

GAO

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Report to the Chairman, Armed Services  
Committee, House of Representatives

April 1987

# MEDICAL READINESS

## Progress in Stating Manpower Needs



133087

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United States  
General Accounting Office  
Washington, D.C. 20548

National Security and  
International Affairs Division

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April 29, 1987

The Honorable Les Aspin  
Chairman, Committee on Armed Services  
House of Representatives

Dear Mr. Chairman:

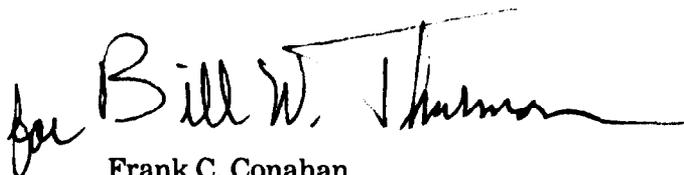
As you requested we have evaluated the military's wartime medical manpower requirements to assist your committee in assessing the services' medical readiness. This report provides an overview of management information and analysis problems which continue to confront Defense managers and the Congress in evaluating medical manpower readiness.

We found that we could not substantiate Defense statements about wartime shortfalls of medical personnel because we could not obtain complete, reliable, and consistent data needed to make valid Department-wide assessments of medical manpower needs and personnel resources.

The Office of the Secretary of Defense has several projects underway to improve the medical management information system. These projects have the potential to remedy longstanding medical manpower reporting and evaluation problems. If these projects are completed, the Department should be capable of providing timely management reports which contain the data needed to reconcile current and projected wartime medical manpower requirements, authorizations, and inventories.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report. At that time, we will send copies to the Chairmen, Senate Committee on Armed Services, House Committee on Government Operations, Senate Committee on Governmental Affairs, and House and Senate Committees on Appropriations; the Secretary of Defense; the Secretaries of the Army, Air Force, and Navy; and the Director, Office of Management and Budget. Copies will also be made available to other interested parties upon request.

Sincerely yours,

*for* 

Frank C. Conahan  
Assistant Comptroller General

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# Executive Summary

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## Purpose

Reports that wounded military personnel would not receive emergency surgery if a general war broke out have prompted public and congressional support for Department of Defense (DOD) proposals to spend over \$4 billion to eliminate shortfalls in medical equipment and personnel by the early 1990s. At the same time, large differences among the services' estimates of the number of medical personnel who would be needed to provide adequate combat casualty care have raised concerns about the credibility of DOD's medical requirements.

The Chairman of the House Committee on Armed Services requested GAO to assess DOD medical manpower requirements; review the methods used to compute, evaluate, and report those manpower requirements; and suggest ways that the services can achieve greater uniformity in determining the requirements.

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## Background

For many years, the services' differing estimates of their wartime medical manpower requirements have been questioned. For example, in 1979, the Air Force showed a requirement for fewer hospital beds in Europe than the Army, but for twice as many physicians. These types of differences have persisted and made it difficult to assess joint service wartime medical requirements, capabilities, and shortfalls.

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## Results in Brief

Each service has traditionally planned, managed, and reported on its own medical workforce. For several years, the services and the Office of the Secretary of Defense have acknowledged the need to know more precisely how many active and reserve medical personnel, by specialty, must be available in time of war and how many should be currently assigned to actual medical units. However, progress has been slow in getting the services to develop and use a common methodology to resolve persistent inconsistencies in their estimates of wartime medical personnel requirements.

The services compute and report on their medical manpower needs and personnel inventories in different ways. Because of the lack of complete, consistent, and accurate data, GAO was unable to verify the extent of DOD medical manpower shortfalls. DOD currently has efforts underway which, if adequately implemented, should improve the data available for DOD-wide assessments of medical manpower. However, given the slow progress in resolving longstanding medical manpower information problems, the Office of the Secretary of Defense needs to give special

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management attention to these efforts to ensure that they result in management reports that contain the data needed for timely readiness assessments.

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## Principal Findings

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### Shortfalls Unclear From Data

GAO requested summary data on the numbers and types of medical personnel (1) required for current and projected wartime needs, (2) authorized, and (3) available in the active and reserve forces.

For several months, the services compiled and reported this data. However, GAO found that it was inconsistent and incomplete and could not be collated and compared across services. Consequently, GAO could not develop a complete picture of medical personnel needs and inventories, nor could it make any meaningful analysis of DOD-wide shortages.

These same types of deficiencies have repeatedly been brought to DOD's attention. The current Assistant Secretaries of Defense for Health Affairs and Reserve Affairs have projects underway to address these problems.

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### Common Requirements Methodology Could Improve Analysis

A meaningful assessment of shortages begins with a reliable estimate of what medical personnel are needed to treat the anticipated casualty work load. The Assistant Secretary of Defense for Health Affairs has directed the services to use a common model to estimate and report these requirements. Efforts are underway to enhance this model to estimate all hospital-based wartime personnel requirements by medical specialty. With all the services using this model, comprehensive joint assessments could be made of both wartime medical personnel requirements and capabilities.

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### Consolidated Reporting Can Improve Readiness Information

The lack of consolidated DOD medical manpower management information and standard DOD methods for estimating medical requirements are a result of the decentralized management of military medical resources. To address deficiencies in medical planning, management, and oversight, the Assistant Secretary of Defense for Health Affairs has been designated program manager, responsible for all DOD health and medical resources. The Assistant Secretary of Defense for Health Affairs can

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provide a focal point for consolidated medical manpower information and assessments of medical readiness.

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**Recommendations**

The Office of the Secretary of Defense has several efforts underway to improve the medical management information system. Because these initiatives have the potential to produce the information needed to address recurring congressional questions about medical manpower needs and resources, GAO is not making any recommendations.

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**Agency Comments**

The Department of Defense provided official oral comments on a draft of this report, generally agreeing with GAO's conclusions.



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# Contents

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<b>Executive Summary</b>		<b>2</b>
<hr/>		
<b>Chapter 1</b>		<b>8</b>
<b>Introduction</b>	<b>Objectives, Scope, and Methodology</b>	<b>10</b>
<hr/>		
<b>Chapter 2</b>		<b>12</b>
<b>Inadequate Information Limits Assessment of Medical Manpower Readiness</b>	<b>Data for Systematic Analysis Not Available From Services</b>	<b>12</b>
	<b>Data Deficiencies in DOD Management Report</b>	<b>15</b>
	<b>Data Deficiencies Have Been Identified Before</b>	<b>16</b>
	<b>Conclusions</b>	<b>18</b>
	<b>Agency Comments and Our Evaluation</b>	<b>19</b>
<hr/>		
<b>Chapter 3</b>		<b>20</b>
<b>Slow Progress in Developing DOD Medical Requirements System</b>	<b>Prolonged Efforts to Develop Common Requirements Methodology</b>	<b>21</b>
	<b>ASD(HA) Requires Consistency in Services' Programs</b>	<b>22</b>
	<b>Observations on Why It Has Taken So Long</b>	<b>26</b>
	<b>Conclusions</b>	<b>27</b>
	<b>Agency Comments</b>	<b>27</b>
<hr/>		
<b>Appendixes</b>		
	<b>Appendix I: What Is a Requirement?</b>	<b>28</b>
	<b>Appendix II: Methodologies for Determining Wartime Medical Requirements</b>	<b>29</b>
	<b>Appendix III: Support for Use and Improvement of the Medical Planning Module</b>	<b>32</b>
	<b>Appendix IV: MPM Capabilities and Limitations</b>	<b>34</b>

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**Abbreviations**

ASD(HA)	Assistant Secretary of Defense (Health Affairs)
ASD(RA)	Assistant Secretary of Defense (Reserve Affairs)
CONUS	Continental United States
DOD	Department of Defense
DRB	Defense Resources Board
FYDP	Five Year Defense Plan
GME	Graduate Medical Education
JCS	Joint Chiefs of Staff
JOPS	Joint Operation Planning System
MPM	Medical Planning Module
MTOE	Modified Table of Organization and Equipment
OJCS	Office of the Joint Chiefs of Staff
OSD	Office of the Secretary of Defense
POM	Program Objective Memorandum
PPBS	Planning, Programming, and Budgeting System
RCCPDS	Reserve Component Common Personnel Data System
TOE	Tables of Organization and Equipment
WMPS	Wartime Medical Posture Study

# Introduction

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Medical readiness is the capacity to provide medical care to members of the armed forces during war. For several years Department of Defense (DOD) officials have warned about a serious shortage of physicians, nurses, and enlisted medical personnel and about the effects of this shortage on the military's ability to care for the sick and wounded in time of war. For example, in October 1983, the former Acting Assistant Secretary of Defense for Health Affairs (ASD[HA]) noted that DOD had predicted wartime requirements for 7,000 surgeons, of which only 2,500 (35 percent) were then available. He concluded that if a general war should occur, "we could not treat our casualties today because of our lack of qualified and trained manpower."<sup>1</sup>

More recently, the ASD(HA) told members of the House Committee on Armed Services that

"there are today significant shortfalls in the number and type of health care professionals in the active and reserve forces that would be needed to adequately provide medical care to our forces in the event of full mobilization for war. We have a shortfall of about 7,800 physicians and 32,800 nurses needed to meet all the wartime requirements for medical care for our forces upon full mobilization. In the case of physicians, there are especially critical shortfalls in certain specialties, particularly those of general and orthopedic surgery and anesthesiology. For these three specialties collectively, there is a current shortfall of nearly 4,900 physicians needed to fully satisfy wartime mobilization requirements."<sup>2</sup>

Since 1978, reports on numerous studies have documented deficiencies not only in the number of medical personnel, but also in the many other components of wartime medical readiness. Virtually all of them have concluded that the services' medical readiness assets—such as hospitals, equipment, supplies, and people—will not meet the predicted requirements. While the magnitude of the projected shortfalls varies among the analyses, the implication is clear and consistent across the studies: The services will not be able to provide adequate medical support if a full-scale war occurs.

DOD and the services have moved to remedy shortfalls in many medical readiness components. For example, the services plan to spend about \$4 billion to procure and support deployable medical systems through the early 1990s. DOD officials have assured the Congress that with these

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<sup>1</sup> Address by John F. Beary, III, M.D., to the 90th Annual Meeting of the Association of Military Surgeons of the United States, Oct. 31, 1983.

<sup>2</sup> Prepared statement of William Mayer, Assistant Secretary of Defense (Health Affairs), during hearings before the Subcommittee on Military Personnel and Compensation, House Committee on Armed Services, Sept. 19, 1986.

procurements the services can meet their anticipated hospital and medical equipment requirements.

In one key component of medical readiness—medical manpower—DOD management and congressional attention has focused not only on the issue of what to do to remedy projected shortfalls, but also on how to predict wartime requirements.

For several years, wide disparities have been noted in the services' estimates of the numbers and types of medical personnel needed for combat casualty care. For example, the 1979 Defense Resource Management Study found that

- the Air Force showed a requirement for fewer overseas hospital beds than the Army, but for twice as many physicians; and
- the ratio of anesthesiologists to surgeons was 1 to 2 for the Navy, 1 to 9 for the Army, and 1 to 19 for the Air Force.<sup>3</sup>

Since then, Office of the Secretary of Defense (OSD) annual reviews have pointed out similar disparities in the services' estimates of medical requirements.

According to OSD officials, these inconsistencies have had adverse effects on efforts to improve medical readiness. For example, the inconsistencies hindered approval of funds for deployable medical equipment. In July 1982, the then-acting ASD(HA) told Army, Navy, and Air Force manpower officials that the persistent disarray of predictions discredited DOD statements to the Congress that there were critical shortfalls and that the services had sound rationales for their medical programs. More importantly, in wartime these inconsistencies could lead to agonizing choices for field medical commanders, who would have no DOD standard to help them allocate scarce personnel resources among the services. Also, these disparities make it difficult to develop effective joint service mobilization plans and to assess each service's need for additional medical manpower.

The services began to develop a common methodology for estimating hospital-based wartime requirements for medical personnel in January 1980. The services and OSD have told the Congress that the use of this methodology will generate consistent predictions of requirements for

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<sup>3</sup> Donald B. Rice, Defense Resource Management Study, Final Report, Feb. 1979, p. 93.

medical support. However, its use, which was originally scheduled for 1981, has been repeatedly delayed.

## Objectives, Scope, and Methodology

We initiated our review at the request of the Chairman, House Committee on Armed Services, to assess the military's wartime medical manpower requirements. To address the Committee's concerns, we identified three principal questions to be answered:

1. What is the basis for DOD reports of wartime medical manpower shortfalls?
2. Will adoption of a uniform system for predicting medical requirements improve DOD reports on medical manpower?
3. What other actions are needed to improve DOD management reports on medical manpower readiness?

To assess DOD's medical manpower requirements, inventories, and shortfalls, we met with representatives of the Offices of the ASD[HA] and the Assistant Secretary of Defense for Reserve Affairs (ASD[RA]), and the Offices of the Surgeons General of the Army, Navy, and Air Force. We also met with representatives from the Army's Health Services Command responsible for medical combat development activities.

We relied primarily on military medical manpower, personnel and budget data provided by the ASD(HA) and the Surgeons General. In some cases, data from the Surgeons General was specially formatted, collated, or assembled at our request. Most of the data was raw numerical information which we further sorted manually and by computer to analyze the services' medical manpower requirements and inventories. We also reviewed DOD and service documents on methods to determine and document manpower requirements.

Our work was performed from December 1984 to September 1986, in accordance with generally accepted government auditing standards.



# Inadequate Information Limits Assessment of Medical Manpower Readiness

DOD management information and data from the services could not be used to substantiate and clarify DOD statements about wartime medical manpower shortfalls. The services develop and report medical manpower and personnel management information differently. Analysis of DOD shortfalls requires comparable data for all the services on the numbers and types of medical personnel needed and available. We found that this information was not routinely available and, in some cases, could not be assembled.

## Data for Systematic Analysis Not Available From Services

DOD data showed wartime medical shortfalls to be in the range of 1,500 to 2,200 physicians, 14,300 to 19,100 nurses, and 29,000 to 60,000 enlisted medical personnel. To substantiate these estimates, we asked the services for information about the numbers and types of medical personnel available, authorized, and needed overseas and in the continental United States (CONUS) in the event of a full-scale war. Specifically, each service was asked to provide its (1) requirements (wartime demand for manpower), (2) authorizations (funded manpower spaces), and (3) inventory (personnel available to fill authorizations) in terms of

- total number of physicians
  - by specialty
  - active/reserves,
- total number of nurses
  - active/reserves, and
- total number of enlisted medical personnel
  - active/reserves.

This information could substantiate the basis for DOD statements about personnel shortages if either requirements or authorizations exceeded inventory. (App. I defines and describes manpower requirements and authorizations in more detail.)

We found that each service has its own terms, formats, and reporting periods. There was a need to bring this disparate data together, standardize it, make it consistent for the same time periods, and put it in a usable form and format for analysis. We expected to achieve this through the use of standardized data collection formats and follow-up interviews with service officials to clarify data submissions. ASD(HA) officials reviewed our data formats. They agreed that since we were

asking for aggregate management-level information, the services should be able to produce it immediately.

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## **Results of Data Request**

We requested data from the Surgeons General in February 1985, which would allow a comparison of each service's computations of current (fiscal year 1986) and future (fiscal year 1990) wartime requirements for medical units and personnel, with programmed authorizations and assigned end-strengths (inventories).

The services provided data in a piecemeal, ad hoc fashion. The Army and the Navy responded over the course of more than four months, citing various reasons for the delays: data was not kept in the formats requested, collecting and verifying the data was a lengthy process, and other work priorities. In some cases, data sources were not specified, making follow-up difficult and verification impossible.

None of the services provided separate requirements data for fiscal year 1986. Both the Navy and Air Force stated that the fiscal years 1986 and 1990 requirements were the same. Army officials indicated that producing the fiscal year 1986 data in the format requested would be a lengthy, time-consuming process because data from many sources would have to be tabulated and summarized. The Navy did not provide separate authorization data, explaining that it was programming authorizations to meet its requirements. The Army provided aggregate authorization data, but the medical specialty data was incomplete.

It took the Army and Navy longest to collect and report reserve force inventory data, even though the reserves have a substantial combat medical care mission. For example, in the Army, about 80 percent of the combat medical care units are reserves. The Air Force was more prompt; however, its information was not structured so that inventory and requirements could be compared.

In some cases, when attempting to clarify a given response, the services provided different data, making it difficult to obtain definitive, consistent responses. For example, the Army provided three different sets of numbers for its current inventory of medical units.

The services reported the requirements and inventory data for different time periods and in several different formats which could not be collated and compared. The services did not define and report data on requirements, authorizations, and inventories in the same way. All the

services expressed concerns about the accuracy of their reserve forces data.

It was especially difficult to evaluate physician specialty shortfalls because the services differed in the way they reported data on graduate medical education (GME) officers—physicians pursuing specialized medical postgraduate training. The services operate large GME programs to produce the kinds of medical specialists the military needs. In 1985, DOD had almost 4,000 GME officers. To ascertain the extent of specialty shortfalls, specific information on the medical skills of GME officers is needed. We could not compare the services' data on GME officer requirements and inventories. For example, although the Army data reflected no requirement for GME officers, Army officials said that the inventory data which they provided us included residents, but not interns. The Navy showed a CONUS requirement for 814 GME officers—about one-third of the total Navy CONUS requirement; however, medical specialty data for these officers was incomplete. The Air Force provided aggregate active and reserve force data for their GME requirements and authorizations, but none for inventory.

Skill substitution was another major problem in attempting to use the service data to compare physician specialty requirements and inventories DOD-wide. All the services indicated that in wartime they plan to substitute doctors in certain medical specialties for other specialists in short supply. For example, the Navy plans to use obstetricians/gynecologists to fill the need for general surgeons and the Air Force gives its dental officers training to serve as surgical assistants in wartime. However, because the services had different skill substitution policies we do not know the extent to which particular specialty shortfalls could be reduced on a DOD-wide basis by substituting physicians in other clinical specialties.

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## Results of Other Data Requests

When we briefed House and Senate Armed Services Committees representatives on our initial data request results, they asked us to make additional efforts to clarify the services' data to assist them in preparing for hearings on medical readiness scheduled for September 1985.

In August 1985, we requested statements from the Secretaries of the Army, Navy, and Air Force regarding wartime medical needs and projected assets. We had the same problems in obtaining and clarifying this data as in our earlier request. The Air Force and Army did not respond

until October 1985, and the Navy provided an official response in February 1986. The services gave us either very detailed, unsummarized data presented in service-unique terms which were not defined; or consolidated data from many sources which, in some cases, were not identified. For much of this data, these problems made it impossible to understand, verify, consolidate, and compare the data.

During the September 1985 hearings on medical readiness, the Senate Committee on Armed Services requested the services to provide data on the total fiscal year 1986 wartime medical requirements and available personnel by medical specialty, in both active and reserve forces. The responses showed that there was no consistency among the services. Data was reported for different time periods; key terms were undefined; and medical specialty nomenclature differed. Verification of this data would have been very time-consuming and labor-intensive.

We encountered the same types of problems doing the work leading to our report, Will There Be Enough Trained Medical Personnel in Case of War? (GAO/HRD-81-67, June 24, 1981). We asked DOD for data on the personnel needed to fully staff wartime medical facilities and deployable systems available at that time. The data did not provide a complete picture of these requirements, although DOD medical mobilization planners told us that they recognized the need for this information. The criticism we made of this data collection and analysis deficiency in our 1981 report bears repeating:

"DOD needs contingency plans to deal with post-mobilization shortages. Much of its medical readiness planning emphasis has focused on long range goals and objectives to effectively address anticipated changes in threat, personnel, and other factors in future years. However, plans for dealing with medical personnel shortages expected to occur if the Nation went to war tomorrow, especially during the early months after mobilization, are incomplete" (p. 20).

Five years later, the services still could not provide the data.

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## Data Deficiencies in DOD Management Report

Recognizing the limitations of the data supplied by the services, we attempted to use the annual report on DOD Health Manpower Statistics to evaluate medical manpower requirements, authorizations, and inventories. The report is compiled from data submitted by the Army, Navy, and Air Force and is supposed to be used in the development and review of DOD health manpower programs and policies. However, this report had limitations.

For example, the data in the fiscal year 1984 report was incomplete or questionable. The report did not provide sufficient data to establish shortages or overages of medical personnel. For example:

- Its statistical data for the active-duty force was incomplete and unreliable.
- It provided no data on the reserve forces.
- It provided no data on current fiscal year requirements.

Army, Navy, and Air Force officials responsible for submitting the data agreed that the report contained inaccurate, incomplete, unverified information that was not comparable across the services. They also said that the services were not using the same reporting periods, and were defining and reporting information on requirements, authorizations, and personnel inventories differently. Consequently, the report was not useful for the monitoring of military medical manpower needs and resources.

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## Data Deficiencies Have Been Identified Before

For many years, deficiencies in DOD management information have prevented meaningful accounting, reporting, and evaluation of medical manpower shortfalls. The problems we encountered have been identified and brought to the attention of OSD and the services many times, as excerpts from the following reports illustrate:

- Report of the Military Health Care Study (Department of Defense, Department of Health, Education and Welfare, Office of Management and Budget, Dec. 1975)

“Within DOD there was recognition that planning, analyses and management of the Military Health Services System based on comparisons among the services and between military and civilian systems were hampered by the lack of standard and adequate data and information systems” (p. 13).

- Will There Be Enough Trained Medical Personnel in Case of War? (GAO/HRD-81-67, June 24, 1981)

“DOD does not have complete, reliable estimates of personnel requirements as constrained by available medical facilities. Such data are vital for effective planning for near-term contingencies....”

“Further, the services were inconsistent and incomplete in reporting the number of available personnel, making meaningful analyses of DOD-wide shortages difficult” (p. 17).

- Reserve Component Medical Manpower (DOD Inspector General Report, Aug. 16, 1985)

"The Services' medical information systems did not provide management with data relating personnel strength within each specialty to wartime requirements" (p. 6).

- Annual Report of the Reserve Forces Policy Board Fiscal Year 1984 (Nov. 1985)

"A comparison of Defense Manpower Data Center (DMDC) and Service-provided data for Reserve medical personnel has revealed inconsistencies. The Board is concerned because policy decisions affecting Reserve component medical personnel are made utilizing DMDC data" (p. 6-1).

- Medical Readiness in the U.S. European and Pacific Commands, House Committee on Appropriations Surveys and Investigations Staff Report (Feb. 1986)

"The services state their wartime staffing requirements without regard for specialty mix. Combat health care requires a mixture of physicians heavily weighted in casualty specialties such as orthopedic surgery. These skills are required in sufficient numbers to mandate specifically stated requirements if proper medical care is to be provided" (p. 20).

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### OSD Refining Medical Manpower Data

Since 1985, OSD has undertaken several actions to improve the data available for monitoring military medical manpower requirements and assets. Among the most significant efforts are the following:

- The ASD(HA) has directed the services to provide periodic reports on requirements, authorizations, and inventories by specialty for the total active and reserve medical force to include standby reserve and retired personnel. In coordination with the ASD(RA), ASD(HA) staff plans to use this data to advise the services on overages and shortages.
- On March 10, 1986, DOD issued a revised instruction (DOD Instruction 7730.36) and data formats for recording and reporting selected DOD medical manpower information. The instruction states that the ASD(HA) serves as the DOD contact point for official DOD information on health personnel and manpower. Under the new instruction the services are required to submit data to ASD(HA) on reserve component personnel requirements, authorizations, and inventories. Health Affairs officials said that the revisions are intended to correct known data reporting deficiencies in the Health Manpower Statistics Report and improve the usefulness of future reports to DOD managers and others.

- In addition, DOD has contracted for the development of a computer data base to compare by specialty current wartime medical personnel requirements, peacetime manpower authorizations, and actual manning levels for reserve component medical units. This system is called the Reserve Medical Manpower Information System (REMMIS). Currently this system is complete and operating for the Army Reserve, Army National Guard, Air National Guard, and the Air Force Reserve. The Department is now in the process of collecting the data for the Navy Reserve.

At the time of our review, DOD reports using data from these efforts were not available.

## Conclusions

We were unable to substantiate and clarify DOD statements about medical manpower shortfalls from the data the services provided or from the data in DOD management reports. Our evaluation was hampered by the lack of complete, reliable, and consistent data for the services. Therefore, we are unable to respond to questions concerning the number and mix of personnel DOD requires for medical readiness, the number and mix of personnel currently available to meet the requirements, and, in the near term, the number and mix of personnel DOD can acquire through its programmed authorizations.

At the time of this review, DOD had projects underway to improve medical management information. Some are designed to improve standardization of data elements to bring about consistent, comparable, and reliable information. Such standardization and integration of medical manpower information is essential to perform meaningful cross-service evaluation of wartime medical shortfalls.

Given the history of slow progress in resolving basic problems of medical manpower information, we believe that OSD must give special attention to managing current efforts to improve information to ensure that longstanding evaluation problems caused by differences in the services' accounting and reporting of medical manpower needs and assets are resolved. Specifically, OSD needs to ensure that these information improvement projects produce management reports that contain the data needed to reconcile current and projected wartime medical manpower requirements, authorizations, and inventories in the aggregate and by occupational categories for both the active duty and reserve forces.

Because none of the information improvement efforts DOD identified were completed at the time of our audit, we do not know whether the systems either can or will be used to produce management reports that contain the data needed to reconcile current and projected wartime medical manpower requirements, authorizations, and inventories in the aggregate and by occupational categories for both the active duty and reserve forces. However, the new initiatives are directed toward resolving the longstanding medical manpower information problems, and, if successfully implemented, they appear to have the potential for significant progress in that objective. Therefore, we are not making any recommendations at this time.

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## **Agency Comments and Our Evaluation**

DOD provided official oral comments on a draft of this report. DOD agreed that the data deficiencies we identified deterred meaningful reporting and evaluation of medical manpower needs and resources on a DOD-wide basis. They acknowledged that the deficiencies have been brought to the attention of the OSD and the services many times. They agreed that OSD must give special attention to managing the current efforts to improve information to ensure that the data deficiencies that have precluded effective evaluation of wartime medical shortfalls are resolved. DOD expanded on the report's description of current efforts to improve information in the reserve forces, pointing out that DOD has taken the lead to improve the Reserve Component's Common Personnel Data System (RCCPDS). As a result of this effort, a new medical professional inventory reporting system has been implemented, which provides the inventory of health care personnel available in the force (active, reserve, retirees, and civilian personnel).

# Slow Progress in Developing DOD Medical Requirements System

We reported in 1981 that the services were developing a joint service model and common planning factors to make estimates of medical personnel requirements consistent and that DOD expected to have the model and planning factors available in the summer of 1981.<sup>4</sup> Neither was available as planned.

In 1985, the ASD(HA) directed the services to use the joint service model because "the problems engendered by the differences among the services methods of predicting wartime medical manpower requirements, which were first recognized in 1978, have proven intractable." The ASD(HA) issued this directive when he could not get answers to the following questions:

1. What are the services' predicted requirements for wartime medical manpower and units?
2. What apparent inconsistencies exist in those requirements? To what extent can those apparent inconsistencies be explained by service-specific requirements?
3. What portion of the total medical force must be on active duty to ensure the ability of the military medical departments to mobilize for war? What must the specialty composition of that minimum active duty force be?
4. Can the services meet their net wartime medical manpower requirements within the current authorizations for active duty and Reserve Component billets? If not, what are the shortfalls?

The chronology of events leading to the ASD(HA) directive illustrates the problems of getting joint service action.

<sup>4</sup>Will There Be Enough Trained Medical Personnel in Case of War? (GAO/HRD-81-67, June 24, 1981), p. 15.

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## Prolonged Efforts to Develop Common Requirements Methodology

The services' predictions of their wartime medical manpower requirements first became an issue in 1975 when the Report of the Military Health Care Study<sup>6</sup> recommended that medical readiness requirements should be the primary determinant of the size and composition of the peacetime medical force. In 1976, the Joint Chiefs of Staff (JCS) sponsored a study of medical capabilities to define those requirements. It evaluated the requirements for support of a major conventional conflict between NATO and the Warsaw Pact. The study showed that the services were determining their requirements differently and producing different estimates of the numbers of physicians required to operate hospitals in the projected war theaters. (App. II describes the general DOD approach and the methods each of the services used to determine requirements.)

These differences appeared again in the services' 1978 budget proposals. In August 1978, the Secretary of Defense directed the services, the JCS, and various elements of OSD to resolve the disparities by conducting what became known as the Wartime Medical Posture Study (WMPS). The purpose of WMPS was to provide a common foundation for the services' formulation and OSD's review of wartime medical support requirements. The study, published in 1980, concluded that predictions of wartime medical requirements should be based on predictions of patient work load, and recommended a specific methodology for producing future estimates of wartime medical requirements related to direct patient care.

The WMPS methodology was subsequently developed into the Medical Planning Module (MPM) of the JCS Joint Operation Planning System. The MPM is intended to provide a consistent computer-based means of predicting and evaluating medical requirements for all the services.

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## Services Slow to Use Common Methodology

Despite assurances by all the services that the WMPS methodology incorporated in the MPM would be used to develop consistent estimates of medical requirements, disparities in the services' statements of physician requirements reappeared in 1982. (At the time, the MPM was only capable of projecting total physician requirements for a war theater.)

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<sup>6</sup>Report of the Military Health Care Study (Department of Defense, Department of Health, Education and Welfare, Office of Management and Budget, Dec. 1975), p. 8.

The Navy's requirement for physicians as reported in its Program Objective Memorandum<sup>6</sup> (POM) fiscal year 1984-1988 statement changed markedly from the calculation in the WMPS, as did the Army's requirement for hospital beds. Only the Air Force's requirement remained consistent. ASD(HA) officials attributed these disparities to the fact that the Air Force alone had continued to use the WMPS methodology. In July 1982, the ASD(HA) requested the services to take steps to eliminate these disparities. After protracted negotiations, each of the services committed itself to the use of the MPM for calculating wartime medical requirements, and to a joint effort to complete the data base for the MPM. Despite these efforts at reconciliation, the POMs the services submitted to OSD for review in 1983 and 1984 still showed disparities in requirements estimates.

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## ASD(HA) Requires Consistency in Services' Programs

While each service independently develops its own statement of medical requirements, it ultimately must defend its choices to the Secretary of Defense through the ASD(HA). The ASD(HA) serves as the principal staff assistant and advisor to the Secretary of Defense for all DOD health policies, programs, and activities. In October 1984, the Secretary of Defense approved a new charter for Health Affairs, which increased the ASD(HA)'s authority in order to improve the management of the military health care system. previously, the ASD(HA) participated only in the development and review of the services' medical readiness programs. He had no authority to direct the services to take specific actions or to allocate resources. Under the new charter, the ASD(HA) has been designated as the "program manager" responsible for oversight of all DOD health and medical resources.

The expanded role of the ASD(HA) includes

- developing the medical portion of the Defense Guidance;
- reviewing all POM and budget submissions to determine priorities and resources for health and medical programs (performing this function in coordination with the Assistant Secretary of Defense [Comptroller] and Director, Program Analysis and Evaluation);
- reviewing, evaluating, and making recommendations to the Secretary of Defense on health requirements and priorities; and
- reviewing and evaluating plans and programs to ensure adherence to approved policies, standards, and resource guidance and decisions.

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<sup>6</sup>The Program Objective Memorandum (POM) is a document in which each military department and Defense agency recommends and describes annually its total resource and program objectives.

The ASD(HA) has stated that, as program manager, he will centralize policy direction, planning, and resource allocation, although execution of the medical program will continue to be decentralized. One of the Assistant Secretary's goals as program manager has been to direct decision-making, planning, and resources toward achieving and maintaining medical readiness. In the area of manpower, this has meant focusing priorities for medical resource programs on resolving problems of wartime shortages of certain medical specialties.

The primary organizational tool available to the Assistant Secretary to "supervise" and direct the services' medical programs, including readiness-related activities, is through interaction with the military departments in the planning, programming, and budgeting system (PPBS) process. According to ASD(HA) officials, ASD(HA) works with the services and the JCS on the development of predictive models for units and personnel and provides the guidance that the services use to build their respective medical forces.

The services submit data to ASD(HA) on wartime personnel requirements. ASD(HA) also requires each service to submit data on the population at risk, casualty rates, the evacuation policy<sup>7</sup> that the service can support, and the number of beds and personnel needed and available.

ASD(HA) reviews the service programs for (1) compliance with DOD guidance, (2) consistency within that service by requiring the use of existing models and comparing previous and current statements of requirements, and (3) consistency among the services by requiring the utilization of standard methodologies and statistical techniques. If there is inconsistency in the service submission, or between the services, ASD(HA) reviews the planning factors, assumptions and methodologies to resolve the problem. If the services do not comply with Defense Guidance, then the ASD(HA) staff works with the services to obtain compliance. If compliance still is not obtained, and the issue is of sufficient importance, it may be referred to the Defense Resources Board (DRB).<sup>8</sup>

In August 1984, following the DRB's review of disparities in the services' wartime requirements program, the Deputy Secretary of Defense

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<sup>7</sup>The evacuation policy is the maximum number of days a patient will be permitted to stay in a war theater hospital before being returned to duty or evacuated out of the war theater.

<sup>8</sup>The DRB is chaired by the Deputy Secretary of Defense (DEPSECDEF) and composed of top-level Defense executives. The DRB reviews the services' POMs and makes the final changes and decisions with respect to all major programs. The DRB decisions are documented in the Program Decision Memorandum, which becomes the basis for the DOD budget.

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directed the ASD(HA) to lead a study to determine precise fiscal year 1986-1991 program requirements for wartime medical units and manpower needed to meet the force buildup.

The ASD(HA) established a General Officer Steering Committee for the study, chaired by the Deputy Assistant Secretary of Defense (Medical Readiness). The ASD(HA) directed the Committee to evaluate the services' predicted requirements, report any inconsistencies, determine the medical force needed on active duty, and ascertain whether the services had sufficient authorizations to meet their requirements. In addition, he directed them to find out what economies could be achieved through inter-service sharing of hospitals behind the combat zone.

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### Study Reaffirms Staffing Inconsistencies

The final report of the Study of Wartime Medical Requirements was forwarded to the Deputy Secretary of Defense on March 15, 1985. In his memorandum accompanying the report, the ASD(HA) reported the following findings:

1. The predicted requirements for units were consistent and as accurate as the casualty rates on which they were based.
2. Unacceptable inconsistencies remained in the services' predictions of manpower requirements. It was not possible to reduce those inconsistencies because the services used fundamentally different methods to arrive at their predictions.
3. It was not possible to determine either the portion of the total medical force that must be on active duty or the required specialty mix of the wartime medical force.
4. None of the services could meet its predicted wartime manpower requirements with its current active-duty and reserve medical authorized assets.

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### ASD(HA) Acts on Study Results

In his March 15, 1985, memorandum to the Deputy Secretary of Defense, the ASD(HA) recommended remedies for the problems noted in the study. Having concluded that DOD "will never develop a consistent, usable set of predictions of wartime medical requirements until we adopt a common, comprehensive method for making them," the ASD(HA) informed the Deputy Secretary of Defense that he planned to direct

- the Health Affairs staff to assume oversight by participating with each service in the development of its wartime medical requirements as well as guiding the completion and enhancement of methods for making those predictions;
- that the MPM be used in predicting all work load-related wartime medical requirements, beginning with POM fiscal year 1988-1992; and
- that, in the interim, the best possible reconciled estimate of joint wartime medical manpower requirements be prepared and used to identify necessary programs for fiscal years 1987-1991.

The ASD(HA) told the Deputy Secretary of Defense that these measures would permit the formulation of the most consistent possible fiscal year 1987 budget submission for medical manpower and would ensure that the medical services' manpower programs would be fully "rationalized," beginning in fiscal year 1988. The Deputy Secretary approved the recommendations on March 22, 1985. Others have also recommended required use of the MPM to produce consistent estimates of requirements. (See app. III.)

Since mid-1985, the Health Affairs staff has been working with the services and the Office of the Joint Chiefs of Staff (OJCS) to implement the recommendations approved by the Deputy Secretary. Some medical planners have expressed reservations about using the MPM to develop medical requirements because it does not consider service differences. Consequently, much time and effort has still been devoted to getting the services and OJCS to agree to use and enhance the MPM for planning and programming purposes. Despite this, the OJCS and the services had made significant progress during 1986 in refining the MPM data base to provide some physician specialty data and aggregate nurse and enlisted requirements which was used during the fiscal year 1988-1992 POM cycle. ASD(HA) plans to further enhance the specialty-level detail of the MPM so that it can be used to determine requirements for all categories of health care providers (including dental, nursing, and enlisted specialties) for the fiscal year 1989-1993 POM cycle.

Currently, the ASD(HA) and the services are also completing work in developing detailed medical requirements and simulation models at the Army's Academy of Health Sciences. This set of computer models is primarily intended for the design and staffing of specific standardized hospital systems. When complete, the models will also simulate theater medical facility operations and medical evacuation. The simulations are expected to allow each medical service to design a workable combat medical system and to validate resource requirements generated by the

more aggregate models, like MPM. Alternatively, the models are expected to enable readiness planners to evaluate the wartime capabilities of the active and reserve medical forces.

Work on these models has been underway for several years. In February 1985, the ASD(HA) requested that the Secretary of the Army expedite completion of these models so that they would be available for developing and reviewing the services POMS. According to the ASD(HA), the MPM and the Academy of Health Sciences force structure models will complement each other in providing the tools for a standardized process for determining work load-based wartime medical requirements. Appendix IV discusses some of the capabilities and limitations of the MPM to plan and program medical manpower requirements and evaluate statements about shortfalls.

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## **Observations on Why It Has Taken So Long**

The need for a common methodology to estimate wartime medical requirements has been recognized for over 10 years, and since 1980, the services and OSD have agreed to develop and use the MPM methodology to achieve consistency. Why, then, has it taken 6 more years and a directive from the Deputy Secretary of Defense to get the MPM on line? Our work suggests two primary reasons for the slow progress.

First, no management system had been established to oversee development and use of the medical requirements models throughout DOD. While the Army was the lead agency for model development, our discussions with Army and ASD(HA) officials revealed that no systematic management or resources was dedicated to this effort.

Work on the tri-service models and data bases proceeded slowly until the ASD(HA) formally tasked OJCS and the Army to develop action plans with milestones and statements of the resources needed to complete the modeling efforts. The ASD(HA) staff has closely monitored the model development efforts since then.

The second reason for slow progress stems from ASD(HA) plans to use the MPM not just to estimate wartime medical requirements, but also to determine the numbers and kinds of medical personnel the services should obtain. The services are accustomed to deciding for themselves how much and what kinds of manpower are needed. Traditionally, OSD does not become involved in decisions regarding the occupational mix of each service's force. Once wartime force structure requirements are

identified, each service makes its own decisions as to the size and composition of its combat support forces, including medical personnel. Within a service's total program, medical manpower requirements compete for funding priority along with other programs.

Using the MPM, the ASD(HA) has a quantitative basis for evaluating whether the services are programming sufficient medical manpower in the specialties needed for combat casualty care. OSD used the MPM methodology and data to evaluate the services' statements of physician requirements in the 1984-1985 study of wartime medical requirements. Using the MPM methodology, ASD(HA) determined that the Army had underestimated its requirements for physicians in the war theater. The ASD(HA) recommendation, accepted by the Army, was for 760 additional physicians.

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## Conclusions

To begin to address the question of wartime shortfalls of medical personnel requires effective DOD assessments of medical manpower requirements and assets. The MPM provides a common foundation for the services' formulation and OSD review of and reporting on the services' wartime medical manpower requirements. The lack of consistent information about requirements and capabilities and the multitude of conflicting statements has led to confusion and skepticism on the part of the Congress regarding the combat situations DOD is prepared to meet with its available medical resources and about the actions needed to improve medical readiness. To answer congressional and top-level DOD management questions about medical readiness requires comparable summary management information from all the services and a consistent, analytical DOD-wide planning and review framework. As DOD medical program manager, the ASD(HA) provides a focal point to which the Congress can go for consolidated medical manpower information and assessments of medical readiness.

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## Agency Comments

DOD agreed that it has taken a long time to implement a standardized system for determining personnel requirements. However, DOD emphasized that, with the cooperation of the OJCS and the services, the decision to use the MPM was implemented in a most expeditious manner. As a result, the staffing requirements for hospital-based work load are directly comparable between the services. However, some personnel requirements are unique to a service and, therefore, not comparable, such as the Navy's need for underseas medicine physicians.

# What Is a Requirement?

Manpower requirements are statements of the quantity and quality (skills and paygrades) of military personnel needed to accomplish assigned wartime tasks and missions. Manpower requirements are initially developed without considering funding constraints or the availability of personnel, equipment, and organizations. Later, during various phases of the annual PPBS cycle, requirements are constrained by these considerations and are called "authorizations."

The services use many different terms to describe these constrained manpower needs, such as "programmed manning," "programmed authorizations," "force structure authorizations," "funded peacetime authorizations," and "authorized strength." Very often, the term "authorized position" refers to the unit positions approved by the Secretary of Defense and contained in the Five Year Defense Plan (FYDP). The many different meanings of the terms "requirements" and "authorizations" throughout DOD can make it difficult to analyze and compare services' data.

We first noted the analysis problems caused by these different terms in our 1975 report on field grade officer requirements:

"The term "requirements" differs in meaning not only among the services but also among their suborganizational elements. Additionally, what constitutes a requirement often depends on a program's stage of development. For example, service manpower sponsors authorize positions against structure requirements—which represent full wartime needs. These authorized positions then become requirements for personnel managers charged with procurement and training. Thus one man's authorizations become another man's requirements. We also encountered other terms with differing meanings and a significant amount of unique terminology in each service."<sup>9</sup>

<sup>9</sup>Development of Field Grade Officer Requirements by the Military Services (GAO/FPCD-75-137, Mar. 25, 1975), p. 1.

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# Methodologies for Determining Wartime Medical Requirements

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The services determine their wartime requirements in accordance with the annual Defense Guidance, which specifies the particular war situations the services should be prepared to fight. This guidance contains goals and objectives for the military departments in developing their 5-year programs. It also states the work the military medical departments need to do to accomplish their wartime missions. The guidance requires each service to develop the necessary programs to equip, man, and train a medical force that would ensure adequate support for the operating forces. In programming medical manpower, the guidance calls for the services to allocate to the active component only that manpower required for wartime before reserve-component assets will become available. For several years the guidance has required the services to use consistent methods based on work load to determine requirements for medical personnel.

Medical planners at the DOD staff and service levels have developed procedures for estimating medical requirements for various mobilization situations. For each wartime scenario, the service determines the casualty rates for its own forces. Casualty estimates and the evacuation policy drive the requirements for hospital beds in the theater and in CONUS. The beds required are then translated into the number and types of medical units needed to support the operating forces. The types and total numbers of medical personnel required are then determined by adding personnel requirements for all the medical units.

Because of the distinctively different missions of the Army, Navy, Air Force, and Marine Corps in a combat environment, each service develops its own estimates of medical manpower required for mobilization. Each service also determines the portion of its medical requirements for which it will seek resources through the PPBS. The services gave the following explanations for how they determined their medical manpower requirements. These descriptions do not yet reflect any changes to the services procedures which the ASD(HA) directive to use the MPM to determine wartime requirements for personnel, beginning with the fiscal years 1988-1992 POM, may necessitate.

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## Army Procedures

The Army determines its medical personnel requirements as part of the total Army manpower management process. The initial step in this process is the Total Army Analysis, which develops the medical force structure requirement needed to execute and support Army contingency missions in the Defense guidance scenario. The number of support units, including medical units, is based on Army doctrine and specifies a ratio

of medical units to combat units supported. After the type and number of medical units are identified, the manpower required to staff these units is obtained from the Tables of Organization and Equipment (TOEs). The TOE specifies the number and type of personnel in each Army unit. The TOE is prepared by the medical combat developer, using Army methodology and models.

A TOE prescribes the structure, manpower, and equipment for five organizational options (from full manning to cadre levels) for a particular type of unit. These options provide a model for fielding the unit at full or reduced capability. A unit organized at full TOE capability is defined as having the minimum essential personnel and equipment for sustained operations. TOEs, however, specify only requirements. The Modified TOE (MTOE) is the authorization document for an actual unit. It shows the actual organization option selected from the TOE, as amended, to fit the unit to a specific geographical or operational environment and to reflect manpower and equipment constraints. The approved MTOE document is the authorization for the unit to requisition personnel and equipment, frequently at a reduced level from full TOE requirements. CONUS medical units' mobilization requirements depend significantly on the work load transferred from the war theaters.

The Army's strength request is for personnel to fill a constrained number of MTOE authorized spaces and does not represent a request for the full TOE complement of personnel required to perform wartime missions. According to the Army, the medical force it programs represents the minimum essential professional skill base needed to meet emergencies, provide for a rapid, orderly transition to a mobilization posture, and provide the required levels of peacetime patient care and support health services.

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## Navy Procedures

Navy medical manpower requirements are generated primarily from providing medical support to the Fleet Marine Force, the Navy Fleet, and medical support in CONUS. As a general rule, the Navy relies on the MPM of the JCS-directed Joint Operation Planning System (JOPS) to quantify a number of key elements for wartime medical support planning. The principal MPM output that the Navy uses is the number of beds required in theater to treat anticipated casualties. The bed determination is then processed through a series of data interpretations to provide the numerical requirement for physicians. Once the number of beds and physicians to be supported are identified, the Navy uses other staffing

standards and guides, manning documents, and models to develop statements of ancillary medical support requirements. CONUS medical manpower requirements are determined by expanding the CONUS peacetime medical capabilities to accommodate the increased patient work load anticipated for wartime. The Navy programs active-duty and reserve manpower resources for the operational medical support assets it plans to have in inventory at the end of the 5-year POM period.

### Air Force Procedures

The Air Force has two principal missions for which it programs medical manpower requirements in mobilization—support of Air Force requirements and support of all services' aeromedical evacuation requirements. Generally, the programmed manpower requirements to support Air Force medical needs are developed through a two-step process.

First, projected casualty rates are determined based upon intelligence data (threat analysis), weapons effects, historical data, and other criteria. Second, the Air Force uses the tri-service computer model and data base of the MPM to compute the bed and gross physician requirements. The computer model includes the casualty rates, forces at risk, and specifies the requirements for beds in theaters and CONUS beds for returning casualties. Physician requirements by specialty are then determined by diagnostic classification. In the Air Force, this process is called PRISM II (Provider Requirements Integrated Specialty Model). Each diagnostic class contains a predetermined treatment protocol consisting of a series of required tasks, task completion times, and a type of care provider for each task diagnosis are included. Hospital admission rates and frequency of occurrence of specific patient conditions vary among the services, based on characteristics of combat. The model applies these diagnostic frequencies to the number of patients admitted and determines the number of patients in each diagnostic class. The model then computes the number of physicians needed in each specialty.

The number and types of other medical personnel required to staff each type of medical unit is determined through the use of other work measurement techniques and computer simulation models. Total medical manpower required for each type of medical unit are set forth in manning documents.

# Support for Use and Improvement of the Medical Planning Module

Since mid-1985, additional demands for consistent estimates of medical manpower requirements have encouraged the enhancement and use of the MPM. The June 1985 Final Report of the Blue Ribbon Panel on Sizing DOD Medical Treatment Facilities recommended that the first priority of medical planning be to refine wartime medical requirements in order to identify the type of peacetime medical force required to support mobilization.<sup>10</sup> According to ASD(HA) officials, implementation of this recommendation has required increased enhancement and use of the MPM to predict active duty medical manpower requirements.

The fiscal year 1986 DOD Authorization Act required the Secretary of Defense to produce a plan for revising the organizational structure of the military health care delivery system which will, among other things, enhance medical readiness by standardizing the methodology used to determine the number of personnel, force structure, and specialty mix necessary.

The House Armed Service Committee specifically endorsed the use and enhancement of the MPM in its December 30, 1985, Staff Report on Wartime Medical Readiness. The Committee agreed with the ASD(HA)'s directive requiring the services to use the MPM for predicting physician requirements, as well as certain other requirements, but urged that the model be expanded to predict physician specialty and nurse and corpsman aggregate and specialty requirements.

Finally, the February 1986 revised DOD instruction 1100.19, Wartime Manpower Mobilization Planning Policies and Procedures (WARMAPS), explicitly requires all the services to use the MPM for those personnel categories and operations zones for which data bases have been developed. It also requires the services to use the work load-based methodology described in the WMPS for all other medical manpower demand calculations, until the MPM data bases are further refined.

The WARMAPS directive applies to all DOD components' computations of wartime manpower demand. According to the instruction, data developed in accordance with the WARMAPS procedures and criteria will support service manpower mobilization plans, program objective memoranda, budget estimates and justifications, congressional reports and testimony, and responses to congressional and other inquiries. Thus,

<sup>10</sup>Final Report of the Blue Ribbon Panel on Sizing Department of Defense Medical Treatment Facilities, June 28, 1985, p. 5.

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**Appendix III  
Support for Use and Improvement of the  
Medical Planning Module**

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DOD policy clearly requires use of the MPM wherever possible for all computations, evaluations, and reports of medical manpower mobilization requirements.

# MPM Capabilities and Limitations

Joint service use of the MPM can provide a common work load-based foundation for planning wartime medical support, formulating service programs to provide that support and evaluating the adequacy of the services' wartime medical capabilities. Use of the MPM makes it possible to connect medical contingency planning directly to medical manpower resource allocation.

Each service can use data from the MPM to determine its medical support requirements and to identify shortfalls. The MPM is compatible with the organization and unit structure of each of the services for hospital-based work load. The MPM provides an objective method to compare medical requirements, based on in-theater casualty rates, with existing medical capabilities in order to identify shortfalls in beds, physicians, and supplies. Each service can then identify the impact of these shortfalls on its ability to accomplish its mission and, if need be, program additional medical resources through the PPBS.

OSD can also use the MPM output to systematically review the services' wartime medical support programs to determine whether the services are committing sufficient resources to comply with Defense Guidance. Until the MPM was developed, OSD reviewers did not have the analytic framework and data needed to make such an assessment of service-generated statements of medical manpower requirements. While OSD could ask the services to explain how they derived their requirements and why there were differences, OSD had no quantitative basis for assessing whether the services had programmed sufficient medical resources to satisfy readiness requirements. Typically, OSD accepted service data as valid. The MPM provides a common framework for developing the services' statements of medical requirements and a yardstick against which to judge the service's medical personnel program submissions.

However, proper use of the MPM demands a clear recognition of its limitations. Users and reviewers of the results of computer-modeled calculations of requirements need to have an explicit understanding that the calculations are of limited use because of the many uncertainties and unprovable assumptions used in the models. The answer to the deceptively simple question of how many medical personnel will be needed to fight a war depends on a host of estimates and assumptions about such factors as the type of war, its location, the expected threat, national security strategy, casualty predictions, and available equipment and supplies.

Changes to key planning factors and assumptions can yield very different calculations of medical requirements. For example, requirements based on a massive full-scale conventional war in Europe and Asia could differ greatly from requirements based on different war planning scenarios. Sometimes there is a tendency to focus on the model-generated calculation without being aware of the many variables and premises which produced it and that all estimates of medical personnel needed in wartime will always be approximate.

While the MPM can be used to compute medical manpower required to treat patients in hospitals, it cannot compute the medical manpower needed in non-hospital settings, although nearly half of the Army's stated wartime requirements for physicians are in non-hospital units. For example, the MPM does not estimate requirements for personnel who serve as field corpsmen, staff the aid stations, and other casualty care units. These personnel are a very important part of the medical requirement because they provide the initial care most casualties receive. Furthermore, it cannot estimate the total requirement for medical personnel for staff positions, command and control, preventive medicine, and other non-patient care types of activities. Likewise, the MPM does not identify requirements for medical personnel required in CONUS who are not associated with direct care facilities.

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