treatment of oral disease or infection that is significantly compli- cating a current medical or surgical con- dition.)
Outpatient home and office (routine)	Same as above.
Outpatient psychiatry	Same as above.
Emergency dental care	No benefit.

BENEFIT	
Other Medical Services and Supplies	**CHAMPUS Basic Medical Program**
Prescription drugs and medicines and insulin	When furnished in a hospital, drugs are cost-shared as inpatient hospital services. When obtained by a patient other than an inpatient, they are cost-shared as other outpatient services. (See deductibles and coinsurance below.)
Professional local ambulance service	Ambulance service is considered an out patient service and is cost-shared as other outpatient services.
Private duty nursing (licensed RN or PN)	Services of a private duty nurse are covered by CHAMPUS when ordered by the attending physician. If provided as part of an inpatient confinement, they are cost-shared as inpatient hospital services. When provided a patient in the home, they are cost-shared the same as other out-patient services.
Rental of durable medical equipment	Cost-shared as other outpatient services.
Blood transfusions including the cost of blood and blood plasma	Cost-shared as inpatient services when provided as part of hospital services to an inpatient. Cost-shared the same as other outpatient services when provided on an outpatient basis.
Orthopedic braces, crutches and prosthetic appliances such as artificial limbs and eyes	Same as above.
Day-night hospital care (nervous and mental)	Cost-shared same as other outpatient services.

BENEFIT	
Other Medical Services and Supplies	**CHAMPUS Basic Medical Program**
Outpatient group psychotherapy, collateral visits, and services of members of mental health teams, i.e., physician, clinical psychologist, psychiatric nurse, psychiatric social worker	Outpatient psychotherapy is covered and cost-shared by CHAMPUS as an outpatient benefit with same deductible and coinsurance as other outpatient benefits. Psychotherapy can be provided on an individual or group basis. Services of clinical psychologists do not require a referral or supervision by a physician. All other psychotherapy when provided by a non-M.D.—a psychotherapist must be referred and certified as to necessity and appropriateness by an M.D. and recertified every 30 days.
Marital, family or other counseling	Coverable if provided by a physician or clinical psychologist.
Hypnosis or hypnotherapy	Same as above.
Services rendered or billed by a school	No benefit.
Charges for room and board in a halfway house	Coverable if part of a prescribed psychiatric treatment program.
Charges for room and board in a residential treatment center for emotionally disturbed children and adolescents	Same as above.
Services and supplies related to sex gender change or sexual dysfunctions or inadequacies	No benefit.
Speech, occupational, recreational or educational therapy or other forms of nonmedical self-care or self-help training	Speech and occupational therapy are coverable if part of a medically prescribed treatment plan. Cost-shared as inpatient if provided as an in-hospital service; cost-shared as outpatient if provided as an outpatient service.
Eye exercises or visual training	No benefit.
Custodial or domiciliary care	No benefit.

BENEFIT	
Other Benefit Provisions	CHAMPUS Basic Medical Program
Maximum (dollar) benefits	No dollar limitations.
Deductible	Payment of the first $50 of the charges each fiscal year for all types of outpatient care is the responsibility of the patient. However, a family group of two or more persons is required to pay collectively no more than $100 each fiscal year.
Coinsurance	The beneficiary who is the dependent of an active duty member pays 20 percent of allowable charges for authorized outpatient services after annual deductible requirement has been met. All other beneficiaries pay 25 percent of allowable charges for authorized outpatient services. The coinsurance required of active duty dependents for inpatient charges is $25 per inpatient confinement or $4.65 per day of inpatient confinement, whichever is the greater. All others pay 25 percent of all charges for inpatient services.

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