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Dear Dr. Smith:

This responds to your Freedom of Information Act (FOIA) request of February 2, 1995. Our interim response of February 15, 1995, refers.

The Directorate for Program Analysis and Evaluation has provided the enclosed document as responsive to your request.

There are no assessable fees for this response in this instance.

Sincerely,

A. H. Passarella
Director
Freedom of Information
and Security Review

Enclosure:
As stated

#743

# THE ECONOMICS OF SIZING THE MILITARY MEDICAL ESTABLISHMENT

**Executive Report**
**of the**
**Comprehensive Study of the Military Medical Care System**

**U.S. Department of Defense**
**Office of Program Analysis and Evaluation**

**April 1994**

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## SECTION I. INTRODUCTION AND BACKGROUND

The National Defense Authorization Act for Fiscal Years 1992 and 1993 directed the Department of Defense (DoD) to conduct an analysis of fundamental economic issues bearing on the size of the military medical system. The core issue to be evaluated is whether it is cheaper for DoD to provide medical care for its beneficiaries in DoD facilities or to reimburse beneficiaries for care obtained in the private sector. The Department's findings on that question are reported here in summary form. Responses to related questions that DoD was asked to consider are provided in separate reports issued as part of this study.

The question as to whether it is cheaper for DoD to "make" medical care in-house or, indirectly through beneficiaries, to "buy" care from private-sector providers amounts to a question about the appropriate size of the Department's medical establishment. To the extent that DoD "makes" more care, its medical establishment will be larger; to the extent that care is "bought," the medical establishment will be smaller.

Questions about the size of the DoD medical establishment traditionally have not been cast in terms of the "make/buy" decision but rather in terms of wartime requirements. It has for several decades been established policy that DoD should provide in military medical facilities substantially all of the medical care required by active-duty personnel and all of the treatment required by military casualties until such time as those requiring extended care are released to the Veterans Administration. Because the medical establishment is sized against the wartime requirement, it tends to provide more capacity in peacetime than is needed to meet the health care demands of the active force. DoD uses this extra peacetime capacity to provide care to other categories of beneficiaries--dependents of active-duty personnel, and military retirees and their dependents and survivors.[1]

It remains a generally accepted principle that the DoD medical establishment should be no smaller than the wartime mission requires. The question addressed in this report is whether DoD should maintain a health care establishment <u>larger</u> than required to carry out the wartime mission. The additional capacity would be used to provide in DoD facilities more of the peacetime medical benefits that non-active-duty beneficiaries are eligible to receive.

This is not an issue that would have arisen during the Cold War years because, by most accounts, the capacity then required for the wartime mission (but never achieved) exceeded that required to provide medical services to non-active-duty personnel. The situation has now

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[1]This practice reduces the Department's health care expenditures because the additional cost of providing care to non-active-duty beneficiaries in military treatment facilities does not include the significant "fixed costs" of maintaining DoD facilities for wartime. The variable costs of providing peacetime care are less than the market price DoD would pay to buy care for non-active-duty beneficiaries in the private sector. Moreover, the workload generated by only the active-duty population may be insufficient to maintain the wartime skills of DoD physicians.

changed, in two respects. First, while the active-duty force contracted somewhat during the Cold War years, the population of military retirees and of active-duty dependents increased.[2] Second, war plans of the Cold War era contemplated a global conflict on the scale of World War II, and perhaps much larger, as the United States faced the prospect of all-out war with the Soviet Union and its Warsaw Pact allies. The situation is now very different. Our nation faces threats that are challenging, but ones that are qualitatively different from those of the Cold War, require smaller forces, and present little prospect of involving casualties remotely on the scale of those that would likely have resulted from a global war with the Soviets.

**Box 1.**
**Wartime Requirements**

The starting point for assessments of wartime requirements is the Defense Planning Guidance (DPG), which serves as the basis for all planning and programming activities in the Department of Defense. Representations of potential combat operations--known as Illustrative Planning Scenarios--issued with the DPG form the analytical basis for determining planning and programming requirements. The wartime requirements portion of this study used the scenarios issued for fiscal years 1994-99, the last Departmentally-accepted set of planning scenarios. These scenarios define the nature of potential conflicts, including force levels and force arrival times in each scenario. Combat intensities and durations for the scenarios were generated by wargames performed and interpreted by the Joint Staff.

Medical workload and evacuation streams in both the continental United States (CONUS) and combat theaters were generated for the scenarios using the Medical Planning Module (MPM), an analytical tool maintained as part of the Department's Joint Operational Planning and Execution System (JOPES). The medical manpower required within theaters was divided into two portions: personnel who staff hospitals and personnel who serve outside the hospital system. Estimated requirements for those who staff hospitals in combat theaters were generated by an analysis of results from two sources: (1) the MPM, and (2) service-specific methodologies.

To determine the number of CONUS hospital personnel needed to care for military casualties evacuated from combat theaters, the study used the staff planning factors from the last Departmentally-accepted analysis, the 1988 *Wartime Medical Requirements Study*. All non-hospital medical staffing requirements in combat theaters and in CONUS were generated by service-specific methodologies.

The Illustrative Planning Scenarios and MPM are the standard tools for medical planning and analysis. The study's true challenge was the determination of the *input parameters* to use in the analysis. The history of military medicine indicates significant changes in many of the most important parameters in the model. Survival rates among those wounded have sharply increased, for example, and rates of disease among deployed forces have fallen. The study team reflected on these changes, but within the range of reasonable values, chose parameter values so as not to underestimate the wartime requirement.

The wartime medical requirement implied by current defense planning scenarios is the subject of a separate report done as part of this study (Box 1). That report provides estimates of the medical infrastructure and personnel that would be needed to support U.S. forces in wartime. DoD must maintain a somewhat larger number of physicians on active duty in peacetime than it needs to meet the wartime requirement. The additional peacetime demand arises from training programs and the need to maintain jobs in the continental United States (CONUS) into which personnel stationed overseas can be rotated. The appendix to this report discusses the issues involved in calculating the total number of physicians that must be maintained on active duty in peacetime in order to satisfy the wartime requirement. The current

[2]With the advent of the All-Volunteer Force in 1973, a larger fraction of the active-duty force came to be made up of married people, many with dependent children.

estimate of the total requirement constitutes about 40 to 50 percent of currently programmed physician inventories.

Should DoD then reduce the medical establishment it operates in peacetime to roughly half of the current size? If the objective is to meet only the wartime requirement, the answer to this question must be "yes." When costs are considered, however, there is reason to ask whether the size of the DoD medical establishment should be larger than required solely to meet wartime demands. Today's relatively large DoD medical establishment permits the Department to provide in military facilities much of the medical benefit demanded by those eligible for care. To the extent that the size of the medical establishment were reduced, however, statutory obligations would require DoD to pay for more care obtained from private-sector providers.

Substituting "bought" for "made" medical care does not necessarily reduce the total cost of the defense health program. Indeed, some have argued that it is cheaper for DoD to provide medical care in-house than it is to buy it from the private sector. Overall, therefore, the question addressed in this report is: Does economic analysis imply that the size of the DoD medical establishment should be driven solely by the wartime requirement, and thus that a correspondingly larger part of the medical benefits guaranteed to active-duty dependents and retired personnel and their dependents and survivors should be purchased from the private sector? Or do economic considerations permit the DoD medical establishment to be larger than the wartime requirement implies because it is cheaper to "make" medical care in military facilities than it is to buy it?

**Box 2.**
**Survey of Beneficiaries**

The National Defense Authorization Act for Fiscal Years 1992 and 1993 directed the Department of Defense to survey members of the armed forces and covered beneficiaries in order to determine their access to and use of inpatient and outpatient services in the military medical system. In addition, the survey was to determine the perceptions of beneficiaries about health care; the extent of their knowledge regarding quality, availability, and costs of care; and their likely responses to changes in the structures and costs of providing such care.

The survey consisted of 109 questions organized into seven sections, plus a comment sheet:

- Sponsor and Family Information
- Health Care Benefits
- Recent Medical History
- Most Recent Visit for Outpatient Care
- Most Recent Hospital Stay
- Most Recent Dental Visit
- General Information

Questionnaires were mailed to 44,293 active-duty personnel, retirees, and survivors eligible for military health benefits. Some 7,620 questionnaires were returned as postal nondeliverables, which left 36,673 beneficiaries who presumably received the survey. (The large number of nondeliverables was due primarily to inaccurate addresses for active-duty personnel. It is very difficult to keep active-duty addresses current on a real-time basis.) The overall response rate (adjusted for postal nondeliverables) was 71 percent, or about 26,000 responses.

With the exception of travel time, most beneficiary groups who used civilian facilities had better access than those who used military facilities. Knowledge of health care benefits varied widely across beneficiary groups. Generally, junior-enlisted families knew the least about their medical benefit. Outpatient utilization was divided almost evenly between military and non-military facilities, while inpatient utilization rates showed that stays in civilian hospitals (unadjusted for case-mix severity) were longer, on average, than stays in military hospitals. Satisfaction with outpatient and inpatient care was high across all beneficiary groups for both military and civilian facilities. Satisfaction with dental care, however, was substantially higher at civilian facilities, particularly for retirees and their families. A full discussion of the survey and its results is presented in *Analysis of the 1992 DoD Survey of Military Medical Care Beneficiaries*, issued as part of this study.

These are broad questions, and they are dealt with here in a broad way. The intended result is not a detailed "right sizing" plan for the DoD medical establishment, but an illumination of the basic economic considerations that should have a major role in determining policy on sizing the military medical establishment for the post-Cold War era.

The analysis presented here has been informed by the wartime requirements report mentioned above; by the results of a survey of DoD beneficiaries undertaken for this study by the Office of the Assistant Secretary of Defense for Personnel and Readiness (Box 2); and by analyses done under contract to the Department of Defense by the RAND Corporation and by the Institute for Defense Analyses (IDA). DoD's assessment of the shape of the "make/buy" issue (based on the RAND and IDA analyses) is presented in the sections that follow, with supplementary material appearing in boxes near the relevant portion of text. Readers interested in the technical findings of RAND and IDA, and in obtaining a full understanding of the basis of those findings, should consult the reports RAND and IDA submitted to DoD.[3]

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[3]Institute for Defense Analyses, *Analysis of the 1992 DoD Survey of Military Medical Care Beneficiaries*, IDA Paper P-2937 (January 1994); Institute for Defense Analyses, *Cost Analysis of the Military Medical Care System: Data, Cost Functions, and Peacetime Care*, IDA Paper P-2938 (January 1994); and RAND Corporation, *The Demand for Military Health Care: Supporting Research for a Comprehensive Study of the Military Health Care System*, MR-407-PA&E (January 1994).

## SECTION II. MAIN FEATURES OF THE DEFENSE HEALTH PROGRAM

Approximately 8.7 million individuals were eligible for DoD health benefits during fiscal year 1993. Active-duty personnel (1.9 million) and their dependents (2.7 million), including the active reserves, accounted for 53 percent of the DoD beneficiary population. The remaining 47 percent (or 4.1 million beneficiaries) was made up of retired military personnel and their dependents and survivors.

The scope of medical services included in the DoD medical benefit is similar to that found in a good private-sector health plan. Many of the concerns with private-sector medical care also have their counterparts in the military medical system. There is, for example, a great concern with cost in both systems and, as is the case in the private sector, DoD is exploring the utility of various techniques of managed care. Apart from the wartime mission, the principal difference between DoD health care benefits and those of major private-sector employers is that DoD provides through its own facilities a substantial part of the care received by its beneficiaries. No large private-sector employer in the United States operates a remotely comparable system of in-house medical facilities. Unlike private-sector employers, then, DoD faces a true make/buy decision in which considerations of cost are inextricably involved.

### The "Make" Portion of the System--Military Treatment Facilities

Health care services for DoD beneficiaries are provided by "military treatment facilities" (MTFs), operated by the military departments.[4] Collectively, MTFs are called the "direct care system." MTFs treat all categories of DoD beneficiaries--active-duty personnel, dependents of active-duty personnel, and military retirees and their dependents and survivors. MTFs are responsible for providing acute-care services, as opposed to long-term care. Provision of long-term care to qualified DoD beneficiaries who require it is the responsibility of the Veterans Administration. Within the realm of acute-care services, however, the direct care system provides the full range of medical services, from primary care to tertiary care.

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[4]This report focuses primarily on care provided to military beneficiaries through MTFs and civilian facilities. It does not address the considerable proportion of military medical personnel who are assigned to nonmedical units (flight surgeons attached to fighter wings, for example) or to medical units that deploy with combat forces (such as MASH units.) In addition to their wartime and training missions, some of these personnel are routinely involved in the provision of peacetime medical care to service members. This is true, for example, of the medical personnel serving on aircraft carriers. These "force structure" parts of the military medical system, however, provide comparatively little of the medical care available to active-duty personnel, and are a very small factor in the care provided to dependents of active-duty personnel and to military retirees and their dependents and survivors.

There are three main categories of MTFs: clinics, community hospitals, and medical centers (Box 3). These are distinguished from one another by the type and complexity of the services they provide.

**Clinics.** Clinics do not offer regular inpatient care (although some can do so in emergencies), and they provide only the simpler medical services referred to as "primary care." Cases requiring more extensive treatment are referred to other military facilities or to civilian providers. Within these limits, the medical services offered vary considerably from one clinic to the next. The direct care system includes more than 400 clinics within the United States. The majority of these tend to be relatively small, and to offer a fairly narrow range of services, and many are staffed to treat only minor on-the-job injuries and illnesses. In contrast, 74 "outlying" clinics, located outside hospital or medical center catchment areas, tend to offer a comparatively wide range of services. These facilities often are found on bases too small to justify a hospital.

**Community Hospitals.** DoD hospitals offer both primary and secondary care, and a few also provide some tertiary services. ("Secondary" care covers the broad range of medical services between primary care and the complicated medical or surgical procedures--some forms of chemotherapy and open heart surgery, for example--categorized as tertiary care.)

## Box 3.
## The MTF System

Military medical centers, community hospitals, and clinics provide care to active-duty personnel and their dependents, and to military retirees and their dependents and survivors. The tables below indicate, first, how the care received by each beneficiary group in military facilities is distributed across those facilities and, second, how the care delivered by the various types of MTFs is distributed across the three beneficiary groups.

Percentage of Each Beneficiary Group's MTF Medical Care Delivered by Type of MTF, FY 1992

| | Medical Centers | Community Hospitals | Clinics[a] |
|---|---|---|---|
| Active Duty | 42 | 53 | 5 |
| Active-Duty Dependents | 42 | 55 | 4 |
| Other Beneficiaries | 57 | 40 | 2 |

Percentage of Each MTF Type's Medical Care Delivered to Each Beneficiary Group, FY 1992

| | Active Duty | Active-Duty Dependents | Other Beneficiaries |
|---|---|---|---|
| Medical Centers | 26 | 32 | 42 |
| Community Hospitals | 32 | 41 | 27 |
| Clinics[a] | 39 | 38 | 23 |

SOURCE: FY 1992 Medical Expense and Performance Reporting System (MEPRS) data.

NOTE: Rows may not sum to 100 percent due to rounding.

[a]Only 29 of the more than 400 clinics report cost data separately to MEPRS.

There is considerable variation in the range of services offered in DoD hospitals. One hospital, for example, may have a maternity ward, but not a cardiac care unit; another may have a cardiac care unit and facilities for doing dialysis, but no physical therapy unit; and so on. Most DoD hospitals play the role of community hospitals for a military base, and the larger bases tend to have a hospital on them (Box 4). In December 1992, DoD had 69 small hospitals with fewer than 70 operating beds, and 30 medium-sized hospitals having from 70 to more than 200 operating beds.

**Medical Centers.** Military medical centers are generally large, tertiary-care facilities capable of handling very complex cases as well as providing primary and secondary care. Some of the Department's medical centers are well known--for example, Walter Reed Army Medical Center, Bethesda Naval Medical Center, and Wilford Hall Air Force Medical Center. These facilities function as referral hospitals and conduct residency training for military physicians. In some cases, a single tertiary-care facility provides all of a particular kind of care. For example, Wilford Hall performs all DoD bone marrow transplants, and Brooke Army Medical Center handles all severe burn cases. The 18 medical centers range in size from 120 to 1,000 operating beds.

Medical centers, while few in number, account for a disproportionate share of the MTF workload. In 1992, about 57 percent of MTF inpatient care (adjusted for case-mix severity) and 34 percent of outpatient visits were handled in medical centers. DoD community hospitals handled 43 percent of the MTF inpatient workload and 60 percent of the

## Box 4.
## Typical Military Hospital

**DARNALL ARMY COMMUNITY HOSPITAL**

Darnall Army Community Hospital, located at Fort Hood, Texas (home of the 1st Cavalry Division and Second Armored Division), is typical of the larger DoD community hospitals.

FY 1992 POPULATION: 111,107

PRIORITY I: 32,081 (29%) (Active duty)
PRIORITY II: 48,366 (44%) (Active-duty dependents)
PRIORITY III: 30,660 (27%) (Retirees and others)

Percentage of Bed Days in MTF and CHAMPUS by Beneficiary Group, FY 1992

| | MTF | CHAMPUS |
|---|---|---|
| Priority I | 28 | NA |
| Priority II | 48 | 80 |
| Priority III | 24 | 20 |

NOTE: NA = Not applicable.

BUILT: 1966 OPERATING BEDS: 212

ONE GME PROGRAM: Emergency Medicine

WORKLOAD: Average Daily Census: 121
Annual Dispositions: 15,986
Annual Visits: 128,908

SERVICES: Primary Care, Obstetrics/Gynecology, Pediatrics, General Surgery, Urology, Orthopedics, Otolaryngology, Audiology, Podiatry, Ophthalmology, Internal Medicine, Allergy/Immunization, Neurology, Cardiology, Physical Therapy, Occupational Therapy, Psychiatry/Psychology, Social Work, Dental, Aviation Medicine, Occupational Health, Industrial Hygiene, limited subspecialties.

REFERRALS: 89 percent to Brooke Army Medical Center and Wilford Hall Medical Center.

UTILIZATION: Most resource-intensive services provided at Darnall by major diagnostic categories were Obstetrics, Newborn, Digestive, Muscle/Tissue, and Mental Health.

MTF outpatient workload. The 29 clinics that report their workload separately from other medical facilities accounted for the remaining 6 percent of outpatient workload.

**Managed Care**. The Department currently is implementing major changes in the direct care system under the label "managed care." Lead agents will be established in each of twelve health service regions with explicit responsibility for controlling health care costs, quality, and access to medical services for all beneficiaries in their delivery areas. This responsibility will include not only services provided by MTFs but also care obtained by DoD beneficiaries from private-sector providers and partially reimbursed by DoD. All MTF commanders will be held accountable for practice patterns and costs in their areas of responsibility.

Provider incentives to monitor costs will be strengthened by implementation of "capitation budgeting" techniques, in which resources will be allocated to health care managers on a per capita basis. MTF commanders will assume responsibility for providing health services to a defined population, for a fixed amount per beneficiary. In combination with their responsibility for overseeing health care costs in their areas, capitation budgeting will encourage MTF commanders to employ all available medical resources as efficiently as possible. Capitation budgeting discourages inappropriate hospital admissions, excessive lengths of stay, and unnecessary services. The capitation amount will be set prospectively (independent of MTF commanders' influence), and budget execution will be closely monitored by the Office of the Assistant Secretary of Defense for Health Affairs and the Surgeons General of the Army, Navy, and Air Force.

In deciding to pursue managed care, the Department seeks to strengthen economical aspects of DoD health care, and is adapting tools taken from private-sector health maintenance organizations (HMOs) to make that happen. "Gate-keeping," "utilization management," and "utilization review" techniques, possibly executed through managed care support contractors, are expected to create additional incentives and information for providers so that only the most appropriate and cost-effective care is offered to DoD beneficiaries. Additionally, enrollment of beneficiaries into specific health care plans will enhance the ability of local MTF commanders to allocate resources cost-effectively. For example, the Department is implementing a new managed care program called TRICARE, which incorporates lessons learned from the CHAMPUS Reform Initiative (CRI).

## The "Buy" Portion of the System--CHAMPUS

First priority in MTFs is accorded to active-duty personnel, who are required to use military facilities for their medical care. All other DoD beneficiaries are provided treatment in MTFs on a space-available basis. For at least the past 25 years, however, the DoD direct care system has not had the capacity to provide all of the medical care demanded by dependents of those on active duty, by retired military personnel, and by the dependents and survivors of military retirees. This is not a shortcoming of the direct care system, as it was sized primarily

to meet the wartime requirement, but it is a fact of crucial importance to the economics of the system.

**CHAMPUS**. Prior to 1966, beneficiaries other than active-duty personnel had to arrange for their own medical care, and make their own provisions for paying for it, if MTFs could not provide the treatment they required. That changed in 1966 with the inauguration of the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). In very broad terms, CHAMPUS provides supplemental health care coverage, available automatically to qualified DoD beneficiaries.

CHAMPUS does not cover active-duty personnel because, apart from emergency situations, they are required to obtain medical care from (or through) an MTF. CHAMPUS also is not available to retirees over age 65, or to their dependents or survivors over age 65, because these individuals are eligible for Medicare. CHAMPUS, then, is a program for the families of active-duty personnel, and for military retirees and their dependents and survivors under age 65.

CHAMPUS has three main features:

- Beneficiaries need not enroll to be eligible; CHAMPUS is automatically available to qualified DoD beneficiaries.
- CHAMPUS coverage is comparable to that provided by broader private-sector plans.
- CHAMPUS is not free; beneficiaries must cover all of their medical expenses up to an annual limit (the deductible) and then pay a portion of all costs (copayments) incurred thereafter.

The mechanics of CHAMPUS are familiar to anyone who has been enrolled in a commercial health insurance plan. Beneficiaries arrange for their own care, pay for it, and then submit a claim for reimbursement. The amount of cost-sharing varies somewhat among beneficiary groups. By way of example, dependents of officers and senior noncommissioned officers must meet annual deductibles of $150 per person or $300 per family, and pay 20 percent of the cost of outpatient care, but they are charged only a nominal portion of the cost of inpatient care.

CHAMPUS is an important component of care received by DoD beneficiaries (Box 5). In FY 1992, CHAMPUS expenditures stood at about $3.5 billion (including the costs to beneficiaries). This was nearly as large as the approximately $3.9 billion DoD spent on non-active-duty beneficiaries in the direct care system. Thus, CHAMPUS accounts for almost half of the costs of medical care delivered to non-active-duty beneficiaries through the DoD system.

Active-duty dependents accounted for 60 percent of CHAMPUS inpatient care expenditures in FY 1992, but for only 44 percent of spending on outpatient care. DoD expenditures for CHAMPUS outpatient care were divided almost equally between the two groups of non-active-duty beneficiaries. Overall, some 54 percent of DoD's FY 1992 CHAMPUS bill paid for active-duty dependent care, while the remaining 46 percent paid for care delivered to retirees, their dependents, and survivors.

**New CHAMPUS Plans.** CHAMPUS, like the direct care system, is evolving. The CHAMPUS Reform Initiative and other CHAMPUS programs point toward increased choice of health care plans for DoD beneficiaries. Some of these choices involve improved access, or emphasize preferred provider and HMO-like organizations rather than the more traditional "fee-for-service" plans that characterized the early years of CHAMPUS and civilian health care generally. Experience with CRI in California and Hawaii has demonstrated that beneficiaries indeed value having choices among health plans. Many beneficiaries have willingly traded provider choice for an HMO-like plan (CHAMPUS Prime) offering greater access to preventive health services and lower levels of cost-sharing. Others have elected CHAMPUS Extra, a plan that permits beneficiaries to choose from a preferred list of health care providers (who have agreed to offer discounts to DoD) but requires higher copayments and deductibles than CHAMPUS Prime. Still others have opted to continue using

## Box 5.
## The Composition of MTF and CHAMPUS Care

CHAMPUS spends more on inpatient care than outpatient care, while MTFs spend a higher percentage of their resources on out-patient care. For DoD as a whole, outpatient care constitutes a slight majority of medical expenditures.

MTF and CHAMPUS Costs, FY 1992
(In billions of dollars)

| | MTFs | CHAMPUS | Total |
|---|---|---|---|
| Inpatient Care | 2.4 | 1.6 | 4.0 |
| Outpatient Care | 3.2 | 1.1 | 4.3 |
| Total | 5.6 | 2.7[a] | 8.3 |

[a]Does not include approximately $800 million in beneficiary out-of-pocket costs.

DoD expenditures on active-duty dependent and other beneficiary care are roughly equal, each amounting to about twice that for active-duty care.

DoD Expenditures on Medical Care, FY 1992
(In billions of dollars)

| | MTFs | CHAMPUS | Total |
|---|---|---|---|
| Active Duty | 1.7 | 0.0 | 1.7 |
| Active-duty Dependents | 2.1 | 1.5 | 3.5 |
| Other Beneficiaries | 1.9 | 1.3 | 3.2 |
| Total | 5.7 | 2.8 | 8.4 |

SOURCE: FY 1992 MEPRS data as provided by IDA and DoD's *CHAMPUS Chartbook of Statistics* (October 1993), p. IV-3. CHAMPUS estimates are DoD expenditures only and do not include drug, dental care, Program for the Handicapped, or administrative or overhead costs.

NOTE: Detail may not add to totals due to rounding.

Standard CHAMPUS, which offers the greatest freedom in the selection of providers but imposes higher copayments and deductibles than the other CHAMPUS plans.

### Access to MTFs--The Make/Buy Split

The amount of care produced in-house and the amount reimbursed through CHAMPUS are the result of choices made by individual beneficiaries and physicians within the constraints of DoD regulations. These constraints--restricted access to MTFs (Box 6) and the rules for CHAMPUS use--largely determine how beneficiaries seek care from MTFs and CHAMPUS and through private health insurance plans.

Questions about the division of workload among MTFs, CHAMPUS, and privately-insured care do not arise to any important degree for active-duty personnel. As noted earlier, those on active duty are required to use MTFs for their medical care except in emergencies. The rules governing access to MTFs for other beneficiaries are somewhat complicated, however.

The degree of choice permitted to beneficiaries among MTFs and CHAMPUS differs for those living within the "catchment area" of an MTF--that is, within 40 miles of a facility--and those living outside that area. Those in a catchment area are assumed to be close enough to an MTF to seek treatment from it, and the applicable regulations are designed to ensure that MTF capacity is fully utilized. Accordingly, the regulations embody a presumption that beneficiaries should be allowed to obtain payment through CHAMPUS only if their local MTF cannot provide the services sought. Permission is automatically granted in advance, however, for beneficiaries to use CHAMPUS for certain comparatively routine outpatient services. For such services, beneficiaries may choose between seeking treatment at an MTF or visiting a private facility and obtaining reimbursement through CHAMPUS. For more serious conditions--including virtually all inpatient care--beneficiaries living in a catchment area must first apply for treatment at their local MTF. The MTF will provide the treatment or, if it does

**Box 6.**
**Access and Utilization**

Access is a concept that is used frequently in the medical field, is of great importance, but is surprisingly difficult to define in an unambiguous way. In general, it refers to the ability to obtain admission to the medical system and receive care. Access can be limited by a number of factors, including scarcity of providers, delays or difficulties in obtaining appointments, or high prices. Box 7 provides simple measures of access to the direct care system.

Because access is affected by so many factors, it has been very difficult to devise a single, appropriate measure of it. Such a measure would have to incorporate the influences of all important determining factors. The following example illustrates the problem: A decrease in waiting time or an increase in the ease of making an appointment clearly increases access. An increase in fees, some observers would argue, decreases access. Without a single, unifying measure of access, however, it is impossible to determine the net effect on access of decreasing waiting times through an increase in fees.

The complexity of the problem means that it is often difficult to define measures of access that are complete, and that distinguish the ability to obtain treatment from the actual utilization of medical care (the quantity of medical care received). Measures such as visits per thousand eligible beneficiaries indicate the rate at which medical care is utilized by the population under study. The utilization of care reflects factors such as the underlying health status of the population and the practice patterns of providers in treating medical conditions, as well as access to care. Utilization measures are, thus, a very poor indicator of access.

not offer the required services, issue a "nonavailability statement" (NAS), which the beneficiary must then submit to obtain reimbursement through CHAMPUS.[5]

Beneficiaries (other than active-duty personnel) living outside a catchment area are subject to somewhat different rules. These individuals are free to file claims for CHAMPUS reimbursement for the costs (less applicable copayments) of any covered service, or if they prefer, they may seek treatment at an MTF. The fact that these individuals live more than 40 miles from an MTF suggests that travel time or cost is a significant barrier to their seeking treatment at MTFs for minor medical problems. Beneficiaries living outside catchment areas, however, often seek the free care provided by MTFs for more serious and costly medical

**Box 7.**
**Access to Outpatient Care**

The survey done for this study sought the following information on access to outpatient care:

- The number of telephone calls required to make an appointment;
- The interval between the time an appointment was made and the date of the visit;
- Travel time to the facility; and
- The amount of time spent in the waiting room.

In general, persons receiving care from civilian facilities reported having somewhat greater access to those facilities than did persons using military facilities. Specifically:

- About one in five users of military medical facilities said that they either had to make several calls to book an appointment or were put on hold for a long time. This was true for fewer than one in twenty of those who used civilian facilities.

- More than 15 percent of beneficiaries who chose a military rather than a civilian facility had to wait more than two weeks for an appointment, compared to fewer than 6 percent of beneficiaries who selected a civilian facility. However, of those choosing a military facility, slightly more beneficiaries saw a provider the same day or the day after making an appointment.

- Travel time to MTFs and civilian facilities was generally similar. A notable exception, however, occurred in the case of retirees, more than 20 percent of whom had to travel more than 45 minutes to reach a military facility. Of those using civilian facilities, only about 10 percent had travel times exceeding 45 minutes.

- The proportion of beneficiaries reporting longer waiting times was greater for users of military facilities. A somewhat larger proportion of military-facility users reported waits of more than 30 minutes; this difference was larger still for those who reported having to wait more than one hour (13 percent for users of military facilities versus 5 percent for civilian-facility users).

Further evidence of difficulty in obtaining access to MTFs was seen in the responses to a series of questions asking why medical resources had not been sought when they were desired. Nearly half of all families who selected at least one reason said that "it was too hard to get an appointment." Users of civilian hospitals also exhibited higher satisfaction levels with the ability to see doctors of their choice, and to see specialists.

[5]Beneficiaries with private health insurance do not generally have to apply for treatment at their local MTF before using CHAMPUS as a second payer.

conditions. In fact, substantial numbers of visits to MTFs are made by beneficiaries living outside catchment areas.

How difficult is it for non-active-duty beneficiaries to receive care in an MTF? One indication is provided by beneficiary responses to the survey conducted for this study. (See Box 7 for a summary of the survey findings.) The responses indicate that scheduling visits to MTFs can be far more inconvenient than arranging appointments with civilian providers. To the extent that this is the case, some beneficiaries might be discouraged from using the direct care system.

A supporting perspective emerges from the *Management Information Summaries*, issued periodically by the Defense Medical Information Service (DMIS). DMIS reports, by beneficiary group, the number of inpatient admissions to MTFs and the number of nonavailability statements issued to beneficiaries in lieu of care provided in MTFs. Table 1 summarizes the data for FY 1991.[6] For every five admissions for non-active-duty care in an MTF, DoD issued one NAS authorizing reimbursement from CHAMPUS for services obtained from civilian providers.[7]

**Table 1.**
**MTF Inpatient Admissions and Nonavailability Statements Issued**

| | MTF Inpatient Admissions | NAS Issuances | Percent of All Inpatient Episodes Admitted to MTFs |
|---|---|---|---|
| Active-Duty Dependents | 306,953 | 78,315 | 79.7 |
| Retirees | 104,929 | 11,385 | 90.2 |
| Retiree Dependents/Survivors | 101,498 | 20,891 | 82.9 |
| Other | 19,593 | 316 | 98.4 |
| Total, Non-Active Duty | 532,973 | 110,907 | 82.8 |

[6]Beginning in FY 1992, NASs were required for a small number of outpatient services. The DMIS data do not currently distinguish outpatient from inpatient NASs. Table 1 therefore uses FY 1991 data to compare the volume of NAS issuances with the number of inpatient admissions to MTFs.

[7]Table 1 almost certainly underestimates the proportion of health care provided outside the direct care system that beneficiaries would prefer to receive from MTFs. Observers familiar with the DoD data system assert that NAS issuances are underreported and (as discussed earlier) that some beneficiaries do not attempt to obtain care from MTFs, although they would prefer to. These individuals use private health insurance or forgo receiving care, and so are not reflected in the data.

The discussion thus far has focused on choices beneficiaries have between CHAMPUS and MTFs. It is also important to consider the usage of military medical facilities as a whole versus care obtained from civilian providers and financed by private insurance policies. The opportunity to select among non-DoD health plans, subject to their rules and regulations, adds another dimension of choice for DoD beneficiaries, and is of crucial importance in analyzing patterns of utilization of DoD health care.

The survey of beneficiaries conducted for this study underscores the significance of these other plans to DoD beneficiaries.[8] Among retirees under age 65 and their families, 58 percent reported using a private health insurance plan to pay for their most recent outpatient visit to a civilian facility and 64 percent reported using private insurance for their last episode of inpatient care in a civilian facility. Sixty-four percent of families of retirees over age 65 used a private insurance plan for their last outpatient visit to a civilian facility, and 70 percent used a private plan for their most recent episode of inpatient care. Among active-duty families, the proportions using private insurance are much lower, but significant: 11 percent report using private insurance policies for outpatient care in civilian facilities, and 7 percent for inpatient care. The principal conclusion to be drawn from these data is that for retirees (and to a much lesser extent, active-duty dependents), private health insurance is an important component of the choices that DoD beneficiaries make regarding the medical care that they receive.

[8]These data are extracted from *Analysis of the 1992 DoD Survey of Military Medical Care Beneficiaries*, Tables 4.7 and 5.8.

## SECTION III. UTILIZATION OF MTFs, CHAMPUS, AND CIVILIAN PLANS

The fact that military and civilian facilities share the task of delivering care to DoD beneficiaries points to the question: Should DoD attempt, for economic reasons, to attract more of the beneficiary caseload into the MTF system? Put another way, would it be cheaper for DoD to provide more medical care for its beneficiaries in DoD facilities, or should it continue to purchase that care indirectly, by reimbursing beneficiaries for medical services obtained in the private sector? This is not just a question of the comparative cost of doing a given volume of work. More than cost is involved because DoD cannot simply decide to move specific portions of the CHAMPUS workload in-house ("recapture" CHAMPUS work) or, conversely, shift work from MTFs to CHAMPUS. DoD is not the sole decisionmaker; the choice between seeking care in MTFs or CHAMPUS is determined in considerable part by beneficiaries. Moreover, as the previous section noted, many beneficiaries are not restricted to DoD health programs, but have access to care funded through private insurance plans.

### Choosing Between MTFs and CHAMPUS

DoD data on inpatient care illustrate this point. Table 2 shows how ease of access to MTFs influenced decisions on inpatient care by families of retirees under age 65 who were surveyed for this study.[9] The data are presented according to beneficiaries' level of access to MTFs. Access is measured both in terms of distance to medical facilities (whether beneficiaries reside inside or outside of catchment areas) and in terms of MTF capacity (the number of beds per 1,000 beneficiaries). MTFs were grouped into two equally-sized categories based on the latter measure: facilities in "medium access" catchment areas had fewer than the median number of beds, while those in "high access" areas had more.[10]

Retired beneficiaries living outside catchment areas used an average of four MTF inpatient days annually per 100 beneficiaries. Those living in catchment areas with high access to MTFs used 10 times as many inpatient days. CHAMPUS usage showed the reverse pattern but much less strongly. In fact, CHAMPUS usage among retirees was slightly higher in high-access catchment areas than in medium-access areas. Overall, the data show at most a very modest recapture of CHAMPUS workload as access to MTF care increased.

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[9]This beneficiary group was chosen for illustration purposes because its demand for MTF care is most responsive to the availability of MTFs. The behavior of other beneficiary groups is described in the RAND Corporation report, *The Demand for Military Health Care: Supporting Research for a Comprehensive Study of the Military Health Care System*, MR-407-PA&E (January 1994).

[10]The median splits the sample in half and is equal to 1.34 beds per thousand beneficiaries.

**Table 2.**
**Inpatient Days Annually per 100 Retired Beneficiaries[a]**

| | Live Outside Catchment Area | Live in "Medium Access" Catchment Area | Live in "High Access" Catchment Area |
|---|---|---|---|
| MTFs | 4 | 15 | 41 |
| CHAMPUS | 15 | 10 | 12 |
| DoD Total | 19 | 25 | 53 |

[a]Includes retirees, their dependents, and survivors under age 65.

The clearest pattern in the data is evident in the last row of Table 2. In areas with greatest access to MTFs, the total volume of care demanded in the DoD system by retirees was significantly larger. Retirees living outside catchment areas used a total of 19 days annually of DoD inpatient care per 100 beneficiaries. In catchment areas with the greatest access, the total demand for DoD inpatient care was 53 days annually--almost three times that reported in non-catchment areas. Thus, as access to DoD facilities improved, MTF usage increased much more rapidly than CHAMPUS usage declined, and the total volume of inpatient care in the DoD system (MTF plus CHAMPUS) rose dramatically.

Broadly speaking, three mechanisms contribute to the patterns observed in the data. First, as MTF capacity increases, fewer of those who seek care through the DoD system will be denied access to the free medical services provided by MTFs.[11] In particular, fewer individuals who live in a catchment area and seek inpatient services will be issued nonavailability statements (and sent to seek care through CHAMPUS). Similarly, because more capacity is available, those living outside a catchment area who seek MTF care will more often be accommodated. To the extent that the perceived chance of obtaining care in an MTF is greater, these people also may be more inclined to seek it.

Second, improving access to MTFs will attract workload to the MTF system from beneficiaries who have private insurance and others who have deferred care because of the costs involved. The fundamental point here is that the DoD system is "open" in the sense that many who have the right to space-available care in MTFs or care arranged through CHAMPUS do not regularly use such care. An increase in the quantity of free care provided by MTFs will attract some non-users to the DoD system. Thus, referring back to Table 2, one explanation of the net increase in total inpatient care as access to MTFs improves is that additional workload is being

[11]This conclusion assumes the increase is in areas or services for which the direct care system is oversubscribed.

pulled into MTFs from outside the DoD system. That is, individuals not currently using MTFs or CHAMPUS might use a newly expanded MTF rather than seek care outside the military medical system.

Self-selection is a third mechanism that may contribute to the patterns observed in the data. Retirees who experience a relatively high incidence of illness may choose to live in high-access catchment areas in hopes of receiving relatively larger amounts of free MTF care, thus avoiding expensive CHAMPUS or private insurance cost-sharing. Accordingly, dissimilarities in the health status of the beneficiary population may account for some of the differences in inpatient days between high-access and medium-access catchment areas.

## How Private Insurance Influences Beneficiary Choice

Table 3 presents data that strongly suggest that demand pulled in from outside the DoD system is the dominant reason why increased access to MTFs increases total DoD health care demand. This table expands the previous display by including the number of inpatient days reported in the survey from all sources of civilian care--CHAMPUS plus private health insurance. Consistent with the payment patterns for civilian care presented in Section II, these data indicate that retiree families use significant amounts of civilian care that is not purchased through CHAMPUS. Moreover, the non-CHAMPUS portion of that care also falls significantly in response to expanded access to MTFs. These data imply that a large part of the increase in MTF workload associated with improved access to the MTF system arises from workload that previously was accomplished outside the DoD system.[12]

The large increase in MTF inpatient workload shown in Table 3 may not be due entirely to beneficiary choice. The effect may be intensified by the practice patterns of MTF physicians. The training needs of a large physician force and extensive graduate medical education (GME) programs require a large number of patients to be available in MTFs. This, in concert with resource allocation practices that ratify the workloads done in hospitals in the past, could cause practice patterns to emphasize inpatient care over outpatient care in the military medical system. Additionally, funds have not been allocated to complete renovations of some existing facilities and to make investments that permit increased use of outpatient over inpatient care. For these reasons, when demand is attracted to the DoD system, some of it may show up as inpatient care whereas in the private sector, those services would be provided on an outpatient basis.

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[12]The decrease in total civilian care is smaller than the increase in MTF care, indicating that there may be a price effect on the total demand for medical care. That is, there may be some types of inpatient care (hernia repair, for example) that individuals may defer if CHAMPUS or private insurance imposes significant costs but that they may seek from MTFs, where care is free.

**Table 3.**
**Inpatient Days Annually per 100 Retired Beneficiaries[a] (Including Private Insurance)**

| | Live Outside Catchment Area | Live in "Medium Access" Catchment Areas | Live in "High Access" Catchment Areas |
|---|---|---|---|
| **Defense Health Program Data** | | | |
| DoD Total | 19 | 25 | 53 |
| **Survey Data** | | | |
| All Civilian Care | 56 | 37 | 31 |

[a]Includes retirees, their dependents, and survivors under age 65.

Table 4 presents comparable statistics on outpatient visits.[13] These data exhibit generally the same patterns as found in the inpatient data presented earlier: care provided in MTFs increases as access to MTFs expands; care arranged through CHAMPUS decreases; the total amount of care provided through the DoD system increases; and (looking at the last row of the table) demand appears to be pulled in from outside the DoD system. In contrast to what was observed in the inpatient data, however, there is a sharp decline in CHAMPUS workload, and a more modest increase in total DoD workload, as access to MTFs improves. The data suggest that beneficiaries who use non-CHAMPUS civilian care respond more strongly to the greater cost savings associated with free inpatient care in MTFs than to the smaller cost savings associated with outpatient care.

The general tendency for MTF usage to increase and demand for other sources of care to decrease as access to MTFs improves is illustrated by the data presented in Tables 2 through 4. These tables do not, however, reflect differences in utilization patterns among retirees that are attributable to other characteristics of beneficiaries and the direct care system. Many factors--such as the health or marital status of beneficiaries or staffing levels in MTFs--affect utilization patterns. Furthermore, there are some variations from one part of the country to another in the terms under which CHAMPUS is provided. These variations in demographics and CHAMPUS terms are not an impediment to analysis; to the contrary, they constitute naturally occurring "experiments" that make it possible to observe how various factors, including access to MTFs, influence beneficiary choices.

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[13]Because there is no analogous measure for outpatient capacity, hospital beds are used as a proxy for outpatient capacity as well. Larger MTFs are generally staffed with relatively more physicians, nurses, and equipment, thus increasing their capacity for outpatient care.

**Table 4.**
**Outpatient Visits Annually**
**per 100 Retired Beneficiaries[a]**

| | Live Outside Catchment Area | Live in "Medium Access" Catchment Area | Live in "High Access" Catchment Area |
|---|---|---|---|
| **Survey and CHAMPUS Data** | | | |
| MTFs | 76 | 160 | 212 |
| CHAMPUS | 197 | 154 | 104 |
| DoD Total | 273 | 314 | 316 |
| **Survey Data** | | | |
| All Civilian Care | 342 | 251 | 215 |

[a]Includes retirees, their dependents, and survivors under age 65.

The analysis must account for the effects of these other factors, however, to isolate the relationship between access and utilization. Because the factors are so numerous, a series of simple tables (such as Table 4) cannot capture their full effects on utilization. To do so would require a much larger number of tables--and for many of the cells there would be insufficient data to measure the utilization effect.

## The RAND Analysis: Simulating Beneficiary Choices

The RAND analysis of demand did account for the influence of these other factors in estimating the relationship between access to MTFs and utilization. RAND used a standard multivariate statistical technique that incorporated more than 25 variables that characterize different demographic factors or aspects of the DoD health care benefit available within the United States (Box 8). Data on many of these variables were obtained by RAND by matching survey respondents to records for those same respondents from other data sources. The results of the RAND analysis are consistent with the trends observed in Tables 2 through 4. In particular, RAND found that as access to MTF care increases, demand for care obtained through CHAMPUS and non-CHAMPUS private insurance decreases.

## Box 8.
## RAND Demand Models

RAND's analysis used the following partitioning of DoD beneficiary demand for health care:

Active-duty personnel -- inpatient care in MTFs.
Active-duty dependents -- inpatient care in MTFs.
Retirees and dependents -- inpatient care in MTFs.
Active-duty personnel -- outpatient care in MTFs.
Active-duty dependents -- outpatient care in MTFs.
Retirees and dependents -- outpatient care in MTFs.
Active-duty dependents -- inpatient care under CHAMPUS.
Retirees and dependents -- inpatient care under CHAMPUS.
Active-duty dependents -- outpatient care under CHAMPUS.
Retirees and dependents -- outpatient care under CHAMPUS.

RAND analyzed individually each of these ten categories. The object of the exercise was to estimate statistically a relationship between utilization in each category and beneficiary characteristics and features of the DoD health care benefit. Each model included the following variables:

- Beneficiary Characteristics: Retired or active duty, sex, age, marital status, employment status, income, health status, and others.
- MTF Characteristics: Beds per thousand beneficiaries, staffing levels, military service.
- Civilian Market Characteristics: Presence of CHAMPUS demonstration programs (CAM, CRI).

Utilization of outpatient care was broken into two steps for both MTFs and CHAMPUS:

- Was there any outpatient usage during the year?
- If "yes," what was the number of visits during the year?

Thus, for example, two equations were used to characterize active-duty dependents' use of outpatient care provided by MTFs.

Utilization of inpatient care also was broken into two steps for both MTFs and CHAMPUS:

- Was there any inpatient usage during the year?
- If "yes," for both MTFs and CHAMPUS, the amount of inpatient care was assumed to be equal to recently observed rates for each beneficiary group. This assumption was made because the vast majority of users have no more than one hospital stay annually, and past studies have shown that hospitalization length is at best weakly correlated to demand factors.

RAND characterized the utilization effect of increased access to MTFs by comparing a "reference" case with a hypothetical case in which MTF capacity was expanded. The two cases made the same assumptions about the demographics of the DoD beneficiary population, the terms under which access to MTFs is granted, the degree of cost-sharing required under CHAMPUS, and use of the techniques of "managed care." Active-duty personnel were assumed to continue to have free care and top priority for access to MTFs. Active-duty dependents, retirees, and their dependents were assumed to continue to have the option of using CHAMPUS exclusively or seeking care from MTFs on a space-available basis, supplemented with CHAMPUS. The RAND analysis also assumed that these beneficiaries could enroll in a managed care option that included use of MTFs on a space-available basis and a local network of private providers.

The capacity of the direct care system differed between the two cases, however. The reference case assumed that the system's capacity reflects past decisions on downsizing and base closures. In contrast, the "expansion case" assumed a modest growth in MTF capacity.[14] The growth was defined in terms of both additional beds and additional staffing.

The results of the RAND analysis suggest that expanding the amount of free care offered by MTFs would have significant consequences for the total amount of care that these facilities provide. Table 5 summarizes the RAND results. The first row of the table reports the increase in inpatient and outpatient workloads in MTFs (relative to the base case) arising solely from the *removal of workload from CHAMPUS*. The second row reports the additional workload resulting from reductions in the usage of private insurance plans, higher rates of utilization of health care services within DoD facilities, and services sought by beneficiaries that they otherwise might have forgone. The third row reports the total increase.

**Table 5.**
**Percentage Increase in MTF Workload**
**Relative to the Base Case**

| | Inpatient | Outpatient |
|---|---|---|
| Increase from CHAMPUS | 6.5 | 5.3 |
| Increase from Other Sources | 10.9 | 2.3 |
| Total Increase | 17.4 | 7.6 |

The increase in total MTF inpatient workload is 168 percent larger than the increase produced by CHAMPUS alone; the increase in outpatient care is 42 percent larger. Weighting these two measures by the amount of dollars spent in MTFs for inpatient and outpatient care (about 55 percent of the dollars spent in FY 1992 went to outpatient care) yields a rough overall increase in MTF workload of 90 percent relative to that which was removed from the CHAMPUS system. This is called the "demand effect" in what follows.

These results are consistent with the patterns of utilization observed in the retiree data presented above. When access to MTFs increases, MTF usage rises strongly, CHAMPUS workload falls but not as sharply, and the sum of MTF and CHAMPUS care rises, reflecting the influx of previously non-CHAMPUS civilian workload and higher utilization rates within MTFs.

[14]As spelled out in detail in the RAND report, rules for adding new hospitals or expanding existing ones for the "expansion case" were given to RAND by the study team. The team defined a small expansion to illustrate the effect of increased access on beneficiary behavior.

Moreover, the influx of new workload into the DoD system is more pronounced for inpatient services than for outpatient services, as was observed earlier in the discussion of retiree utilization of the defense health program. Roughly speaking, RAND's results imply that, for every case that departs CHAMPUS in response to an increase in free MTF availability, about two additional cases will be treated in the MTF system.

## SECTION IV. COSTS OF "MAKING" AND BUYING MEDICAL CARE

Is it conceivable that DoD could reduce overall medical program costs by expanding MTF access if it must treat in MTFs two cases for every one case recaptured from CHAMPUS? As is discussed below, MTFs do have a cost advantage over CHAMPUS, but that advantage is not sufficient to dominate the demand effect. There are, however, various means by which DoD could limit the extent to which an expansion of MTF capacity drew additional work into the direct care system. If these mechanisms are effective, and the costs for identical workloads are cheaper in MTFs than in CHAMPUS, perhaps the cost-effective solution to the make/buy decision would be to size the military medical establishment against the peacetime requirement. The "make/buy" decision then becomes a race between the effectiveness of utilization control measures and the MTF cost advantage.

Previous studies of the DoD health care system did not go deeply into the issue of cost. For example, the 1975 *Report of the Military Health Care Study* simply assumed that average costs remain the same as utilization and capacity grow. The 1985 *Final Report of the Blue Ribbon Panel on Sizing Department of Defense Medical Treatment Facilities* compared average CHAMPUS costs per admission for several categories of inpatient care with estimates of MTF marginal costs per admission. The study identified which categories of care appeared to be cheaper in the MTF system, and investigated the dollar savings associated with bringing that care in-house. The cost data reported in the study imply that, for those selected categories of care brought into the MTF system, military facilities enjoy a 44 percent cost advantage over CHAMPUS.

The 1985 study overstated the cost advantage enjoyed by MTFs in at least three respects, however. First, the study did not investigate the diagnostic mix of the workload identified as "recapturable." It acknowledged that the amount of realistic recapture potential may be less than indicated in the analysis. Second, the methodology assumed that the number of inpatient days per admission in MTFs if work were moved in-house would be identical to the number exhibited in civilian facilities providing care under CHAMPUS. Third, the analysis omitted several categories of DoD medical costs. In combination, these effects serve to overstate the cost savings attributable to MTFs. Moreover, the study recognized the existence of the demand effect in one portion of the analysis, but did not integrate the associated increases in total cost into the estimates of cost savings that it developed.

This treatment of cost issues may reflect the assumption, then unchallenged, that the direct care system should be sized solely against the wartime mission. If wartime requirements drive the size of the DoD medical establishment, then costs can be seen as consequences of sizing decisions rather than as inputs to them. The issue takes on added significance if, as is the case today, the direct care system is much larger than the wartime mission requires, and DoD has the opportunity to ask how to size that system cost-effectively. In such a circumstance, the objective becomes to pull work in-house if the full economic cost of doing so is less than the cost of purchasing care.

Application of that standard runs hard against some inadequacies in the accounting data on MTF costs. The key problem is that the costs specifically attributed to MTF inpatient and outpatient care in standard DoD data sources are incomplete; there are other elements of cost, not incorporated in the data sources, that can be ascribed to MTFs. The most important of these is the economic cost of facility depreciation. Other overhead costs not captured in the data systems also influence the costs of MTF care. Finally, several special program accounts reflected in the standard data systems, while directly related to MTF care, are not usually allocated against the costs of peacetime care. These additional "costs of doing business" must be captured to a reasonable extent to get a clear picture of how the costs of care provided by MTFs compare with the costs of care obtained in the private sector.

## IDA's Analysis of MTF Costs

The Institute for Defense Analyses (IDA), as part of its contribution to this study, corrected most of these problems by adjusting data from the Medical Expense and Performance Reporting System (MEPRS) on FY 1990 and FY 1992 MTF costs.[15] Separate adjustment factors were developed for inpatient and outpatient costs, based on comparisons among the military services and on comparisons with external data sources (e.g., Future Years Defense Program appropriation data). The adjustments resulted in increases of 11.3 percent and 14.3 percent, respectively, in the outpatient and inpatient costs reported in MEPRS. IDA noted in its report that these adjustments may be incomplete: MEPRS costs were adjusted only for those items that were reasonably estimated and clearly associated with the provision of beneficiary care (as opposed to the wartime mission). IDA also identified other elements of cost that, with additional research, might appropriately be added to hospital costs. Nonetheless, IDA carefully implemented those adjustments it could identify, yielding costs of medical care at MTFs that are roughly comparable to prices charged by civilian providers (e.g., CHAMPUS).

IDA went on to construct cost relationships that describe how bringing work in-house would affect total MTF costs. These relationships were derived statistically from MEPRS data and other relevant information (Box 9). The main features of this approach are illustrated in Chart 1. Total costs incurred by particular MTFs in 1990 and 1992 are shown on the vertical axis of the figure; workload appears on the horizontal axis. Cost is plotted against workload for each of the 117 hospitals and medical centers in the DoD system in 1990 and 1992. As would be expected, costs tend to increase with increases in MTF workload, although not always in strict proportion.

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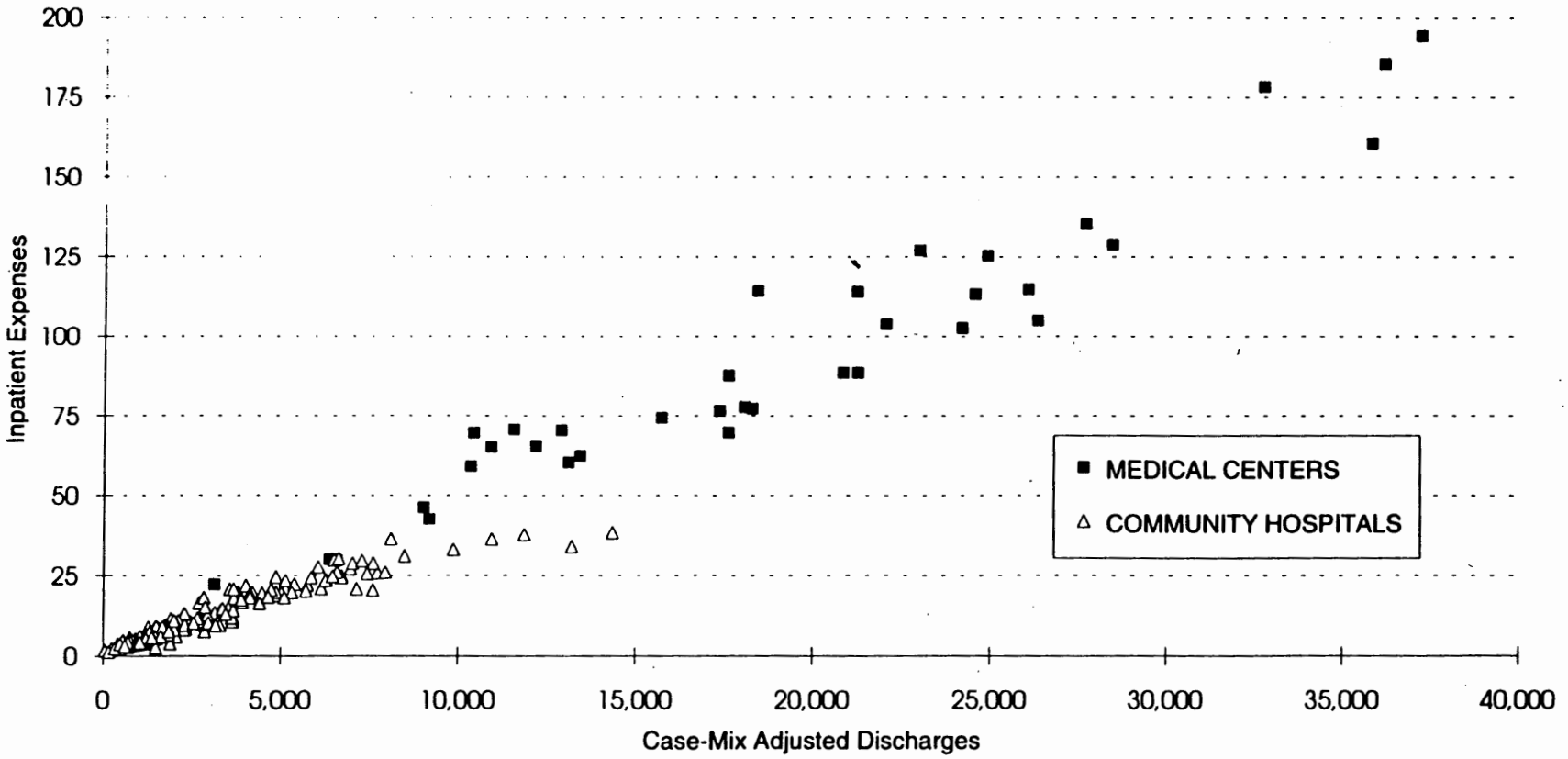
[15]Data from FY 1991 were not used in this analysis because it was not possible to separate the effects on costs of peacetime care from those of Operations Desert Shield and Desert Storm.

**Chart 1.**
**FY 1990 and FY 1992 Inpatient Expenses, by Facility Type**
**(In millions of FY 1992 dollars)**



Workload is not the only influence on costs, and as is discussed later, IDA took account of the effects of other important variables. It is also relevant to note that separate cost functions were developed for inpatient and outpatient workloads. This is important for two reasons. First, beneficiary demands for inpatient care are more responsive to the terms and conditions under which care is offered than are demands for ambulatory care. RAND captured this effect in its beneficiary models, and IDA separated the cost functions to account more precisely for the differential impact on cost. Second, MEPRS cost data are reported separately for outpatient and inpatient care. These costs respond differently to characteristics of MTFs, and can be captured more accurately in separate models than in an aggregate cost model.

**Box 9.**
**IDA Cost Functions**

The estimates of MTF costs used in this study were developed by the Institute for Defense Analyses. The cost-estimation involved two major tasks:

- Identifying the relevant costs and
- Estimating how those costs might change in differing circumstances.

Identifying Costs. DoD maintains at least two major sources of cost data. One of these--MEPRS--provides data on individual hospitals and other institutions. Because there are economic costs of providing care (such as the costs of building and maintaining facilities) that are not captured by MEPRS, IDA supplemented the MEPRS data with information drawn from the DoD Planning, Programming, and Budgeting System (PPBS). In particular, data on military construction, central automation support, and management headquarters activities were drawn from the Future Years Defense Program, which also served as a check on the values of other activities reported in MEPRS. Data for fiscal years 1990 and 1992 were used. The 1991 data were excluded because they are strongly influenced by the costs of Operations Desert Shield and Desert Storm.

Estimating How Costs Change. Several factors affect the costs of providing care. Among the most important are the amount of care provided; the size of the facility providing it; whether the facility is a medical center, hospital, or clinic; the military department that runs the facility; and the size of the physician specialty training programs that the hospital runs.

IDA included all of these elements in its analysis. It constructed two equations relating costs to these factors--one for inpatient care (adjusted for diagnosis related groups), and one for outpatient visits. These equations are presented in IDA Report P-2938, *Cost Analysis of the Military Medical Care System: Data, Cost Functions, and Peacetime Care*.

Equally important, IDA did not simply use inpatient discharges as a measure of inpatient workload. It is widely recognized that the resource requirements of inpatient discharges vary significantly depending on diagnosis, procedures performed, co-morbidities and complications, and so on. As is standard in the literature, IDA developed an inpatient work unit that reflects case-mix-adjusted workload using a weighting scheme based on Diagnosis Related Groups (DRGs). DRGs provide a method for classifying inpatient care into more than 500 groups having roughly similar resource requirements.[16]

Costs incurred in any hospital are influenced both by the hospital's capacity and by the extent to which that capacity is utilized. Case-mix-adjusted workload is an adequate measure of inpatient utilization; number of visits is a reasonable measure of outpatient workload. As its

[16]Unfortunately, a DRG-like system does not exist for standardizing the resource requirements of outpatient procedures. For the outpatient cost models, IDA used a simple measure of outpatient visits.

measure of capacity, IDA used operating beds--that is, the number of staffed and equipped beds available for use in an MTF. Additionally, IDA accounted for the influence on costs of the volume of graduate medical education conducted at a given facility. Finally, the IDA cost functions recognized that medical centers, hospitals, and clinics have different fixed costs.

The cost functions estimated by IDA provide a basis for estimating costs for the "make" portion of the make-versus-buy comparison. Cost estimates for the "buy" portion of the comparison were provided by RAND. DoD and its beneficiaries generally pay market prices for medical care under CHAMPUS. The total cost of CHAMPUS is fundamentally these prices times the quantity of care provided, summed over all CHAMPUS users. In combining data from the survey and actual CHAMPUS payment records for the survey respondents, RAND estimated the costs to DoD and its beneficiaries of using CHAMPUS programs.

IDA's costing work permits the completion of the analysis of the reference and expansion cases introduced in the preceding section. As that earlier discussion noted, the two cases make the same assumptions about the demographics of the DoD beneficiary population, MTF access, CHAMPUS cost-sharing arrangements, and the use of "managed care." The reference case assumes that the capacity of the direct care system reflects downsizing and base closure decisions made to date. In contrast, the expansion case assumes a modest growth in MTF capacity relative to the current level.

**Cost Implications of an Expanded MTF System**

The question left open in the preceding section was the net effect on costs--MTF plus CHAMPUS--of a modest expansion of the MTF system. Table 6 addresses this issue, showing the effects on MTF and CHAMPUS costs of moving a fixed workload from CHAMPUS into the MTF system and of shifting work to MTFs from sources other than CHAMPUS (the demand effect). The costs reported in Table 6 reflect RAND's estimates of the effects on demand of expanding MTF capacity and IDA's analyses of costs of the MTF system, and include both DoD expenditures and beneficiary out-of-pocket costs.

The first line of the table shows that an expanded MTF system would pull $352 million of health care from CHAMPUS, and that this care could be provided in MTFs at an annual cost of $265 million, for a savings of $87 million. Thus, the cost (to both DoD and beneficiaries) of providing a given volume of care in MTFs is about 24 percent less than the cost of obtaining that

**Table 6.**
**Change in Cost Relative to the Base Case**
**(In millions of dollars)**

| | MTFs | CHAMPUS[a] | Net[a] |
|---|---|---|---|
| Change Due to Shift from CHAMPUS | +265 | -352 | -87 |
| Increase from Additional Workload (Demand Effect) | +206 | NA | NA |
| Total Change | +471 | -352 | +119 |

NOTE: NA = Not applicable.

[a]Includes changes in both DoD and beneficiary payments.

care through CHAMPUS.[17] These savings are shared unequally between DoD and its beneficiaries. Beneficiaries avoid $70 million in out-of-pocket costs that they otherwise would have borne under CHAMPUS cost-sharing arrangements. DoD saves $17 million (the difference between $87 million and $70 million), or about 6 percent of DoD's cost of purchasing the work from CHAMPUS ($282 million).

The cost advantage enjoyed by MTFs is not the end of the story. The second line of Table 6 shows that DoD would pay an additional $206 million for the workload associated with the demand effect. This is the cost to DoD for the work generated by: beneficiaries who seek care in an expanded MTF system rather than using their civilian health plans, the increase in per capita utilization associated with beneficiaries who use the DoD system rather than civilian health plans, and treatment sought in MTFs that beneficiaries previously would have deferred. As discussed earlier, for every one case that leaves CHAMPUS, 1.9 new cases arrive in the MTF system.

The last line of Table 6 summarizes the net cost effects. The expansion of the MTF system reduces CHAMPUS costs by $352 million, but in so doing, it adds $471 million to MTF costs, for a net increase of $119 million, or 33 percent of the original CHAMPUS cost. The

[17]How the direct care system expands or contracts could have a significant effect on the size of the DoD cost advantage. If DoD were to add or subtract similarly operated MTFs, this estimate would remain indicative of the average cost advantage of the DoD system. If an unrepresentative set of facilities were added or subtracted (either the proportion of types of facilities did not replicate the current composition or the facilities were of a size that lay outside current experience), the estimated cost advantage could increase or decrease depending on the actual changes made in the direct care system.

implication is clear: increasing MTF capacity increases the costs of the DoD medical program--not because MTFs are less efficient in delivering a fixed amount of care but because in trying to recapture CHAMPUS workload, DoD also attracts new work from outside the DoD system. If the simulations had reduced MTF capacity rather than increasing it, the results would have been the same: A reduction in MTF capacity would force DoD beneficiaries into more expensive civilian plans, but the demand effect (working in reverse) would dominate the cost effect. People would leave the DoD system (using their private insurance and utilizing less health care generally), reducing DoD costs by far more than the increase resulting from the growth in the CHAMPUS workload.

The magnitude of the cost advantage that MTFs enjoy in providing a given amount of care may be surprising; however, there are specific areas in which MTFs have clear cost advantages. These include the absence of malpractice insurance premiums, less responsibility for uncompensated care of the indigent, and less stress on cost-increasing technological innovation. Moreover, private-sector health care providers compete, in large part, on the basis of service, often providing "conveniences" (private rooms, telephones, and other amenities) that typically are unavailable to patients in MTFs. While the quality of care provided in MTFs is comparable to that offered in the private sector, the setting within which care is delivered is more austere.

On the other hand, the cost advantage attributed to MTFs may be somewhat overstated because the DRG adjustment may incompletely account for the relative case-mix severity of MTFs and CHAMPUS. As noted earlier, other categories of medical facility costs might, on further examination, appropriately be added to the MTF cost functions.[18] Inclusion of these costs could trim the 24 percent cost advantage cited above to somewhere between 10 and 20 percent. (The budgetary savings to DoD would fall to 1 or 2 percent.) The RAND estimates, too, are subject to some uncertainty. The utilization estimates are based on the CRI experiment in California and Hawaii. Other possible models for future beneficiary behavior embody different health care services and cost-sharing arrangements than CRI. The Air Force experience with catchment area management, for example, would indicate a DoD cost advantage of 18 percent.[19]

Although the exact size of the cost advantage may be subject to question, the available evidence warrants this qualitative judgment: on average, MTFs appear to provide a given amount of care at significantly less cost than is the case in the private sector. This conclusion does not imply, however, that an expansion of the free care offered by MTFs would reduce DoD's total costs. To the contrary, the quantitative results indicate that expanding the MTF system would

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[18] These cost categories include examining activities, supplemental care for active-duty personnel, other health activities, and training activities not already captured elsewhere. IDA describes these omitted costs on page IV-15 of its report, *Cost Analysis of the Military Medical Care System: Data, Cost Functions, and Peacetime Care.*

[19] Adjusting for the omitted costs discussed earlier would probably reduce this estimate to somewhere between 5 and 15 percent. DoD's budgetary savings would fall proportionately.

increase costs because the demand effect of increasing access to free care overwhelms the cost advantage enjoyed by MTFs. Viewed from this angle, the cost analysis points to the importance of finding means to manage the demand effect.

# SECTION V. IMPLICATIONS OF SINGLE-PLAN ENROLLMENT

This section examines the implications for the make/buy decision of incorporating "single-plan enrollment" in the DoD health care system. Single-plan enrollment refers to that feature of the President's health proposal which provides for the enrollment of all Americans in a health care plan. For DoD, implementation of single-plan enrollment would represent a sharp departure from current practices: whereas at present, many DoD beneficiaries are eligible to use military treatment facilities even though they are enrolled in health plans offered by their non-DoD employers, under single-plan enrollment, they could receive MTF care only if they were enrolled in a DoD-sponsored plan.

Consideration of single-plan enrollment is relevant for three reasons. First, it probably would be required for the integration of the DoD health care system into a reformed national health care system. Second, an analysis of single-plan enrollment leads to a more precise understanding of why, under the current DoD system, costs rise if sufficient capacity is retained to meet peacetime demand. Third, as is discussed briefly below, single-plan enrollment itself has important implications for strengthening DoD's control of utilization management.

## Single-Plan Enrollment and the DoD Health Care System

The defining characteristic of a single-plan enrollment system is that beneficiaries must periodically make a selection, from the choices available to them, of the plan they will use in the upcoming period. This is a simple property, but one that touches basic aspects of the DoD health care system and which, if adopted, probably would entail fundamental changes in the system.

If single-plan enrollment were adopted, DoD would have to decide how many and what types of plans to make available to its beneficiaries. As was discussed in Section II, non-active-duty beneficiaries currently receive treatment in MTFs on a space-available basis, and those under age 65 who cannot obtain MTF care can seek treatment from civilian providers, reimbursable in part through CHAMPUS. This package--MTFs on a space-available basis, CHAMPUS otherwise--probably would not be feasible under a single-plan enrollment system, because it would require beneficiaries to make a commitment without knowing what space would be available and, hence, what their costs would be. Beneficiaries, especially those employed outside DoD who have access to employer-sponsored insurance plans, probably would require more certainty than the current MTF system provides about the terms on which care would be available.

Viewed from this perspective, single-plan enrollment strongly challenges the notion that DoD could continue to offer MTF services to non-active-duty beneficiaries only on a space-available basis. DoD presumably could include an MTF-based HMO among the menu of plans it sponsored. It is reasonable to presume, however, that those who elected this option would be entitled to care in MTFs.

There are corresponding implications for CHAMPUS. Since those who elected the MTF-based HMO would be entitled to MTF care, CHAMPUS would no longer be needed as a form of supplemental health insurance and probably would be discontinued. In its place, DoD would need to provide at least one civilian plan for those residing outside MTF catchment areas; given the mobility of the beneficiary population, that plan probably would be offered nationwide. Under a single-plan enrollment framework, therefore, DoD beneficiaries would likely be given a choice among regional MTF-based HMOs and one or more civilian plans (for example, a civilian HMO and a civilian fee-for-service plan).

The decision on whether to include MTF-based HMOs in the DoD health package would be a key aspect of the decision on whether to size the military medical system against peacetime demand. If a decision were made to size to the wartime requirement, MTF-based HMOs would probably not be offered because the restructured direct care system would be inappropriately configured to support an HMO alternative. In this circumstance, DoD beneficiaries would be offered only a choice among civilian plans. If the direct care system were, instead, sized to peacetime demand, MTF-based HMOs would be included among the DoD-sponsored plans, and those who elected this option would be entitled to care through the DoD system.

Another key aspect of single-plan enrollment is the cost-sharing provisions, if any, attached to the various plans offered. DoD beneficiaries already face copayments and deductibles under CHAMPUS, and cost-sharing presumably would continue to be a feature of DoD-sponsored civilian plans. The issue is what degree of cost-sharing would be required of those who elect MTF-based HMOs. As noted above, under single-plan enrollment, those who choose the MTF HMO option would be entitled to treatment through the HMO, rather than receiving care on a space-available basis, as is currently the case. This change might argue for imposing a premium of some magnitude for MTF-based HMOs. This is not a requirement of single-plan enrollment, however.

Finally, adoption of single-plan enrollment might entail changes in the assignment of responsibility for the employer's share of premiums of health care plans selected by DoD beneficiaries employed outside the Defense Department. Under a single-plan enrollment system, either DoD or the current employer would have to pay the employer's share of premium costs. This is quite different from the situation today. Currently, DoD pays for care obtained through the DoD system (less CHAMPUS copayments and deductibles). If the recipients are employed outside the Department of Defense and have coverage through their employer, DoD has the statutory authority to demand payment from third-party insurers. In practice, very little is received from private insurers due to accounting and other difficulties. Conversely, DoD pays nothing for care received by DoD beneficiaries under other insurance plans in which they are enrolled.

**Modeling Single-Plan Enrollment**

The RAND and IDA analyses conducted for this study can be used to model beneficiary behavior and the costs of the military medical system under a single-plan enrollment framework.[20]

Modeling single-plan enrollment requires estimating the number of DoD beneficiaries who would choose various competing plans, including an MTF-based HMO. On a conceptual plane, this is simply a variation on the problem (discussed in Section III) of characterizing the choices beneficiaries make between seeking treatment through the DoD system or through insurance they have through their non-DoD employer, and within the DoD system, choosing between CHAMPUS and MTFs. Expansion of the analysis to single-plan enrollment encounters a practical problem, however. The analysis in Section III considered options that are currently available to DoD beneficiaries, and was based on choices that were actually made. In contrast, the selection by beneficiaries of options that would be available under single-plan enrollment cannot be estimated from actual choices, but must predicated on information concerning beneficiary preferences among hypothetical alternatives.

RAND's analysis of single-plan enrollment used, in place of observed choices, the responses of DoD beneficiaries to questions concerning what plan they would choose under certain circumstances. The survey conducted for this study (Box 2) asked respondents to consider a choice between an MTF-based plan and a civilian plan offering the same coverage. The respondents were asked to focus only on the difference between the premiums of the civilian and military plans, hence leaving open the possibility that a small premium might be charged for the MTF-based plan. Respondents were asked, in particular, to indicate which plan they would choose under each of three alternative assumptions about differences in monthly premium levels:

- The premium for the civilian plan equalled that for the MTF-based plan.
- The civilian premium was $50 more per family than the military premium.
- The civilian premium was $75 more per family than the military premium.

The survey did not ask respondents to compare MTF-based and civilian plans on the basis of cost differences in premiums for single enrollees. RAND estimates that a $50 per month family differential equates to a $20 per month differential for a single enrollee and that a family differential of $75 per month translates into a $30 per month differential for an individual.

RAND's analysis of the survey responses proceeded along the lines described earlier (see Box 8). The responses indicated that DoD beneficiaries would be very sensitive to the premium

[20] A complete description of the analytical techniques used by RAND and IDA will be provided in future reports.

differential between the civilian plan and the MTF-based HMO if the plans' coverage was identical (Box 10). The estimates presented below assume that the premium for the civilian plan is $20 per month more for individuals and $50 per month more for families than the premium

## Box 10.
## The Effects of Premiums on Enrollment in an MTF-based Plan

RAND employed survey data to assess in what proportions DoD beneficiaries would select among competing civilian plans and an MTF-based plan if the plans differed only in premium amounts. Three variations in premium costs were investigated: in the base case, the monthly premium for the military plan equalled that for the civilian plans; in the second case, the military premium was $50 less per family (and $20 less per individual) than the civilian premiums; and in the third case, the MTF monthly premium advantage rose to $75 per family (or $30 per single enrollee).

The results of the analysis are presented in the table below. It should be noted that the table reports beneficiary preferences and does not reflect the impact of limiting enrollment in an MTF plan only to those beneficiaries living in catchment areas (as is assumed in Table 7). When the premiums of MTF and civilian plans are identical, a minority of non-active-duty beneficiaries opt to enroll in a military plan. The fraction of DoD beneficiaries selecting the MTF plan increases greatly as the military plan becomes relatively less expensive, however. As the premium advantage enjoyed by an MTF plan rises from zero to $30 per month for single enrollees or $75 per month for families, the fraction of active-duty families and retirees under age 65 enrolling in MTF plans triples and that of older retirees almost doubles.

**Percent Choosing a Military Plan Rather Than a Civilian Plan as a Function of the MTF Monthly Premium Advantage**

| Single/Family Coverage | Active-Duty Dependents | Retirees Under Age 65 | Retirees Over Age 65 | Military Plan Enrollment (millions) |
|---|---|---|---|---|
| $0/$0 | 27 | 30 | 40 | 3.7 |
| $20/$50 | 68 | 70 | 66 | 6.2 |
| $30/$75 | 82 | 86 | 78 | 7.2 |

The last column of the table shows the number of beneficiaries (including active-duty personnel) who would enroll in an MTF-based plan under these relative premium levels. A $20/$50 premium advantage increases the number of beneficiaries by 70 percent relative to the $0/$0 case. Increasing the MTF cost advantage to $30/$75 per month roughly doubles enrollment compared with the $0/$0 case.

for the MTF-based plan.[21] This results in an MTF workload that most closely approximates the status quo--the reason why the $20 per month/$50 per month premium differential was selected as the basis for comparison.

The simulations also require assumptions about who pays the employer's portion of the premium for the roughly three-fifths of DoD's non-active-duty beneficiaries who are eligible for coverage under non-DoD employer-sponsored health plans. Currently, DoD has the statutory authority to collect from third-party insurers. The amounts collected remain small, however (see Box 11). In practice, DoD pays if a beneficiary employed outside DoD seeks treatment through an MTF or (subject to copayments and deductibles) through CHAMPUS; the non-DoD employer pays if treatment is provided under a plan sponsored by the employer. This arrangement will be referred to hereafter as "sponsor pays." (The sponsor in question is the sponsor of the health plan.)

**Box 11.**
**Collections from Insurance Companies**

The 1985 Consolidated Omnibus Budget Reconciliation Act gave DoD authority to collect payment from insurance companies for treatment rendered to DoD beneficiaries who have other health insurance coverage. Initially, the funds collected reverted to the U.S. Treasury, providing little incentive to actively pursue collections. In 1989, DoD was granted authority to keep the money. Collection authority was modified in the 1994 National Defense Authorization Act to permit the hospitals providing the treatment to keep 100 percent of the funds collected.

As incentives for collection improved, the amounts collected grew, rising from about $17 million in FY 1989 to about $76 million in FY 1992. (Collections are not yet complete for 1993, but $74 million in receipts have been received while $62 million in billings are yet to be resolved.)

Despite this rapid growth, significant problems remain in the collection process. First, beneficiaries have no incentive to inform DoD of outside coverage. (At best, informing a facility does not affect the patient; at worst, the beneficiary must file additional forms relating to the claim, and may fear adverse consequences from the insuring company.)

Second, DoD's accounting and finance systems were not designed to support the collection of claims from outside sources. Consequently, until recently, MTF commanders had little assistance in filing claims. Because DoD does not, in general, calculate costs on a Diagnosis Related Group or other basis, claims made were based largely on the average cost of a day of service. (MTFs in some high-cost areas bill third-party insurers at rates somewhat higher than the DoD average.) DoD will begin billing on a Diagnosis Related Group basis in FY 1995, but to date, its collection scheme has been nowhere near as sophisticated as those employed by civilian facilities. Amounts collected are very small relative to the size of the health program.

[21]The findings of the analysis would apply if no premium were charged for the MTF-based HMO (and premiums of $20 per month/$50 per month were charged for the civilian plans) or if a small monthly premium were charged for the MTF-based HMO and correspondingly higher premiums were charged for the civilian plans.

Table 7 compares the FY 1992 costs of the DoD health program with the estimated costs of the base case presented in Sections III and IV and the "sponsor pays" version of single-plan enrollment. Costs under the single-plan enrollment option are larger than those for the base case largely because a premium differential of $20 monthly for individuals and $50 monthly for families results in a direct care system that is somewhat larger than the current system.

**Table 7.**
**Costs of the DoD Medical Program**
**(In billions of dollars)**

| | FY 1992 Cost[a] | Base Case | Sponsor Pays |
|---|---|---|---|
| MTF Costs | 6.3 | 6.3 | 6.7 |
| CHAMPUS Costs | 3.8 | 3.8 | 3.7[b] |
| Total | 10.1 | 10.1 | 10.4 |

[a]As adjusted by IDA (see Section IV).
[b] Cost of civilian plans sponsored by DoD.

As mentioned above, adoption of single-plan enrollment might entail changes in employer responsibility for the premiums of plans selected by non-active-duty beneficiaries employed outside DoD. The decision on assignment of the employer's share does not alter the choices faced by beneficiaries or the terms on which those alternatives are available to them. Thus, the RAND analysis of these two financial arrangements assumes no change in the choices made by beneficiaries. The issue is only whether DoD or the current employer pays the employer share of the premiums for DoD beneficiaries who are employed outside the Defense Department. Table 8 reports estimated costs of the DoD health care program under the "sponsor pays" option (essentially the current financing arrangement) and two alternative assignments of financial responsibility:

- DoD pays the employer's share of premiums for all of its beneficiaries, including those employed outside the Department who select a non-DoD plan.

- The current employers of DoD beneficiaries pay the employer's share of their health care premiums even if these individuals select a DoD plan. This

calculation also assumes that DoD is reimbursed by Medicare for those who select a DoD-sponsored plan.[22]

**Table 8.**
**Effect of Premium-Sharing on Costs of Sizing to Peacetime Requirements**
**(In billions of dollars)**

| Sponsor Pays | DoD Pays | Non-DoD Employer Pays |
|---|---|---|
| 10.4 | 12.7 | 6.5 |

This report offers no recommendation as to how financial responsibility for the employer's share should be assigned. Clearly, however, the implications for DoD are large. Under a "DoD pays" framework, the annual costs of DoD's health care program would be $2.3 billion higher than under the current "sponsor pays" rule. Alternatively, under a "non-DoD employer pays" rule, DoD's annual health care costs would decrease by about $3.9 billion. Moreover, as will be seen below, assigning financial responsibility also plays a key role in the question of whether DoD reduces its health care costs overall by doing more work in MTFs.

### The Make-Versus-Buy Decision

The analytic framework developed above can be used to answer, within the context of single-plan enrollment, the central question of this report: Is it more cost-effective for DoD to size its medical system to wartime demands for care or to the projected peacetime demand? The approach used in this instance, however, must be somewhat different from that employed in Sections III and IV, which considered an expansion in MTF capacity and asked whether increasing access to MTFs would yield lower DoD health care costs overall. It is not possible to use an identical approach in this case because, under single-plan enrollment, the MTF-based HMO portion of the system would be sized to the demands of those who elect the HMO option and are entitled to care in MTFs. Under the current system, excess demands for MTF care can be refused, forcing beneficiaries to use CHAMPUS or private insurance. The models developed by RAND and IDA, however, permit the comparison of estimated costs in two cases--one in

[22]The RAND analysis of the "non-DoD employer pays" alternative is based on Congressional Budget Office estimates presented in the February 1994 CBO report, *An Analysis of the Administration's Health Proposal.* See pages 9, 10, and 30 of that report for a more detailed characterization of employer funding of health care premiums.

which the direct care system is sized to peacetime demand, and another in which it is sized against wartime requirements.

One further preliminary point must be made. Under single-plan enrollment, DoD has two means of adjusting the size of the direct care system:

- It can impose a premium for MTF-based HMOs, thereby reducing the cost advantage that this option enjoys relative to DoD-sponsored civilian plans (with a corresponding reduction in the likely enrollment rate).

- It could forgo offering MTF-based HMOs to non-active-duty beneficiaries, giving these individuals a choice among civilian plans only.

For example, an MTF premium that was equal to those of civilian plans would create an MTF system "sized to peacetime requirements" that would not be much larger than a system sized to wartime requirements. The simulations analyzed here, however, assume premiums for the MTF-based HMO in the peacetime case are set at a level that would yield an MTF system somewhat larger than the current system. Thus, in the size-to-peacetime case, about two-thirds of non-active-duty beneficiaries would be assumed to choose the MTF-based HMO. In the wartime case, these individuals would choose the DoD-sponsored civilian fee-for-service or HMO plans, or plans offered by their employers.

Table 9 compares the costs of the DoD medical program under the size-to-peacetime and size-to-wartime cases for the three financial arrangements defined previously. The top row of the table repeats the estimates presented earlier in Table 8; the bottom row presents corresponding estimates of the cost of a DoD direct care system sized against the wartime mission. The estimates for the two cases follow the same pattern: costs are highest under "DoD pays," lowest under "non-DoD employer pays," and fall somewhere in between for "sponsor pays." As the explanation of the pattern for the wartime case parallels that offered earlier for the peacetime case, no further comment on this aspect of the estimates is given.

The new element that appears in Table 9 lies in the comparison of costs under the wartime and peacetime sizing rules. Under "sponsor pays," the estimated cost of the DoD health program is lower if the system is sized to meet wartime requirements. Under "DoD pays" and "non-DoD employer pays," however, sizing to peacetime demand reduces, although only slightly, the estimated cost of the DoD medical program.[23] This cost advantage could increase as DoD implements managed care and capitation budgeting (see Box 12).

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[23]The cost advantage of sizing to peacetime requirements in the "non-DoD employer pays" case is somewhat larger than in the "DoD pays" case because the employer-pays calculation reflects premium payments to DoD on behalf of Medicare-eligible beneficiaries who enroll in MTF-based HMOs.

**Table 9.**
**Effect of Premium-Sharing on Costs of Sizing to Peacetime or Wartime Requirements (in billions of dollars)**

| | Sponsor Pays | DoD Pays | Non-DoD Employer Pays |
|---|---|---|---|
| Size to Peacetime Requirement | 10.4 | 12.7 | 6.5 |
| Size to Wartime Requirement | 8.6 | 12.9 | 7.4 |

## Box 12.
## Cost Reductions from Managed Care

The principal impetus behind managed care, according to a June 1992 Congressional Budget Office (CBO) memorandum, is a desire to improve quality and reduce costs by eliminating unnecessary or inappropriate care. Using established guidelines, managed care employs utilization review (UR) and feedback to physicians to achieve its ends. Forms of managed care are health maintenance organizations (HMOs), preferred provider organizations (PPOs), point-of-service (POS) plans offering choices to patients, and fee-for-service (FFS) plans that impose utilization controls.

Evidence that unnecessary or inappropriate care is sometimes administered is provided in a 1987 paper from the *Journal of the American Medical Association*, cited in the CBO analysis. In certain procedures studied, one-third of the care administered was deemed inappropriate. A potential thus exists for managed care to work, but how successfully it has met this end is an open question. Indeed, the available evidence suggests that the different forms of managed care vary considerably in their effectiveness.

The goal of the Department's managed care and capitation budget initiatives is to change incentives so that DoD facilities function more efficiently and their utilization rates are reduced to levels found in civilian HMOs. IDA estimated the costs of the MTF system in the size-to-peacetime case based on utilization levels (provided by RAND) that approximate the lower per capita rates of civilian HMOs. These analyses imply that the direct costs of care could fall by about $700 million annually. In addition, the Department would have an opportunity to reduce MTF capacity and the size and number of graduate medical education programs, perhaps saving in excess of another $1 billion annually.

The reversal is explained by the different assumptions regarding who pays the employer's share for treatment received through the DoD system by beneficiaries who have third-party insurance (that is, insurance obtained through a non-DoD employer). Under "sponsor pays," as an MTF expansion pulls such people into the DoD system, DoD pays costs that would otherwise be borne by the third-party insurer. Under the other two alternatives, however, there are only minor shifts in cost to or from DoD, or the employer is responsible for the employer's share of cost, regardless of where treatment is obtained.[24]

[24]The difference between the wartime and peacetime cases under "DoD pays" and "non-DoD employer pays" could not be expected to be in proportion to the cost advantage attributed to MTFs in Section IV because many DoD beneficiaries will elect civilian plans even if the MTF system is sized to peacetime demand. Moreover, ensuring that costs are appropriately billed to third-party insurers does not eliminate the utilization component of the demand effect, part of which is due to the tendency of beneficiaries to utilize the free care provided by MTFs somewhat more intensively then they do care subject to copayments and deductibles.

## SECTION VI. CONCLUSION

It is generally agreed that DoD's direct care system should be large enough to support the wartime mission. The requirements of that mission are now much smaller than they were during the Cold War. This presents a new question to the Department of Defense: Is it cost-effective to maintain a direct care system that is sized to a peacetime demand that is much larger than the requirements of combat? Put another way, should DoD make or buy that portion of the health care required by its beneficiaries in peacetime that exceeds the care that would be provided in MTFs if the DoD system were sized to meet wartime requirements? This report follows two paths in resolving this issue: Sections III and IV examine the "make or buy" question within the context of the current arrangements for assigning financial responsibility for the employer share of health care costs. Section V discusses the impact of single-plan enrollment and alternative assignments of employer financial responsibility.

Both paths lead to the same essential element of the make/buy question: Can the Department effectively manage the demand effect associated with expanding access to the MTF system? If so, DoD could cost-effectively size the MTF system to peacetime demands for care. If not, the cost-effective solution for DoD is to size the MTF system to wartime requirements and buy peacetime care from civilian providers.

Two sources of the demand effect are identified in the report. First, beneficiaries with third-party health insurance are likely to make greater use of MTFs if these facilities become more accessible; as a result, DoD's costs would rise significantly. Under current procedures, however, very little additional revenue could be obtained from third-party insurers to offset the additional costs. Section V estimates that $3.9 billion in revenues (the difference in Table 8 between $10.4 billion in costs under "sponsor pays" and $6.5 billion under "non-DoD employer pays") could be generated annually if civilian employers of DoD beneficiaries were responsible for the employer portion of these individuals' insurance premiums. Second, a combination of beneficiary responses to free care and provider incentives within the MTF system causes utilization of DoD health care services to be much higher per capita than comparable rates under civilian health plans. RAND and IDA estimate (Box 12) that reducing utilization levels per capita to those of civilian HMOs could reduce DoD costs by $700 million. Thus, the impact of the third-party insurer component of the demand effect is about five times larger than that of the utilization component.

The increase in utilization caused by provider incentives and beneficiary behavior is an important problem which DoD is attempting to solve. Capitation budgeting and managed care hold great promise for reducing the costs of care within the DoD system. The cost reductions that can reasonably be expected are insufficient, however, under a "sponsor pays" system to make the size-to-peacetime case the cost-effective one for DoD.

Thus, sizing to peacetime requirements cannot be the cost-effective alternative unless DoD can manage the dominant component of the demand effect--the financial implications of non-payment to DoD by third-party insurers for care provided to DoD beneficiaries who are enrolled in third-party health plans. Since 1988, DoD has been authorized by statute to bill third-party insurers (except Medicare) for treatment provided in the DoD system. The revenues collected under this authority are very small, and significant hurdles remain in executing that mandate effectively. Current practice, then, closely approximates a "sponsor pays" system. The cleanest response lies in the implementation of single-plan enrollment, which would fix responsibility (either with DoD or non-DoD employers) for the employer share of health costs of DoD beneficiaries who are employed outside the Department. Making non-DoD employers responsible for these expenses would reduce DoD costs significantly and make the size-to-peacetime case the cost-effective option for the Department. Assigning DoD responsibility for the health care costs of its employed beneficiaries would entail a significant increase in DoD expenditures, but the (marginally) cost-effective response to that decision would, again, be to size to peacetime requirements.

Discussions of demand effects, the relative cost-effectiveness of MTFs and CHAMPUS, employer mandates, and Medicare subvention have been a part of the debate over the DoD medical system for some time. Work done for this study has added a more careful accounting of the full costs of DoD medical facilities, a quantitative assessment of what drives DoD health care costs, identification of the policy implications of that assessment, and an analysis of the salient aspects of single-plan enrollment for the future costs of the DoD medical system. The primary contribution of this report is in identifying management of the demand effect as the key to controlling DoD medical costs. DoD can cost-effectively size to peacetime requirements only if it manages the demand effect through a combination of:

- Single-plan enrollment;
- Assignment of responsibility for the employer share of health care costs;[25]
- Collection of payments from third-party insurers (including Medicare); and
- Managed care and capitation budgeting, possibly including copayments and deductibles for care received in MTFs.

If DoD is unable to implement these initiatives effectively, sizing to wartime requirements becomes the cost-effective alternative.

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[25]If DoD is assigned responsibility for the employer's share of health care costs for beneficiaries employed outside the Department, sizing to peacetime requirements will remain the cost-effective option, but the cost of the DoD health program will rise dramatically.

# APPENDIX. ESTIMATING THE PEACETIME REQUIREMENT FOR PHYSICIANS

This appendix describes in greater detail how the peacetime requirement for military physicians is derived from the wartime requirement. What is said concerning the estimation of physician requirements is representative of issues faced in other personnel categories.

The wartime report identified four categories of physicians that support U.S. forces in combat: physicians assigned to nonmedical units in theater; physicians assigned to nonmedical units out of theater; physicians assigned to medical facilities in theater; and physicians assigned to medical facilities in the continental United States (CONUS). The wartime requirements for these respective physician categories are discussed in *Wartime Medical Requirements* (classified Secret), prepared as part of this study.

As noted in Section I of this report, DoD must maintain a somewhat larger number of physicians on active duty in peacetime than it needs to meet the wartime requirement. Two components of the peacetime military medical establishment are closely linked to the wartime mission:

- *Physicians assigned to nonmedical units, either at home or abroad.* These personnel, who often are referred to as "structure" physicians, remain with their units in wartime and are an explicit part of the wartime requirement. In peacetime, some of them work at great distances from MTFs; others (such as most CONUS-based structure physicians) are assigned to nonmedical units but work in MTFs, primarily delivering health care to active-duty personnel.

- *A CONUS-based training and rotation base for structure (and a few other) physicians.* By providing assignments in a clinical setting, these positions help medical personnel maintain and improve their skills. In addition, they enhance morale by providing relief from assignments outside of CONUS (OCONUS).[26] In peacetime, these positions are found in graduate medical education (GME) programs, some research programs, and in CONUS MTFs. In wartime, many of the personnel occupying such billets are mobilized and sent to medical facilities in theater or in CONUS.

The peacetime requirement for military physicians is shown in Table A-1 in comparison with currently programmed FY 1999 physician levels.

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[26]It is DoD policy to operate facilities overseas in which active-duty personnel provide care for DoD beneficiaries. These individuals also require rotation base support.

**Table A-1.**
**Calculation of Physician Requirements**

| | |
|---|---|
| Structure and OCONUS MTF Positions | 3,078 |
| Rotational Positions Required | 1,853 |
| Total Physicians | 4,931 |
| Programmed FY 1999 Physician Inventory | 12,586 |

The number of rotational positions required is a product of three factors:

- The number of positions that must be maintained in the training and rotation base to support each physician requiring training/rotational support. This analysis assumes that each supported physician requires 1.2 positions in the base.
- The number of physicians who require support by the training and rotation base.
- The treatment of GME programs.

It should be noted that the general conclusions related to the requirement for active-duty physicians cannot be applied uniformly to the three military departments. There are service-specific missions, relating to both wartime and routine operational commitments, that create significant differences in total requirements for medical personnel and in the distribution of those personnel between the active and reserve components. Additionally, one service may be operating a lean peacetime force relative to its wartime requirements, while another may maintain a relatively large portion of its force overseas in peacetime, generating a much higher requirement for active physicians than the other services.

Two issues arise in the calculation of training and rotation base requirements. First, the current analysis assumes that only those physicians assigned to OCONUS MTFs or to OCONUS structure positions require support by the training and rotation base. Roughly 17 percent of Army and Air Force physicians assigned to nonmedical units, and Navy physicians assigned "with the fleet" or the Marine Corps, meet that standard. The rotation base requirement shown in the table above--1,853--represents a middle ground among conflicting opinions. Discussions are currently underway within the Department to refine the definition of personnel requiring rotation base support. Depending on the outcome of those discussions, the requirement could increase by as many as 600 positions relative to the number reported here.

The other source of disagreement concerning the training and rotation base involves the treatment of GME. This report treats GME as a source of physicians to fill the training and

rotation base. As such, GME programs cannot be said to generate an additional peacetime requirement in support of the wartime mission, but are included in the base.

Some assert that GME is an important and separate mission that cannot be satisfied within the current definition of peacetime support for the wartime mission. Currently, about 3,200 doctors participate in GME annually. Using a rough scaling algorithm and adjusting for the composition of the required GME programs, the number of GME physicians needed to support just the wartime requirement would be approximately 800 annually. These billets would have to be added to the peacetime requirement identified in Table A-1 if GME were to be treated as a separate element of that requirement.

Military department policies concerning specialty training for physicians differ dramatically. Some departments do much less GME in-house, while others do considerably more. This disparity in the approach to specialty training has no apparent effect on the relative quality of the physician corps among the military departments, and suggests that current GME programs tell us very little about GME "requirements." Granting that argument, however, and recognizing that GME programs based only on the wartime requirement will be much smaller than current programs, one could calculate a GME requirement that is as much as 800 physicians higher than the figure reported in Table A-1. Such an adjustment would raise the total requirement from 4,931 to 5,731 physicians, or about 46 percent of the physician inventory currently programmed for FY 1999.

The main purpose for pursuing this analysis is to assess whether a significant fraction of the current military medical establishment should be subject to the make/buy decision. The answer is clearly "yes." Additions to the wartime requirement of the size likely to be argued persuasively by various observers do not change the central conclusion of the analysis: about half of the currently programmed number of physicians cannot be justified on the basis of wartime requirements and should be subjected to a cost-effectiveness standard.