

GAO

Report to the Chairman, Subcommittee on
Military Personnel and Compensation,
Committee on Armed Services, House of
Representatives

August 1992

**OPERATION DESERT
STORM**

**Full Army Medical
Capability Not Achieved**



147209



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Washington, D.C. 20548

National Security and
International Affairs Division

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The Honorable Beverly Byron
Chairman, Subcommittee on Military
Personnel and Compensation
Committee on Armed Services
House of Representatives

Dear Madam Chairman:

This report responds to your request that we review the Army's effectiveness in deploying medical units in support of Operation Desert Shield/Desert Storm. As we promised in testimony on this subject before your Subcommittee, this report is a more detailed discussion of the problems that the Army encountered in mobilizing, deploying, and supporting medical units in the theater of operations. It contains recommendations to the Secretary of the Army for improving the readiness and operational effectiveness of Army medical units.

We are sending copies of this report to the Chairmen of the House and Senate Committees on Armed Services and on Appropriations, the House Committee on Government Operations, the Senate Committee on Governmental Affairs, the Secretary of Defense, and other interested parties. We will also make copies available to others upon request.

This report was prepared under the direction of Richard Davis, Director, Army Issues, who may be reached on (202) 275-4141. Other major contributors are listed in appendix III.

Sincerely yours,

Frank C. Conahan
Assistant Comptroller General

Executive Summary

Purpose

Because of the high number of U.S. casualties expected during Operation Desert Shield/Desert Storm, the U.S. Army deployed about 23,000 medical personnel and shipped millions of dollars of medical materiel to the Persian Gulf. The Chairman of the Subcommittee on Military Personnel and Compensation, House Armed Services Committee, asked GAO to assess the Army's effectiveness in deploying medical units and providing medical services during this war. She requested that GAO determine whether (1) the Army had experienced problems in identifying, mobilizing, and deploying medical personnel; (2) medical units had their required equipment, supplies, and transportation support; and (3) medical units were able to evacuate and direct patients to appropriate hospitals.

Background

To support combat forces in the Persian Gulf, the U.S. Army deployed 198 medical units, such as hospitals, air and ground ambulance companies and detachments, logistical support units, and special surgical teams. These units were in addition to medical aides and battalion aid station staff of individual combat divisions.

Army medical units deployed to the Gulf region in two phases. The first, consisting of active duty units, began in August 1990. The second phase, which began in November 1990, involved active duty units from Europe and Reserve and National Guard units from the United States.

Active duty doctors and nurses are assigned to medical treatment facilities during peacetime to care for dependents, retirees, and Army personnel but are scheduled to deploy with different units to provide casualty care in a conflict.

Results in Brief

The Army had to overcome numerous significant problems to make medical units operational before the start of the ground war. For example, many doctors and nurses in active, Reserve, and National Guard units who were scheduled to deploy could not do so for a variety of reasons. First, the personnel information systems used to identify doctors and nurses for assignment to active units contained incomplete and outdated information. Second, units' peacetime status reports did not adequately reflect personnel deficiencies. Finally, many doctors and nurses had not trained during peacetime to perform their wartime missions, resulting in doctors' and nurses' being unfamiliar with their units' missions or equipment. The Army also faced equipment and other logistical support problems. Even with a massive effort to field equipment and supplies to hospital units,

many did not receive equipment and supplies or received only partial shipments. Shortages of transportation and materiel-handling equipment limited hospital mobility, and the evacuation of casualties was hampered by long distances, poor communications, and a lack of navigational equipment. As a result, the Army's ability to provide adequate care had the war started earlier or lasted longer or had the predicted number of casualties occurred would have been questionable.

Principal Findings

Personnel Information Systems Incomplete or Out of Date

Information in the Professional Officer Filler System was incomplete and outdated because the units, U.S. Army Forces Command (which oversees the units and validates their requirements), and U.S. Army Health Services Command (which manages the system) did not follow required procedures. The Army, consequently, could not provide all the necessary doctors and nurses within 72 hours of notification, as required. During the first phase of deployment, this system should have enabled the Army to identify and assign 100 percent of the doctors and nurses needed for the 40 active medical units selected for deployment. However, it could identify only 46 percent of them. In the second phase, the Army experienced similar problems when it began to deploy medical units from Europe.

Personnel Were Nondeployable

Many doctors and nurses assigned to medical units were found to be nondeployable for Operation Desert Shield/Desert Storm. Personnel were nondeployable for numerous reasons, such as unacceptable physical conditions, noncurrent skills, and mismatches in medical specialty requirements. Some officers had not taken required basic training, and some had incomplete medical training.

Deficiencies in Unit Status Reports

In many cases, unit commanders did not reflect in their unit status reports personnel deficiencies that could affect mission capability, as required by Army regulations. Therefore, managers and decisionmakers did not know the actual status of the units. If these reports had been accurate, the Army might have either not mobilized deficient units or attempted to have the required personnel at the mobilization stations when the units arrived.

Many Personnel Not Trained for Wartime Missions

Many doctors and nurses had not been trained during peacetime to perform their assigned wartime jobs. Many lacked basic soldiering skills, had no training in treating chemical casualties, had not participated in field training, and were not familiar with their units' missions or equipment. In peacetime, Reserve and National Guard units are required to train on designated weekends and during a 2-week training exercise. However, during training, many of these doctors and nurses had been assigned to Army hospitals to supplement hospital staffing.

Some Hospitals Never Fully Equipped or Supplied

Deployable hospital sets that had been stored for emergencies were short critical equipment. For example, of the 19 hospital sets deployed from storage facilities in Europe, the average set contained only 60 percent of its required equipment, with one set having only 28 percent. The missing equipment was to be sent to the units in theater; however, some hospital commanders said that their units had either received their missing equipment and supplies late or never received them at all. A lack of supply discipline and requisitioning problems exacerbated the shortage of supplies.

In-Theater Supply Centers Did Not Operate According to Doctrine and Faced Other Problems

Army medical supply centers in the Persian Gulf could not adequately respond to the demands of in-theater units. The doctrinal mission of these supply centers is to serve only as resupply points for Army medical units. However, during Operation Desert Shield/Desert Storm, they were also required to act as initial supply points for Army medical units and as resupply points for Air Force, Navy, and Marine Corps medical units. The centers were neither trained nor equipped to adequately respond to these extensions of their mission.

Some Hospitals Could Not Follow Doctrine

Some hospital units, lacking sufficient mobility, could not perform their missions. Because of the speed of the battle, weight and configuration of the hospitals, and the shortage of trucks and materiel-handling equipment, some Mobile Army Surgical Hospitals and Combat Support Hospitals moved only a portion of their bed capacities and surgical capabilities in order to be able to provide surgical support.

Evacuation and Regulation Problems

During the war, problems arose in the effective use of ambulances and in the evacuation of casualties. Ground ambulances could not be used as much as planned because of the rugged terrain, a lack of navigational equipment, communication difficulties, and the long distances between hospitals and the front lines. Even the air evacuation units were taxed by the distances from pickup points to the hospitals. The long distances required frequent refueling, and crews had trouble locating fuel points.

Medical regulators, who direct the evacuation of casualties, were unable to perform their mission due to a lack of adequate equipment to communicate with ambulance units. As a result, ambulances evacuated casualties to only hospitals whose locations they knew. If the war had produced more casualties, this unmanaged evacuation system could have led to the underuse of some hospitals and the overwhelming of others.

Recommendations

In chapters 2, 3, 4, and 5, GAO makes several recommendations to the Secretary of the Army to improve the mobilization, deployment, and wartime operations of medical units.

Agency Comments

In commenting on a draft of this report, DOD concurred or partially concurred with most of the findings and all of the recommendations. DOD disagreed with the overall conclusion that adequate care may not have been provided had the predicted number of casualties occurred or had the ground war started earlier or lasted longer. GAO believes the problems it noted from the beginning of the deployment of Army medical units up through the ground war phase of Operation Desert Storm support this conclusion. DOD also did not concur with GAO's conclusion that the lack of medical supplies had delayed mission capability. According to DOD, all hospitals had adequate supplies to carry out their missions. However, information GAO obtained indicated that medical units were lacking supplies up to and during the ground war and that in-theater medical supply centers had zero balances of critical supplies just before the start of the ground war. DOD stated in its written response that steps are being taken to address the problems noted in GAO's review. DOD's complete written response appears in appendix II.

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Abbreviations

CSH	Combat Support Hospital
DEPMEDS	Deployable Medical System
DOD	Department of Defense
EVAC	Evacuation Hospital
FH	Field Hospital
GAO	General Accounting Office
GH	General Hospital
HSC	Health Services Command
MASH	Mobile Army Surgical Hospital
MEDSOM	Medical Supply, Optical, and Maintenance
P&D	potency and dated items
PROFIS	Professional Officer Filler System
TAMMIS	Theater Army Medical Management Information System
USAMMA	U.S. Army Medical Materiel Agency
USAMMCE	U.S. Army Medical Materiel Center, Europe

Introduction

Background

On August 2, 1990, Iraqi armed forces invaded and occupied the country of Kuwait. The United States, at the request of the Saudi Arabian government, deployed combat troops, including U.S. Army ground forces, to aid in the defense of Saudi Arabia, a neighboring country of Kuwait.

As support for the deploying U.S. Army combat forces, medical units were deployed. To care for the predicted number of casualties, the Army deployed about 23,000 medical personnel. In the initial phase, the XVIII Corps deployed and was accompanied by active medical units. However, before the initial deployments were completed, the U.S. Army's involvement was expanded to include the VII Corps and an echelon above corps. This decision necessitated the call-up of Army Reserve and Army National Guard medical units to provide the required medical support for the additional Army combat troops deployed.

This report covers the call-up, mobilization, deployment, and in-country operations and support of the hospital and evacuation units that supported U.S. Army combat troops during Operation Desert Shield/Desert Storm.

Call-up and Mobilization of Army Medical Units

The Army Central Command, a subcomponent of U.S. Central Command, sent its requirements for medical support for the XVIII and VII Corps and an echelon above corps to the U.S. Army Forces Command. Forces Command was responsible for monitoring the readiness of units in the continental United States and for selecting units to deploy to the Persian Gulf. Forces Command selected units in two phases, which started in August 1990 and ended in February 1991.

In August 1990, Forces Command identified the active Army medical units to deploy in support of the XVIII Corps. These units consisted of hospital units, logistics support units, air and ground ambulance companies and detachments, command and control units, blood supply units, as well as other types of medical units needed to meet the requirements established by the Army Central Command and the U.S. Central Command. For this first phase, units began to deploy on August 9, 1990, and to arrive in theater on August 12, 1990.

After defining XVIII Corps' requirements, the Army Central Command identified requirements for the medical support of a second corps and an echelon above corps. Again, Forces Command was tasked with filling these requirements. U.S. Army, Europe, assisted in filling these requirements, since VII Corps, which was stationed in Europe, had been selected as the

second corps to be deployed to Saudi Arabia. Units identified during this phase were similar in functions to those deployed during the first phase. However, most of these units were from the Army Reserve and National Guard. For the second phase, units began to arrive at their assigned mobilization stations in November 1990 and to deploy in December 1990. The last medical unit arrived in theater in January 1991. Of the 198 units and about 23,000 personnel deployed, 55 percent were from the Army Reserve and National Guard, while the remaining 45 percent were from Army active units.

Reserve and National Guard Medical Units' Readiness Reviewed Prior to Deployment

After the Reserve and National Guard units were alerted and called up, personnel were to report to their home stations within 72 hours for processing. Home stations are the facilities where units meet to conduct their training during peacetime. The responsible Continental U.S. Army for the Reserves or the State Adjutant General for National Guard units attempted to fill any shortages of personnel or equipment. Units then reported to their mobilization stations, where Mobilization Assistance Teams evaluated them for deployment preparedness in terms of their Modified Tables of Organization and Equipment.

Modified Tables of Organization and Equipment list the units' wartime authorizations for personnel by occupational specialty and equipment required to perform their missions. If units were short in either category or personnel were not qualified for their positions, mobilization stations attempted to correct personnel, equipment, and/or training deficiencies to enable the units to deploy to the theater of operation.

Various Types of Army Medical Units Called Up and Mobilized for Desert Shield

To support combat forces in the Persian Gulf, Forces Command alerted and called up a variety of units in the Army medical corps. These units included

- hospital units, which provided surgical and medical treatment to patients;
- air and ground ambulance units, which provided transportation for patients to the medical facilities;
- logistics units, which provided needed medical supplies and maintenance of medical equipment;
- area support units, which provided a variety of medical support;
- command and control units, which coordinated and provided support for theater operations;
- combat stress units, which helped to prevent or treat battle fatigue;

- preventive medicine units, which detected and identified health hazards and minimized their effects;
- veterinary services units, which inspected foods for personnel and treated military animals;
- dental services units;
- medical professional teams, which provided special treatment, such as thoracic surgery; and
- laboratory services units, which examined samples of such things as blood and skin to determine the existence of diseases or other microorganisms.

Table 1.1 provides a breakdown of the types and numbers of Army medical units deployed to the Persian Gulf.

Table 1.1: Types and Numbers of Army Medical Units Deployed to the Persian Gulf

Type of unit	Active	National Guard	Reserve	Total
Hospital units	16	11	17	44
Evacuation units	16	8	11	35
Logistics units	10	1	9	20
Area support units	14	7	0	21
Command and control units	9	7	7	23
Combat stress units	1	0	2	3
Preventive medicine units	11	0	3	14
Veterinary services units	3	0	6	9
Dental units	5	0	0	5
Surgical teams	4	1	16	21
Laboratory units	0	0	3	3
Total	89	35	74	198

Source: Office of the Army Surgeon General.

Although all these types of units were mobilized and deployed, our review focused on hospital and evacuation units and their logistical support because they represented the most critical areas in the treatment of battlefield casualties and because their missions required the majority of medical personnel and equipment deployed to the Persian Gulf.

Hospitals' Missions and Capacities Varied

By the time the ground war began in the Persian Gulf, the Army had deployed 44 hospital units. These units had various missions, and their hospitals had different bed capacities. In general, hospital units provided resuscitative and definitive surgery and specialty treatment for battlefield casualties. The Army hospital system in theater consisted of six types of hospitals. Descriptions of these are as follows:

A Mobile Army Surgical Hospital (MASH) is a 60-bed hospital whose missions are to provide resuscitative surgery and to prepare injured and wounded patients for further evacuation. Usually employed near a combat division's rear area, a MASH is the only Army hospital that should have enough internal transportation assets to make it 100-percent mobile.

A Combat Support Hospital (CSH) is a 200-bed hospital whose missions are to provide resuscitative surgery to injured or wounded patients requiring more specialized care and to prepare them for further evacuation. Employed further to the rear of a combat division, a CSH is to be provided only enough transportation assets to move about 20 percent of the unit. It must therefore rely on a corps or other organization for movement.

Evacuation Hospitals (EVAC), Field Hospitals (FH), and Station Hospitals have bed capacities of 400 to 500. Their missions are to provide more definitive care than smaller hospitals and some limited outpatient care. These hospitals operate in the corps' rear area and do not normally relocate.

A General Hospital (GH) is a 1,000-bed hospital that provides specialized and definitive care. It operates in a relatively permanent corps rear area and is rarely moved.

Of the 44 Army hospitals deployed to the Persian Gulf, 8 were MASHs, 9 were CSHs, 22 were EVACs, 3 were FHs, 1 was a Station Hospital, and 1 was a GH.

Army Used Deployable Medical Systems as Hospitals

Initially, five Army hospitals deployed with less than up-to-date hospital equipment and general purpose tents. It soon became apparent that a change to a state-of-the-art facility should be made because the temperature in the general purpose tents could not be brought below 100 degrees and because the sand- and windstorms tore the tents. The decision was made to convert the five hospitals already in the theater to the Deployable Medical System (DEPMEDS) sets, which contain the most

up-to-date equipment available. It was also decided that all hospital units due to be deployed to the theater would be fielded with DEPMEDS sets except those utilizing host nation facilities.

Eventually, all the hospital units in the Persian Gulf (except those in host nation facilities) operated with DEPMEDS equipment sets. These sets were designed to contain all the equipment and structures units needed to complete their missions. These sets are configured to fit the type of unit that will use it. Figure 1.1 shows a layout of a DEPMEDS facility.

Some Units Used Host Nation Hospitals

Some hospital units that deployed to the Persian Gulf did not obtain DEPMEDS sets but rather operated in host nation hospitals or medical facilities. These units took no equipment with them because everything they needed was to be furnished by the host nation (Saudi Arabia, the United Arab Emirates, and Oman), including living accommodations. Units that used host nation support facilities were assigned to the echelon above corps in the medical command structure. Of the 44 Army hospitals deployed to the Persian Gulf, 9 were assigned to host nation facilities.

Patient Evacuation and Regulation a Key to Saving Lives

Thirty-five Army air and ground ambulance units were deployed to the Persian Gulf to evacuate wounded, injured, or ill soldiers from the battlefield. Sixteen ground and six air ambulance units were deployed to evacuate casualties from forward positions to the closest hospitals. During the evacuation, some medical care was also provided.

A prompt and well planned patient evacuation process is a key factor in saving the lives of those who suffer battlefield casualties. An important ingredient of patient evacuation is patient regulation. This is the process of directing the ambulance to the facility that can best treat the patient, depending on the nature and severity of the injury or illness.

Organization of Health Care in Theater

Army medical units in the Persian Gulf were assigned to the various major military divisions in the theater. The mission of the medical support units was to provide the troops with hospitalization and other health services.

Medical care in the theater was distributed among various levels in the corps. Treatment was provided at the front lines by medics or soldiers known as "combat lifesavers," who were trained in lifesaving techniques. Battalion aid stations near the front lines also provided immediate

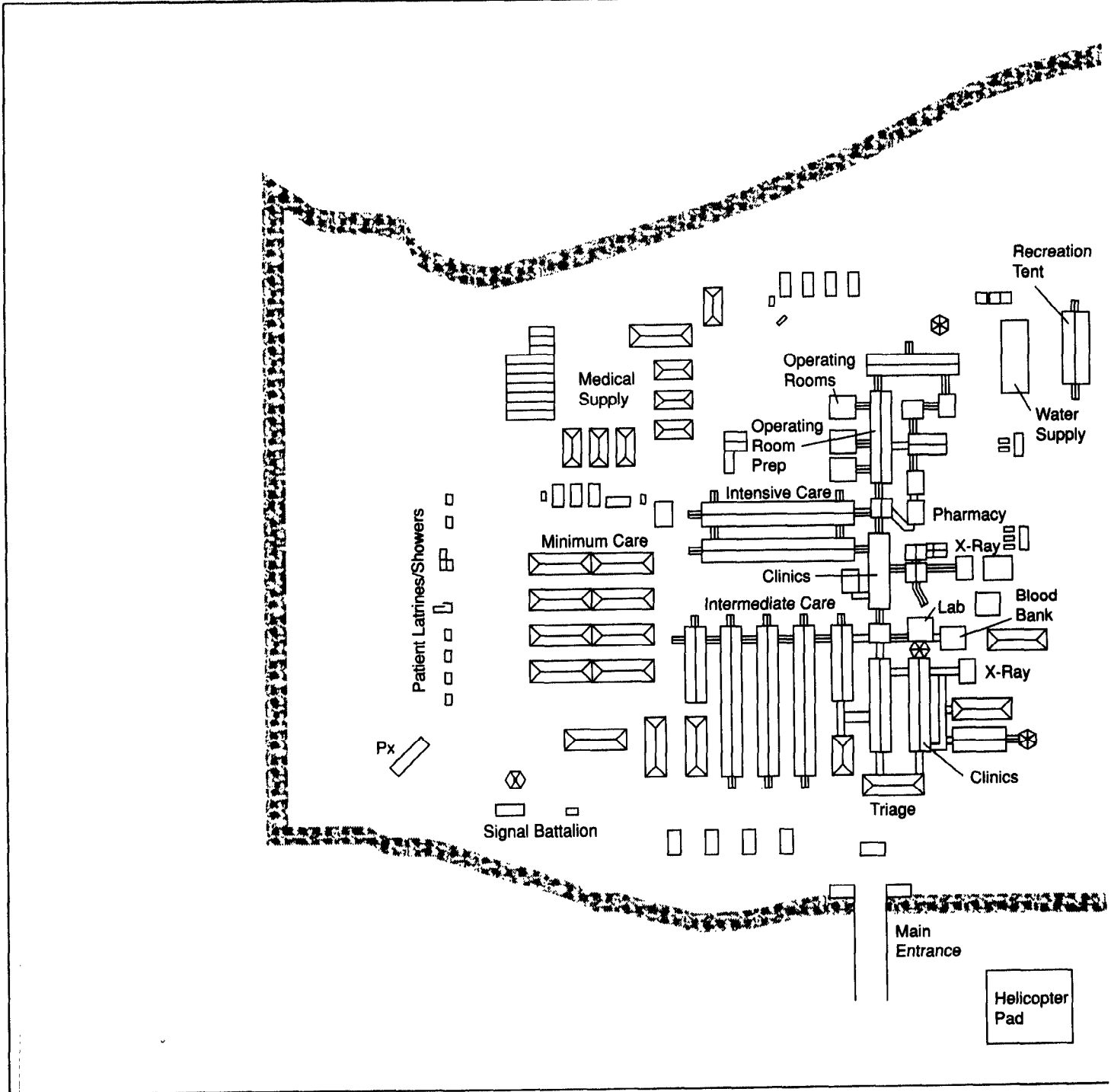
lifesaving measures but did not possess surgical capabilities. When necessary, patients were evacuated to clearing stations for emergency care and on to a MASH for surgery or stabilization for subsequent evacuation to a CSH or an Evacuation Hospital if specialized medical care was needed. If more intensive care was required, the patient was then evacuated to medical facilities at the echelon above corps level. In a General Hospital, for example, the patient received specialized surgical care and could recuperate. If more advanced care was required, the General Hospital stabilized the patient for evacuation to a hospital outside the theater of operation or in the continental United States.

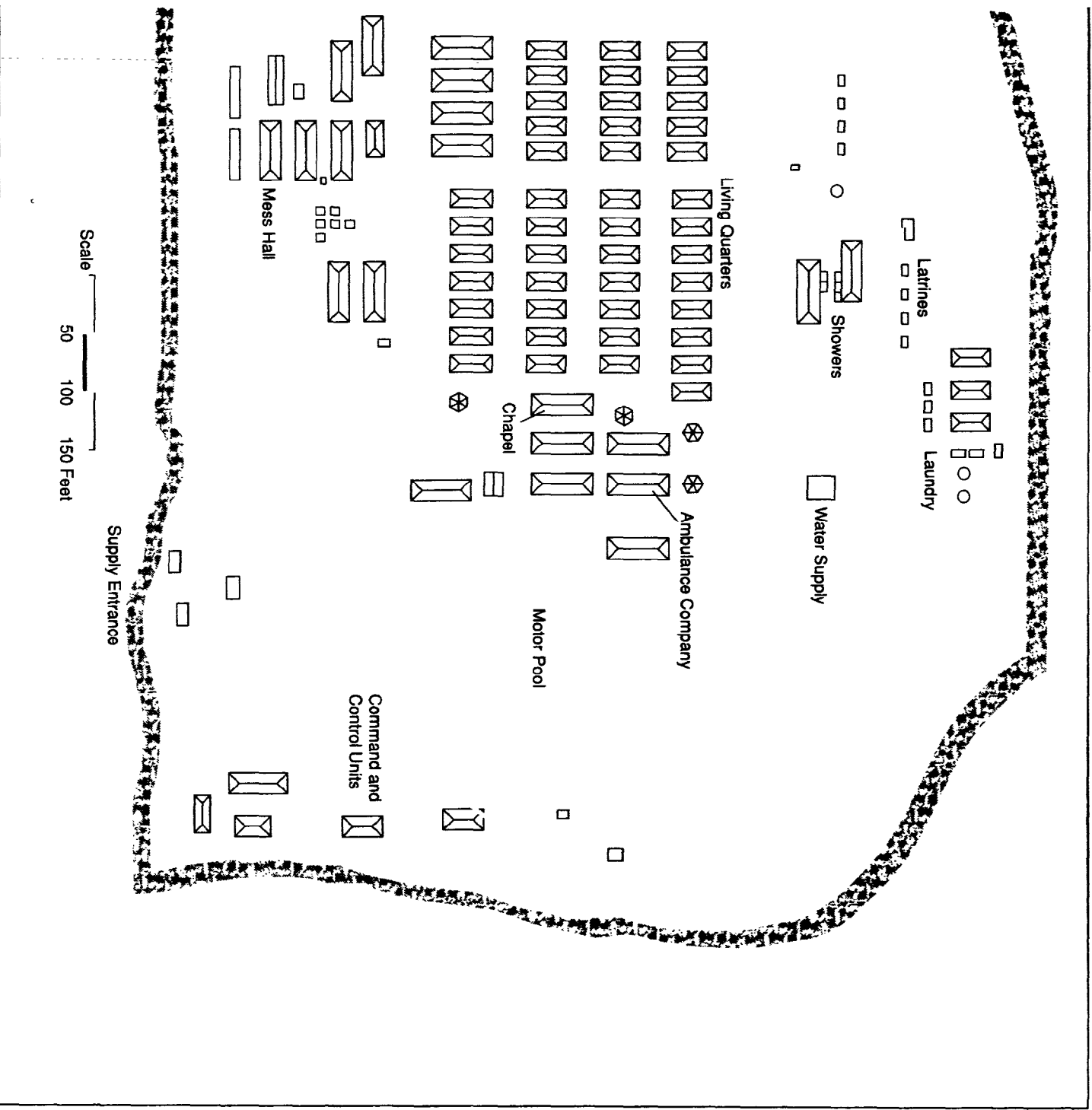
Medical Supply System Established in Theater

To support the medical units in Saudi Arabia, the Army set up an in-theater medical logistics system. The system consisted of five Medical Supply, Optical, and Maintenance (MEDSOM) units with forward distribution points to distribute supplies to the various medical units.

The MEDSOM units were supplied with millions of dollars of medical equipment and supplies by the U.S. Army Medical Materiel Center (USAMMCE) in Europe and the Defense Personnel Support Center and the U.S. Army Medical Materiel Agency (USAMMA) in the United States. Emergency requisitions were shipped via Desert Express from Charleston Air Force Base, South Carolina. Two of the MEDSOM units were tasked with providing theaterwide support to all services and became known as the U.S. Army Medical Materiel Center, Saudi Arabia. The other three were designated to supply only Army units within the two corps and echelon above corps units.

Figure 1.1: Layout of a DEPMEDS Facility





Objectives, Scope, and Methodology

The Chairman of the Subcommittee on Military Personnel and Compensation, House Armed Services Committee, requested that we assess the Army's effectiveness in deploying medical units and providing medical services in support of Operation Desert Shield/Desert Storm. We were asked to determine whether (1) the Army had experienced any problems in identifying, mobilizing, and deploying medical personnel; (2) medical units had their required equipment, supplies, and transportation support; and (3) medical units were able to evacuate and direct patients to appropriate hospitals.

Although 11 types of medical units deployed to Operation Desert Shield/Desert Storm, our review focused on hospital and evacuation units, as they represented the most critical areas in the treatment of battlefield casualties. Further, performance of their missions required the majority of the medical personnel and medical and nonmedical equipment sent to the theater. The 18 units we visited included 11 hospital and 7 evacuation units. We selected active, Reserve, and National Guard units; air and ground evacuation units; a cross section of different types of hospitals; and units from Europe, the United States, and the different corps. We did not select these units statistically; however, our selection represented a cross section of deployed units. Also, the after-action and lessons learned reports we reviewed indicate that our results are systemic throughout the Army medical community.

To determine units' status prior to and during call-up and mobilization, we visited selected mobilization and home stations. We also interviewed Army personnel responsible for the mobilization and deployment of medical units. These included representatives from the Army's Office of the Surgeon General, the selected Continental U.S. Armies, U.S. Army Forces Command, Health Services Command, XVIII Corps, VII Corps, and U.S. Army, Europe.

To ascertain the in-theater readiness status of units, we also interviewed Army medical personnel from the selected hospital, ground and air ambulance, medical supply and logistics, and command and control units from both corps in theater; the U.S. Army Central Command; and the U.S. Central Command. We also obtained, when available, units' after-action reports, as well as both corps' after-action reports.

A complete listing of units and commands we visited is contained in appendix I.

We conducted our review from February to December 1991 in accordance with generally accepted government auditing standards.

Mobilization and Deployment of Medical Personnel to Operation Desert Shield/Desert Storm Were Hindered

The U.S. Army experienced significant unanticipated problems in mobilizing and deploying medical personnel, especially doctors and nurses, who had been selected to support Operation Desert Shield/Desert Storm. In many cases, information used to identify active duty doctors and nurses was outdated and unreliable. Also, active, Reserve, and National Guard units had many nondeployable personnel. Required periodic reporting did not reflect these deficiencies. Further, individuals and units had not received training to perform their wartime missions.

Automated Information for Assigning Personnel Incomplete or Out of Date

Information used to assign doctors and nurses to active medical units was incomplete and out of date, resulting in a massive scramble to fill out units deploying from the United States and Europe. Active duty doctors and nurses are assigned to medical treatment facilities during peacetime to care for dependents, retirees, and Army personnel but are scheduled to deploy with different units to provide casualty care in a conflict. Personnel in these cases had not been identified; personnel were no longer at the indicated medical facilities; or the units or Forces Command had not recently updated personnel requirements. The Army, therefore, could not provide all the doctors and nurses within 72 hours of notification, as required by its own regulations.

PROFIS Did Not Function as Planned

The Professional Officer Filler System (PROFIS), which is designed to identify and assign active Army doctors and nurses to deploying active duty medical units, did not function as planned. PROFIS provided only 449 doctors and nurses (46 percent) to meet the 981 known requirements identified during the call-up of 40 active medical units in August 1990. This fill rate was low because requirements were not being kept current and because filler personnel either had not been identified or had not been monitored to ensure currency. In addition, a lessons learned report stated that during Operation Desert Shield/Desert Storm, some key personnel working in medical treatment facilities had been removed from PROFIS slots when the deployment of units had been initiated. It said that these actions had been taken to preserve continuity within continental U.S. Army medical treatment facilities.

The medical staff identified by PROFIS work in medical centers during peacetime, caring for active duty personnel, their dependents, and retirees. Each medical unit is responsible for identifying, by specialty and rank, all medical personnel identified in the Modified Table of Organization and Equipment as necessary to deploy at full mission capability. These

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requirements are then reported to U.S. Army Forces Command. In addition to identifying requirements, the units must report any changes to the requirements to Forces Command, which, in addition to processing the filler requirements and forwarding them to Health Services Command, is responsible for monitoring and validating individual unit requirements.

Health Services Command (HSC), the major command for Army medical activities and medical centers in peacetime, is tasked with identifying specific doctors and nurses to satisfy the requirements identified by each unit. These personnel are entered into the PROFIS system by name, rank, physical location, and telephone number. As these medical personnel are subject to transfers, retirement, or separation from active duty, Health Services Command must monitor the lists and when necessary, change them to keep them current. Further, as new requirements are identified or old requirements deleted, the Command must identify new filler personnel or redesignate previously assigned ones.

Health Services Command
Did Not Keep Identified
Fillers Current

Health Services Command is responsible for identifying doctors and nurses to fill known requirements and for ensuring that up-to-date information is maintained for each identified filler. The initial fill achieved through the PROFIS system demonstrates that doctors and nurses had not been identified, their availability status had not been kept current, and some were considered essential in preserving the continuity of stateside treatment facilities. Table 2.1 shows how many additional medical personnel Health Services Command had to identify and assign to 13 hospitals that required PROFIS personnel.

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Table 2.1: Additional PROFIS Fillers Required (August 1990)

Unit	Required fillers	Fillers identified by HSC	Fillers deployed	Fillers who did not deploy	Fillers not identified	Fillers that had to be identified
2nd MASH	35	18	12	6	17	23
5th MASH	48	44	37	7	4	11
10th MASH	51	32	15	17	19	26
28th CSH	44	41	28	13	3	16
41st CSH	35	29	18	11	6	17
46th CSH	58	52	34	18	6	24
47th CSH	31	29	11	18	2	20
8th EVAC	86	76	41	35	10	45
15th EVAC	65	38	25	13	27	40
85th EVAC	73	47	17	30	26	56
86th EVAC	70	62	26	36	8	44
93rd EVAC	62	42	20	22	20	42
47th Field	100	68	55	13	32	45
Total	758	578	339	239	180	419

Source: U.S. Army, Health Services Command.

Table 2.1 demonstrates that Health Services Command had identified only 578 of the medical personnel required to satisfy the 758 known hospital unit requirements. In addition to the 180 requirements for which no filler personnel had been identified, 239 of the identified filler personnel did not deploy with the unit to which they had been assigned. As a result, the Command had to identify personnel to fill 419 of the known requirements to enable these hospitals to deploy. For the 40 units needing PROFIS personnel, Health Services Command had to scramble to identify personnel to fill 532 of the 981 requirements that existed prior to call-up. These actions would have been unnecessary if the Command had monitored and maintained the PROFIS system as required.

Units Did Not Keep Requirements Current

Actions initiated at call-up demonstrate that requirements had not been monitored or changed as required. Each unit with PROFIS requirements is responsible for notifying Health Services Command through Forces Command that a requirement is no longer current or that an additional requirement has been identified. Thirteen of the 40 units with PROFIS requirements identified a total of 83 requirement changes that they had submitted through Forces Command to Health Services Command after the call-up. For example, a medical detachment that had reported no PROFIS requirements identified the need for eight fillers after it had been

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alerted. There were 42 new requirements and 41 deletions. While the net effect would appear to be one new requirement, differences in required areas of specialty necessitated different types of fillers.

Table 2.2 demonstrates that upon alert, 10 hospital units identified 30 new filler requirements and 41 invalid requirements that might or might not have had filler personnel assigned.

Table 2.2: PROFIS Requirement Changes Initiated Upon Unit Alert

Unit	PROFIS additions	PROFIS deletions
2nd MASH	5	5
10th MASH	1	2
28th MASH	1	0
41st CSH	5	0
47th CSH	1	0
8th EVAC	1	16
15th EVAC	10	4
86th EVAC	2	14
93rd EVAC	2	0
47th Field	2	0
Total	30	41

Source: U.S. Army, Health Services Command.

Had the units kept their PROFIS requirements current, Health Services Command would have had a more accurate picture of personnel requirements before these units were deployed.

Forces Command Had Not Updated Unit Requirements

According to Army officials and reports, Forces Command had not updated medical units' PROFIS requirements for as long as 5 years in some cases. This resulted in some erroneous PROFIS assignments. For example, some units received more personnel than they were authorized because the requirements in the PROFIS system were based on a Modified Table of Organization and Equipment that was outdated by 5 years.

System to Augment VII Corps' Unit Deployment Not Used

The selection of VII Corps as the second corps in the theater resulted in the deployment of medical units from Europe. However, U.S. Army, Europe, had to scramble to deploy VII Corps medical units to Saudi Arabia. Under Army regulations, U.S. Army, Europe, was to use PROFIS to fill medical units. However, it did not do so, preferring to use its own "personnel

augmentee system." The information in this system was similarly out of date and could not be used to fill personnel shortfalls, particularly in the hospital units.

Hospital personnel in Europe perform the same peacetime missions as their counterparts in the United States. Medical personnel are not assigned to the units but rather to medical facilities to meet the peacetime requirements of troops and their dependents. Hospital units consist of small cadres of enlisted personnel whose mission is to maintain the units' equipment. When the three hospital units were alerted, the U.S. Army, Europe's Medical Command discovered that the augmentation system in place to identify medical personnel to join the units for deployment was not current and could not be used to fill the units. The system was updated only once a year, at the beginning of the fiscal year, making the list at the time VII Corps was alerted 11 months old. With the annual rotation system in Europe, one-third of the people on the list were no longer in the theater. As a result, U.S. Army, Europe, used medical specialty consultants to identify 236 active duty doctors and nurses for assignment to units to make the units deployable.

Personnel Were Nondeployable

Many doctors and nurses assigned to medical units were nondeployable for Operation Desert Shield/Desert Storm. For example, 239 of the 578 fillers initially identified in August 1990 by PROFIS did not deploy with their assigned active hospital units. Similarly, when Army Reserve and National Guard units reported to their mobilization stations, the Army found large numbers of nondeployable personnel.

Active duty, Reserve, and National Guard personnel were nondeployable for a variety of reasons:

- Their physical conditions were unacceptable. In one case, a surgeon who had retired from private practice reported to his mobilization station unable to stand for more than 30 minutes. Another surgeon reported with Parkinson's disease. In both cases, the surgeons had been reported as filling authorized slots.
- The skills of some personnel were not current. Some doctors reported to their mobilization stations after they had been in teaching positions and were no longer qualified in their fields of specialty. They had to be replaced before the units could deploy.
- Some personnel's skills did not match specialty requirements. A Reserve thoracic surgeon team mobilizing at Fort Carson, Colorado, is one example

of a unit that did not have the required skills. Surgical teams are small, specialized units designed to join a hospital in the field to augment the hospital's surgical capability. Total requirements for this unit were seven personnel, including two thoracic surgeons. However, when the unit arrived at the mobilization station, it had no thoracic surgeons and was commanded by a gynecologist filling one of the two thoracic surgeons' slots. According to the Fort Carson mobilization team, this physician admitted that he was not qualified for the position he was filling and that, in fact, "the only chest he had opened was in medical school and belonged to a goat." Without thoracic surgeons, the unit could not perform its mission and was not deployable. The mobilization team was subsequently able to transfer one thoracic surgeon into the unit so it could deploy. Although a second surgeon was to join the unit in theater, the unit never received a second surgeon.

- Officers had not taken the required basic training. According to the Army, this unanticipated training deficiency forced the Army to condense a legislatively required 12-week course for officers on basic soldiering skills to 2 weeks. Since the officers could not deploy without having taken the course, the Army conducted this condensed course to enable critically needed medical personnel to deploy. An Army lessons learned report stated that 1,600 medical officers had not taken the officers' basic course and, therefore, were initially nondeployable.
- The medical training of some personnel was incomplete. Some doctors reporting to their mobilization stations could not deploy because they were still in residency programs. For example, though a National Guard unit arrived at its mobilization station with 13 of its required 15 doctors, 10 of them were still in residency programs. Without transfers of doctors from other units, the unit would have been unable to perform its mission.
- Some personnel who reported were in positions that exceeded unit requirements. Reserve and National Guard hospital units that mobilized for Operation Desert Shield/Desert Storm had many excess personnel assigned who were not needed to carry out the units' missions. Excess personnel were those who occupied positions above authorized levels or were not authorized to the unit, such as cannon crew members or infantry soldiers. Our analysis of the most current Reserve Medical Management Information System report available at the time of mobilization revealed that for 28 Reserve and National Guard hospital units, of the 10,600 personnel assigned, 3,300 exceeded authorized levels. While these statistics were current in September 1989, the situation appears to have been relatively unchanged during the mobilization for Operation Desert Shield/Desert Storm. For example, a National Guard Evacuation Hospital with an

authorized strength of 402 reported to the mobilization station with 58 personnel who exceeded authorized levels.

Unit Status Reports Did Not Adequately Reflect Personnel Deficiencies

Periodic reporting by medical units in peacetime did not accurately reflect the status of personnel in the units. Unit commanders must reflect in their unit status reports any personnel deficiencies that could affect mission capability. These deficiencies are to include personnel shortages, shortages of critical skills, and training needs. In many cases, however, the commanders had not reported these deficiencies, and managers and decisionmakers, therefore, did not know the actual status of the units. As previously stated, many Reserve and National Guard units arrived at the mobilization stations with large numbers of nondeployable personnel; consequently, the Army had to transfer the needed personnel from other units. This was the case with the Fort Carson thoracic surgeon team, which had been selected for mobilization based in part on its reported 100-percent personnel strength. If the unit status reports for this and other units had been accurate, the Army might have either not mobilized that unit or attempted to have the required personnel at the mobilization stations when the units arrived. In one case, a hospital unit that deployed to the Persian Gulf was disbanded because its personnel could not perform its mission. The personnel were assigned to other units and given other duties. The corps medical commander has recommended that that unit be permanently disbanded.

Many Units Deployed Without All of Their Personnel

Despite the Army's efforts to fill medical units with their authorized personnel prior to deployment, many units left with less than their full complements. For example, of the 41 hospital units that deployed from the United States, 25 deployed with fewer than their authorized numbers of personnel. In VII Corps, 638 filler personnel were assigned in theater to Reserve and National Guard units. Three hundred forty-one individuals arrived after the deployed units had arrived, and 297 were reassigned following the reorganization of two units already in theater. Personnel who were assigned after the deployed units had arrived consisted of a mix of active duty and reserve component individuals and included medical specialists such as doctors, surgeons, and nurses. The filler personnel were assigned to several types of units, including MASHs, CSHs, and Evacuation Hospitals, as well as ground and air ambulances units. Without these additional personnel, the receiving units would have been unable to perform at full mission capability.

Many Personnel Not Trained for Wartime Missions

Many doctors and nurses in active, Reserve, and National Guard units had not been trained during peacetime to perform their assigned wartime jobs. For example, a VII Corps after-action report stated that interviews with active medical personnel "revealed an embarrassing lack of field training." In addition to lacking basic soldiering skills, many doctors and nurses had not participated in field training and were not familiar with their units' missions or field equipment. In peacetime, Reserve and National Guard units are required to train on designated weekends and during a 2-week training exercise. However, during these weekend drills and annual training exercises, many Reserve and National Guard doctors and nurses are assigned to Army hospitals to supplement hospital staffing. Doctors and nurses in the active units are assigned to Army hospitals during peacetime.

As a result of this lack of training with the unit, according to the Army Central Command Surgeon, doctors and nurses were unfamiliar with the equipment and supplies in the DEPMEDES. In many cases, doctors and nurses preferred to use equipment and supplies that they were more familiar with, rather than the equipment and supplies that were part of the DEPMEDES. The Army agreed to provide the equipment and supplies that met the individual physicians' preferences.

Another impact of this lack of training was that many of the physicians did not understand the missions of the units they were to join. A physician's peacetime mission is to provide care at a medical activity or center to active duty personnel, their dependents, and retirees. In meeting that mission, the physician provides comprehensive treatment until the patient is discharged from the hospital. Typically, physicians joining forward-deployed units did not understand that their role was to stabilize the patient so that the patient could be evacuated to the rear, where more intensive care could be provided. The Army Central Command Surgeon stated that this misunderstanding had the greatest impact on MASH and CSH units, where, if it were left to the physicians, all beds would have remained occupied, diminishing the units' ability to treat incoming patients.

In addition, 10 hospital units were scheduled to operate DEPMEDES sets having never trained on the equipment. Prior to the war, these units had been assigned older equipment. Consequently, the Army established an 8-day "crash" course to teach units how to operate a DEPMEDES hospital. However, the course taught little except how to assemble the hospitals. This course was given to four units in the theater, and the remaining units were taught at the mobilization stations.

Also, according to an after-action report, most medical units had not been trained in the treatment of chemical casualties. This deficiency was recognized early in the operation, and a training team was sent to the Persian Gulf to train 1,400 doctors and nurses in the management of chemical casualties. This was initial—not refresher—training.

An additional training shortfall identified by active duty hospital personnel during our review was that some unit commanders had no experience in commanding units and had not participated in any of the training for the units they were to command. In peacetime, hospital units are commanded by medical service corps officers, who are responsible for the day-to-day operations of the unit. The Army has determined, however, that upon being alerted to deploy, a hospital unit must be commanded by a physician. Army after-action reports identified this situation as a problem and reported that in some cases it had adversely affected unit mission capability.

Conclusions

The Army could not fill medical units with required personnel as planned for active, Reserve, and National Guard units because information systems were out of date and many medical personnel were found to be nondeployable. Many units deployed with personnel shortages and were not fully mission capable upon arrival in the Persian Gulf, though many units continued to receive personnel in theater.

Prior to Operation Desert Shield, unit wartime training and preparation were minimal or nonexistent. In addition to lacking basic soldiering skills, many doctors and nurses had not participated in field training and were not familiar with their units' missions or field equipment. Many of these deficiencies were not reported periodically in unit status reports.

Recommendations

We recommend that the Secretary of the Army

- establish effective controls to ensure that (1) more accurate and complete information is maintained in the Professional Officer Filler System and (2) personnel conditions of units, including deployability and the ability of personnel to perform their occupational specialties and wartime missions, are reported accurately and
- require realistic mission-related training of the medical corps, including doctors and nurses.

Agency Comments

DOD concurred with all of our findings and recommendations. In response to our recommendations, the Army is going through a validation process to improve the accuracy of the Professional Officer Filler System and will issue changes to its readiness reporting system to require that physicians be assigned to field units based on the training and skills required for the positions. Also, the Office of the Assistant Secretary of Defense for Health Affairs has issued guidance to begin to address the lack of wartime training.

Problems With the Distribution and Receipt of Equipment and Medical Supplies Affected the Capability of Hospitals

After medical units arrived in Southwest Asia to support the deployed combat units, they faced problems in receiving the needed equipment and supplies to accomplish their missions. The Army's plan was to deploy the medical units and to have DEPMEDS, which had been stored in Europe and the United States, arrive in theater within 2 days of the units' arrival. Any known equipment and supply shortages were to be alleviated shortly after the units arrived in theater. However, some units reported that they had not received their supply packages, the packages were missing equipment or supplies, or the packages they received were late in arriving.

Some Deployable Hospitals Were Never Fully Equipped

Hospital sets sent to the Persian Gulf had significant equipment shortages. For example, of the 19 hospital sets deployed from prepositioned sites in Europe, the average set contained only 60 percent of the required equipment, while fill rates of individual sets ranged from 28 to 82 percent. The equipment missing from the sets included such essential items as X-ray equipment, ventilators, defibrillators, dental equipment, electrocardiograph monitors, laboratory supplies, and water distribution systems.

DEPMEDS are comprised of hundreds of pieces of medical equipment, some of which were not available when the DEPMEDS were fielded to storage facilities. Shortages were caused by (1) supply system deficiencies, (2) procurement and contractual problems, and (3) new equipment development problems. Officials from the Army's Medical Materiel Agency were aware of the specific shortages and planned to take emergency actions to fill them should deployment be necessary. For Operation Desert Shield/Desert Storm, the Army's deployment plan called for hospital personnel to match up with their DEPMEDS, as well as missing equipment, in theater.

After the Army had designed the medical force structure for Operation Desert Shield/Desert Storm, it selected hospital sets from Europe and the United States for movement to Saudi Arabia. Mobilized units designated to receive these sets were made aware of the shortages, and commanders were assured that actions had been initiated to obtain the missing items. Missing equipment in DEPMEDS sets were to be sent in separate packages known as "ship shorts." However, many of the ship short packages were never received, arrived late, or were missing equipment. One hospital commander told us that some of the equipment packages his unit had received were not only incomplete, but they contained equipment that was

incompatible with the equipment in the unit's DEPMEDS. Another unit reported that it had not received all of its authorized equipment.

Shortages of Medical Supplies Reduced Mission Capability

Acquiring sufficient amounts of medical supplies was a constant concern of Army hospital units in the Persian Gulf. Some units received limited amounts of critical supplies, and some received none. Supply discipline and requisitioning problems exacerbated the situation. In some cases, units did not receive critical supplies until days before the ground war.

On-Hand Quantities of Medical Supplies Limited

Units assigned to DEPMEDS did not have perishable or "shelf life" medical supplies in the sets. Hospitals deployed to the Persian Gulf were to receive a 10-day supply of these potency and dated (P&D) items in theater. Some of these P&Ds include narcotics, anesthesia drugs, antibiotics, and X-ray film. However, due to supply shortages, P&D items, which were shipped in what the Army called "push packages," contained only limited quantities of some critical supplies. For example, the hospitals deployed in support of VII Corps initially received only a 3-day supply of P&D supplies, and some hospitals reported they never received their push packages.

Hospital Personnel Lacked Supply Discipline

The lack of supply discipline placed unrealistic demands on the logistical system. Army officials told us that the decision had been made in theater to provide doctors with what they wanted, regardless of whether it was available within the Army's supply system. As one supply official stated, it is difficult to turn down requests when the people making the requests fully believe that unless they have exactly what they want, they cannot properly care for casualties. However, responding to so many demands—especially for items not in the Army's supply system—was more than the supply system could handle.

Because the hospital personnel were uncertain of when and how extensively their services would be needed, some medical units hoarded medical supplies and requisitioned excessive amounts of supplies from the in-theater medical supply centers. Hoarding was particularly prevalent in medical units that had arrived in theater first. For example, while hospital units arriving early were instructed to carry a 15-day level of supplies, some requisitioned additional supplies, eventually attaining up to and beyond a 30-day level. U.S. Army Medical Materiel Center, Europe, officials stated that some of the early deploying units had been well stocked yet had continued to order additional supplies. According to supply officials, one

hospital unit was found to have 120 days of supplies on hand. The later arriving units did not receive many of the items they ordered until after the earlier arriving hospitals had received excessive amounts of these items. As a result, some of the later arriving VII Corps units were concerned that if the war had started earlier, some of their forward-deployed units would have had to treat casualties but would not have had adequate supplies.

Requisitioning Problems Plagued the Receipt of Supplies

According to Army officials, medical units experienced difficulty filling requisitions through the in-theater medical centers during Operation Desert Shield/Desert Storm. One hospital commander told us that as of February 15, 1991, his unit had placed approximately 4,000 requisitions for medical supplies, but only about 200 had been filled by the supply center. An ambulance unit commander stated that his unit had depleted its medical supplies inventory and had not received any of its requisitioned items.

Army medical unit commanders cited what they believe to be two supply center requisitioning policies as primary sources of the problems: the "first-in/first-out" and "fill or kill" policies. The computer system used by the supply centers filled the requisitions in the order in which they had been received, oldest first. In other words, the later arriving units did not receive many of the items they had ordered until after the earlier arriving hospitals had all of their requisitions for the same items filled. The "first-in/first-out" requisition system could not be overridden, even if early arrivals had adequate supplies. In addition, under the "fill or kill" system, if the medical supply centers could not fill an entire order, they did not fill it at all. The supply centers would sometimes cancel requisitions they could not fill without notifying the unit making the requisition.

Officials from the U.S. Army Medical Materiel Agency stated that, while units might have perceived the medical supply centers to be following a "fill or kill" policy, the supply centers were not doing so. To the contrary, if the supply centers lacked requested items, the entire requisition was forwarded to Europe. If the requisition could not be filled in Europe, it was sent to USAMMA in the United States. If USAMMA could not fill the requisition, it was sent to the Defense Procurement Supply Center for contracting action. After the item was procured, USAMMA would send it directly to the in-theater supply center. Eventually, the medical units learned that numerous requests for smaller numbers of items were more likely to be filled than large bulk requisitions.

Hospitals Did Not Receive Some Critical Medical Supplies Until Immediately Prior to the Start of the Ground War

Some critical medical supply shortages continued up to and through the start of the ground war. Mission-essential items in critically short supply included narcotics, anesthesia drugs, antibiotics, and X-ray film. These items were often the last to arrive at the units, some on the day the ground war started. One medical supply center commander stated that the shortage of anesthesia drugs would have been a "war stopper" until about 2 or 3 days before the ground war began and laboratory supplies remained in short supply throughout the war.

Due to the late arrival of limited quantities of critical medical supplies, the capability of the hospitals would have been questionable had the ground war started earlier. For example, Army officials stated that until 4 days before the ground war began, many of the hospitals did not have surgical capabilities due to a lack of anesthesia drugs, antibiotics, and pain medications. Surgeons from one hospital stated that their unit had been capable of only sick-call operations and could not perform as a surgical hospital until just days prior to the start of the ground war. Representatives of two other hospitals added that they would have been in a bind if their units had had to set up and become operational immediately upon arrival in the Persian Gulf. They believed that they had been fortunate that nothing had happened earlier because they had not been ready.

Shortages of critical medical supplies also could have hindered the units' ability to sustain medical care. Because the medical units received only limited quantities of critical supplies and faced serious problems in obtaining additional ones, their ability to sustain the level of medical care would have been questionable had the ground war lasted longer or had casualties been higher. Representatives of several hospitals told us that, even with the limited demands of Operation Desert Storm, their units had experienced supply shortages that raised concerns about their ability to sustain operations. One EVAC hospital commander said, "Unless the supply system got fixed, we would have been flat on our backs." The hospital was supplied for 3 or 4 days of intense casualties, but supplies would have been exhausted under a maximum load of casualties. According to the commander of another hospital, if the ground war had lasted a fifth or sixth day, the hospital would have been short some supplies.

A VII Corps lessons learned evaluation states, "The medical supply system was never stretched by actual casualties, but the actual capability to provide, on short notice, wartime potency and dated items to deploying units is in question." A VII Corps Deputy Medical Commander expressed concern that the U.S. industrial base might not have been able to support

the supply needs of 44 hospitals in the Persian Gulf if the hospitals had been operating at capacity for a sustained period of time.

In-Theater Supply Centers Did Not Operate According to Doctrine and Faced Other Problems

The Army medical supply centers in the Persian Gulf were assigned missions beyond those ascribed to them in doctrine. Also, hospital readiness was delayed because these supply centers and the in-theater medical supply distribution network were not established until after hospitals had arrived in the Persian Gulf. Finally, the hospitals were slow to receive supplies because the supply centers lacked some supplies, trained personnel, automated data processing capability, and transportation.

Medical Supply Centers Did Not Operate According to Doctrine

Army medical supply centers in the Persian Gulf could not adequately respond to the medical supply demands of in-theater units. The doctrinal mission of these supply centers is to serve only as resupply points for Army medical units. However, during Operation Desert Shield/Desert Storm, they were also required to act as initial supply points for Army medical units and as resupply points for Air Force, Navy, and Marine Corps medical units. These new requirements were extensions of the centers' basic mission, and the centers were neither trained nor equipped to adequately respond to the additional demands.

Medical Supply Centers Were Established Late

Medical supply centers were not established and operational in the theater prior to the arrival of many of the hospitals. They were therefore unable to provide medical supplies and other logistical support when the hospitals arrived. For example, one of the three hospitals deployed from Europe to support VII Corps sent its personnel into the theater on December 5, 1990, and the other two hospitals deployed on December 26, 1990. However, the medical supply centers whose mission was to support the VII Corps medical units were not deployed until December and did not become operational until January 6, 1991. In XVIII Corps, the supply center began limited operations in late August 1990. This supply center was responsible for supplying Army units and the other services. However, it could not establish full operations because it could not find suitable warehouse space for its medical supplies. The lack of covered space rendered some medical supplies unusable because of damage from the heat and rain. The center did not become fully operational until October 5, 1990, almost 2 months after medical units began to arrive in the Persian Gulf.

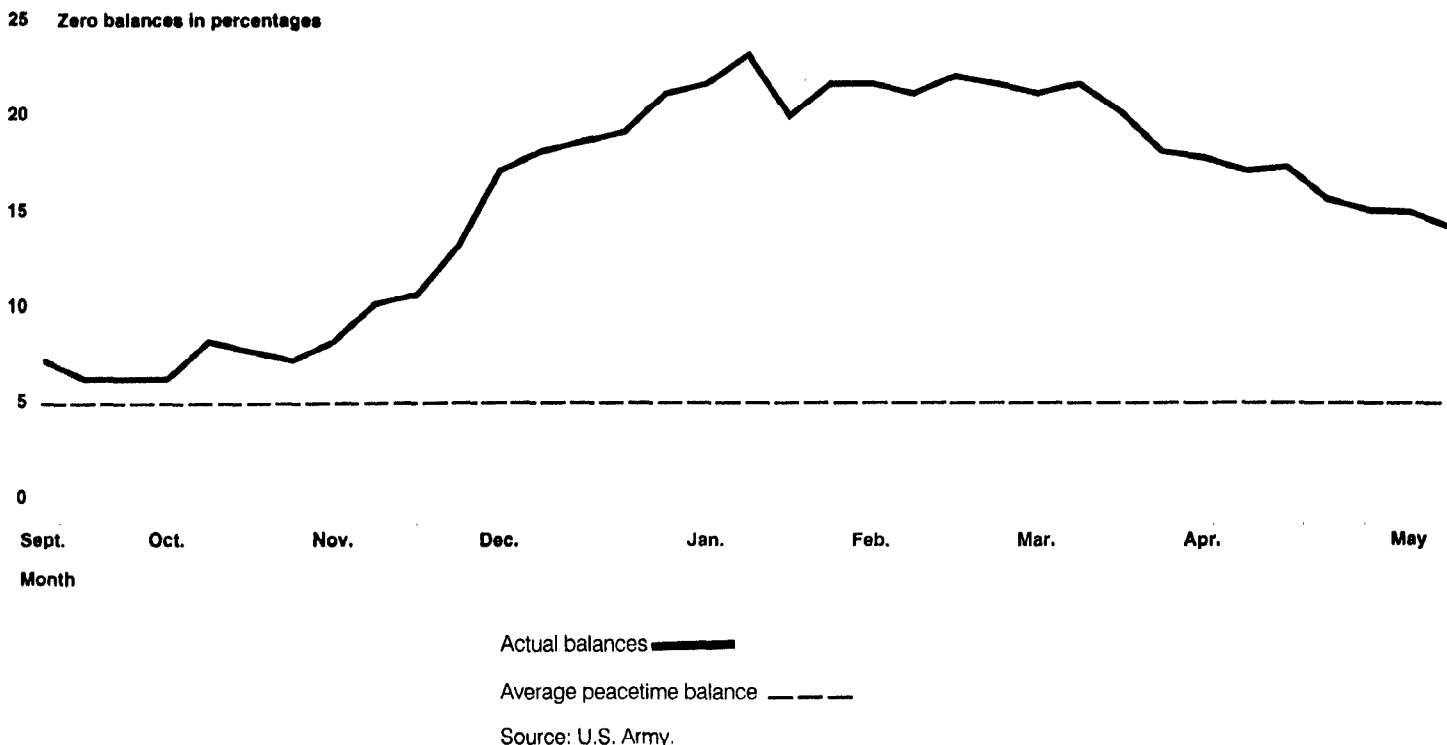
The greater-than-anticipated demand for medical supplies during Operation Desert Shield/Desert Storm contributed to supply shortfalls. According to Army officials, the Army's medical supply system was not prepared for and could not keep up with the demand for certain items. During peacetime, the medical supply centers managed "300 lines," or different types of medical supplies; during Operation Desert Shield/Desert Storm, they managed over 3,000 lines. According to an official with the Army's Office of the Surgeon General, the medical supply centers' staffing and equipment initially were inadequate to handle the volume of medical supplies required for the force buildup.

Medical Supply Centers Lacked Supplies

Medical supply centers in theater also experienced shortages of supplies. For example, about 10 days before the start of the ground war, the medical supply centers reported that a number of critical items were out of stock, including penicillin and blood serums. According to Army officials, some shortages resulted from the fact that unique wartime medical supplies are only available from single sources within the industrial base. Items in short supply included immunizations and antidotes to counter the threats of biological and chemical warfare. The industrial base sources were not capable of accelerating their production capacities to meet the increased demand for the items that had resulted from Operation Desert Shield/Desert Storm.

USAMMCE, a major source of supplies for deployed units, also had shortages during Operation Desert Shield/Desert Storm. For example, at USAMMCE the percentage of inventory items out of stock, or at "zero balance," reached about 23 percent in January 1991. The rate at USAMMCE remained around 20 percent for the next 2 months. (In peacetime the rate of out-of-stock items in the USAMMCE inventory averages about 5 percent.) Figure 3.1 shows the zero balance rates at USAMMCE from September 1990 through early May 1991.

Figure 3.1: Zero Balance Rates at USAMMCE During Operation Desert Shield/Desert Storm



Medical Supply Centers Lacked Trained Personnel

The medical supply centers in theater did not have adequate numbers of personnel or adequately trained personnel for the magnitude and type of supply support necessary during Operation Desert Shield/Desert Storm. The medical supply centers under both corps needed additional staffing to perform their missions. XVIII Corps medical supply centers deployed with a shortage of supply personnel, which hindered their ability to provide responsive and timely service. The VII Corps reassigned 20 medics from corps hospitals to assist the supply centers as drivers and materiel-handlers. Further, 40 personnel from an EVAC hospital were assigned to a medical supply center for a period of 6 weeks.

The training and peacetime experiences of the medical supply center personnel had not prepared them for the operations of the medical supply centers in the Persian Gulf. For example, supply center personnel are trained to manage supplies using national stock numbers (item numbers), not the items' commercial names. One hospital commander stated that,

since the medical supply centers' personnel were not familiar with the items, they often did not know what they had in the inventory and could not provide substitutes when the requested items were out of stock. This problem was compounded by the fact that physicians did not specifically request possible substitutes. As a result, the medical supply centers did not fill some requisitions when they might have had acceptable substitutes on hand.

Medical Supply Centers Had Automation Problems

Another problem that both the logistical organizations and the medical units faced involved the Army's new automated supply system. The medical supply portion of the Theater Army Medical Management Information System (TAMMIS) was designed to assist medical personnel by providing timely, accurate, and relevant supply information. TAMMIS automates the management and requisitioning of medical materiel required to support all medical units. Deficiencies in organization, training, and communications, however, adversely affected the successful fielding of the system. Since headquarters and hospital units did not have the communications equipment required to support TAMMIS, units had to physically transport their automated files to the medical supply centers. Supply center personnel, in trying to analyze these files, found errors and other problems that made the requisitions incomplete and incomprehensible, but they were unable to communicate back to the units to reconcile the problems and proceed with processing the requests. Not only did the unit personnel lack the training to operate TAMMIS, but supply center personnel, as well, lacked an understanding of how the system was supposed to function. The medical supply centers had similar problems in communicating requisitions to USAMMCE and USAMMA.

Medical Supply Centers Lacked Transportation

A lack of adequate transportation assets in the theater slowed the distribution of medical supplies between the ports of entry, the medical supply centers, and the hospitals. Supply officials stated that the volume of air and sea shipments of medical supplies sent from Europe into the Persian Gulf had overwhelmed the receiving capabilities of the ground operations. One supply center commander claimed that, though medical supplies might have arrived in theater by airlift, they often sat at the airport for 3 weeks before trucks were available to transport them to the medical supply centers. An XVIII Corps report stated that the lack of organic transportation had hampered the supply center's ability to support medical units and that the movement of medical supplies was "consistently a fourth or fifth priority." An Army Central Command combined lessons learned

report stated that the medical supply system must be able to coordinate delivery to distant customers and to provide emergency resupply to all customers. However, several medical unit and medical supply center officials cited the lack of transportation assets at the supply centers and the lack of transportation support from the corps as factors that had limited the distribution of supplies to the hospitals.

Conclusions

The Army had many problems in equipping and supplying medical units during Operation Desert Shield/Desert Storm. DEPMEDS sets lacked significant quantities of critical medical equipment, and medical supply centers had many problems providing medical supplies to units. Army medical units might have achieved higher readiness rates in a shorter period of time if the Army had established a logistical support system to fully equip and supply medical units and had assigned priorities to do so in theater. Due to problems with equipping and supplying units in theater, the Army was not adequately prepared to provide medical care prior to the start of the ground campaign, and the Army's ability to provide adequate care had the war lasted longer or had the predicted number of casualties occurred would have been questionable.

Recommendations

We recommend that the Secretary of the Army take the following actions:

- Develop policies and procedures for equipping and supplying hospitals deployed to a theater of operations to ensure full mission capability upon arrival.
- Develop policies and procedures for establishing medical resupply centers in theater, including when they are to be operational and who they are to support. These policies and procedures should detail the amount of resources such as transportation, automation, and personnel required to carry out their mission.

Agency Comments

DOD concurred or partially concurred with all our findings except our finding that medical supplies were in short supply. DOD indicated that it had procured more than \$500 million worth of medical supplies for Operation Desert Shield/Desert Storm and that there were 30 days worth of medical supplies in Saudi Arabia at the start of the ground campaign. According to those with whom we talked during the course of our review, however, shortages did occur. Unit personnel, including unit commanders; after-action reports; and other information we obtained during our review

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indicated that units had not received all the medical supplies deemed necessary for sustained operations.

DOD concurred with our recommendations, stating that the Army is in the process of modernizing its combat hospitals and estimates the modernization's completion by fiscal year 1996. DOD also indicated that it is developing a joint doctrine to articulate the tri-service medical supply functions of the Army's in-theater medical supply centers. The doctrine will be issued around April 1993. Additionally, the Army has initiated a study to review and identify (1) total transportation and lift requirements for the distribution of all classes of supply and (2) automation systems that provide in-transit visibility at all points in the supply system. However, the amount of resources that can be applied will be based on Army priority and fiscal constraints.

Doctrinal Employment of Hospitals Limited

During Operation Desert Shield/Desert Storm, some Army DEPMEDS hospital units could not perform their doctrinal missions because they lacked mobility. Hospital units were not mobile because the equipment in the sets was very heavy, and the units lacked transportation and other support assets. MASH and CSH units moved only portions of their hospitals after the ground war started. For example, the 60-bed MASH units are expected to move with the combat units and operate in the rear combat areas. The hospitals are therefore designed to be 100-percent mobile. However, because of the weight of the hospital sets, the speed of the battle, and the shortage of trucks and materiel-handling equipment, some MASHs and CSHs took only a portion of their bed capacity and surgical capability in order to be in a position to provide surgical support early in the ground campaign. According to Army reports, over 40 percent of the bed capacity of these units was left behind the line of departure, and only half the surgical capability moved forward. Other, larger DEPMEDS-configured hospitals also lacked transportation and support equipment, and these shortages resulted in delays in the transportation and setup of these units.

Weight and Size of DEPMEDS Limited Mobility

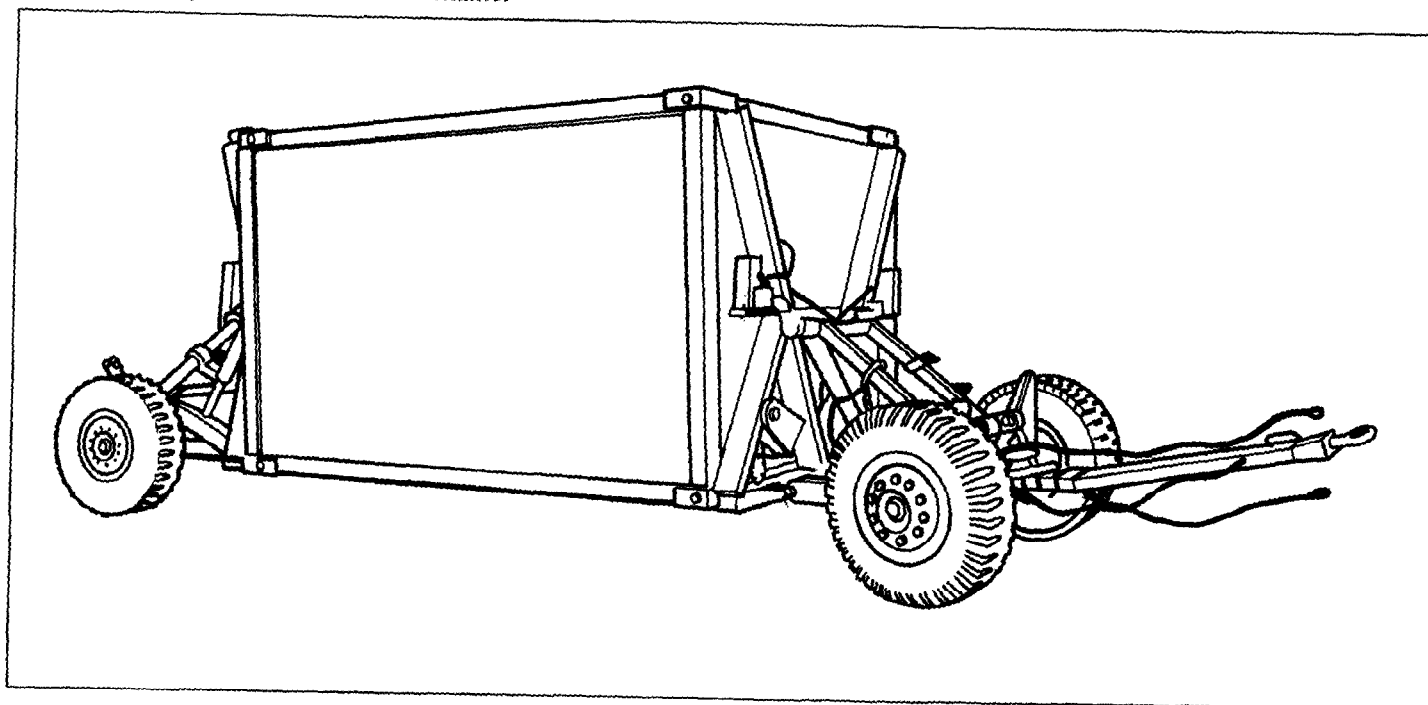
Army war-fighting doctrine calls for the use of MASHs and CSHs in the rear areas of a combat division. These hospitals offer the first surgical services injured soldiers receive during combat operations. Moving these hospitals into their planned locations became a challenge during Operation Desert Shield/Desert Storm because of the anticipated speed of the front lines' movement and the difficult terrain. For example, XVIII Corps' first major offensive battle of the ground war was expected to be 100 miles from the combat units' original line of departure.

The two types of hospitals that moved with the combat forces are large and very heavy. For example, a MASH weighs around 1,450 tons and consumes about 42,000 cubic feet of space, and a CSH consumes about 52,000 cubic feet of space. To state these figures comparatively, moving a MASH would be the equivalent in weight to moving about 21 M1A1 Army tanks. Moving all the MASH's equipment would take at least 36 trucks (of which 22 must be 5-ton) and 32 medical storage containers (some of which are approximately 20 feet long, 8 feet high, and 8 feet wide). This equipment includes medical and nonmedical equipment such as tents, surgical equipment, and mobile generators.

The medical storage containers are very cumbersome to move. Dolly sets were designed to attach to each end of these long containers and to be pulled by 5-ton trucks. Some of these containers weigh as much as

14,000 pounds and have to be towed by specific types of 5-ton trucks. Using the dolly sets allows a clearance of only 12 inches off the ground, and according to an after-action report, it was virtually impossible to move these containers in rugged terrain and sand. Figure 4.1 shows a dolly set connected to a medical storage container.

Figure 4.1: Dolly Set With Medical Container



Source: U.S. Army.

Shortage of Support Vehicles Caused Problems in the Setup and Mobility of Hospitals

Shortages of transportation and support assets throughout the theater during Operation Desert Shield/Desert Storm hindered the transportation and setup of hospital units. For example, the transportation of DEPMEDS requires the latest version of the Army's 5-ton truck, which was in particularly short supply. This is the only truck capable of pulling the dolly sets that are part of the DEPMEDS equipment. Medical units were authorized this truck, but the necessary quantity was not available in the Army's inventory. According to logistics officials, the Army Medical Department eventually reached an agreement with the Department of the Army for a shipment of 5-ton trucks to be sent to the Persian Gulf. However, once in Saudi Arabia, the vehicles were reallocated to meet other theater needs, and the medical units did not receive all the trucks they needed. For

example, VII Corps medical units needed 148 5-ton trucks but received only 85.

Also, there was an insufficient amount of materiel-handling equipment for hospital units, which can cover up to 32 acres. Once a hospital unit arrived at a site to establish its operations, it needed materiel-handling equipment to move heavy containers and other heavy equipment to the appropriate areas. After-action reports state that the lack of materiel-handling equipment adversely affected the operational readiness of the hospitals because the unloading and setup of the DEPMEDS equipment was impossible.

Some units that did not have, or could not obtain, logistical assets and support overcame these shortfalls by (1) obtaining needed equipment on the local economy, (2) using less efficient substitutes, and (3) confiscating necessary items. For example, when one Evacuation Hospital unit experienced delays in hauling its equipment, it hired civilian contractors. Also, medical units often resorted to using less effective substitutes when authorized assets were not available. For example, some units used less efficient contractor flatbed trucks, abandoning the authorized DEPMEDS dolly sets when adequate numbers of 5-ton trucks were not available to pull them. One medical official stated that after the air war had started, the unit had confiscated a number of abandoned Saudi buses to help meet the unit's unfilled transportation needs.

Logistical and transportation support provided by the corps during Operation Desert Shield/Desert Storm was reportedly inadequate. For example, although the corps is to provide CSH units with most of the necessary transportation assets to relocate, it was short trucks. Army after-action reports also noted that hospitals did not have adequate materiel-handling equipment and, as a result, had to rely on the corps for support. However, these assets were in short supply in the corps as well.

The lack of transportation and materiel-handling equipment in the units and limited corps support resulted in delays in the transportation and setup of the hospitals. For example, one CSH required 7 days to relocate, though it was estimated that a move should require only 2 or 3 days. In another instance, the unit could not set up its equipment until 3 days after it had arrived at its tactical location because the unit did not have materiel-handling equipment to move the heavy DEPMEDS containers. One commander stated that the corps had not even known the transportation and support needs of the hospitals. He added that if the corps had the

responsibility to supply these assets to the medical units, it needed to train with them to know what their needs were and how to fill them.

Medical support was only one of many competing demands for limited corps assets. The medical units had to compete with the combat units for corps support, and it appears that the medical units were often assigned a lower priority. Medical unit commanders and supply personnel frequently stated that the combat units had gotten first priority for corps support. Many of these officials believed that the corps had not provided adequate support to the medical units and that the medical units had in fact been assigned the lowest priority.

Employment of DEPMEDS Limited

Because of mobility problems, some Army hospitals designed to provide the first surgical services to injured soldiers could not be employed during the ground war with their full surgical and bed capabilities intact. As the ground war unfolded and combat forces of the two Army corps moved forward, the corps' medical support moved with them but in different ways. According to an XVIII Corps after-action report, medical planners believed that MASHs and CSHs, in their DEPMEDS configurations, would not be able to keep up with combat forces or traverse the rugged terrain. To provide some hospital services, the XVIII Corps planned to make the hospitals 100-percent mobile. However, while MASH and CSH units were able to gain total mobility, they were able to provide only about half of their surgical and bed capabilities. To do this, only a limited amount of equipment was transported. Most of the surgical capability was loaded onto trucks rather than into DEPMEDS containers to ensure that the surgical capability of the hospitals was not lost, as it would have been if dolly sets carrying these containers had failed to negotiate difficult terrain. According to an after-action report, this decision enabled the units to get to their positions and establish their facilities in time to support combat casualties. However, in one case, a unit had to scale down even further the amount of equipment it carried. One MASH unit commander said that his unit could set up 4 operating tables and 36 beds in 12 hours and be ready to receive patients. However, when the ground war started, it became apparent that the unit would have to be made lighter and more mobile so that it could keep up with the advancing forces. His MASH downsized to 12 beds and 4 operating tables.

The VII Corps moved its forward hospitals as complete sets. According to an Army after-action report, VII Corps MASHs were completely uploaded on organic and corps transportation assets. However, reports indicate that the

units could not keep up with the pace of the operations. By the end of the ground war, only one MASH was operational. The report concluded that the hospitals had been inadequately designed to perform their doctrinal missions. Personnel in other hospital units that moved forward with combat troops reported that they had simply been unable to carry out their missions due to problems with mobility. They stated that during their move to Iraq, under no enemy fire, with no air threat, with roads and essentially flat terrain, they had been unable to move, set up, or prepare to take patients before the ground war was over. They said that, in fact, their unit had been so far behind that they had not even unloaded their equipment. They stated that there was no place for the CSH or MASH equipped with DEPMEDS in the new, highly mobile combat theater.

Conclusions

Hospital mobility is a key element in the Army's war-fighting doctrine. In a fast-paced battle, hospital units—especially MASHs and CSHs—must be in a position to care for combat casualties as quickly as possible. These units, operating in the rear of a combat division, are the hospitals that provide resuscitative surgery to injured soldiers. Units that were assigned these roles during Operation Desert Shield/Desert Storm, however, could not keep pace with the combat units and had to leave much of their surgical and bed capacity behind. Had the war been more intense or lasted longer, adequate care might not have been provided.

Recommendation

We recommend that the Secretary of the Army ensure that the doctrine involving the employment and configuration of battlefield hospital units is consistent with the battlefield of the future and that these units are sufficiently resourced with transportation and support assets to accomplish their missions.

Agency Comments

DOD concurred or partially concurred with our findings. It also concurred with our recommendation, indicating that the Army was in the process of completing doctrine for a new battlefield infrastructure known as "Medical Force 2000" at the time Operation Desert Shield commenced.

Problems With Patient Evaluation and Regulation

The Army's ability to effectively and quickly evacuate casualties from the battlefield was impeded due to the rugged terrain, distances between the hospitals and the front lines, poor communications, and the lack of navigational equipment and repair parts. The Army was fortunate that hostilities had not been more intense or of longer duration because the evacuation system might not have been able to accommodate higher numbers of U.S. casualties.

Ground Ambulances Were Ineffective

The rugged terrain, a lack of navigational equipment, communication difficulties, and the long distances between units and medical treatment facilities prevented the use of ground ambulances for anything but the collection of patients from the forward battlefield and their movement between hospitals in the rear area. As a result, patients were evacuated to medical treatment facilities almost exclusively by air ambulances. Given the fast-moving, offensive nature of the ground war, only air ambulances were capable of providing the necessary rapid evacuation of the seriously wounded.

Desert Conditions Degraded Air Ambulance Capabilities

According to Army reports, air ambulance support was neither adequate nor responsive, especially at night. This concern can be traced in large measure to the limitations of the UH-1 (Huey) air ambulances. The Army employed both the UH-1 and the UH-60 (Blackhawk) helicopters as air ambulances. Lessons learned assessments cite numerous problems with the use of UH-1 ambulances in the heat and dust of the desert. Problems with these ambulances included the following:

- The UH-1 was unable to perform day and night missions in bad weather because it lacked navigational aids and performance capabilities, such as a pilot's night vision system, which are available in other Army helicopters, including the UH-60. For extended periods of time and on a number of occasions during and immediately after the war, UH-1 air ambulances were unable to respond to urgent requests due to poor visibility.
- The UH-1 was inadequate for the role of direct support to forward maneuver divisions because of its lack of lift capability in hot weather, its short range and low speed, and frequent maintenance requirements.
- The UH-1 could not meet its primary mission of evacuating priority patients from forward units to a MASH and then on to a CSH, due to the distances involved and the limited fuel available at MASHs. The long distances required frequent refueling, and crews had trouble locating fuel points. Some air ambulances reported landing next to tanker trucks, tanks,

and Bradley Fighting Vehicles to ask for fuel or for directions to the nearest fuel supply.

- The UH-1 lacks the additional armored protection afforded the UH-60 and does not possess an antimissile/rocket defense system.

In spite of these deficiencies, according to Army reports, units with the UH-1 were given the heaviest work loads, even though the more capable UH-60s were available. However, the evacuation capabilities of the UH-60s were also limited because of the speed of combat operations and because hospitals were far from the front line.

Communication and Navigational Shortfalls Impeded Patient Evacuation and Regulation

Ambulance units were severely limited because radio communication was limited in range to only 15 miles or less, even though conditions required communicating distances 10 times that range or more. Ambulance units also experienced a lack of navigational equipment or delays in obtaining it. The sustainability of ambulances was questionable as well, due to units' lack of spare parts and their inability to get them through the supply system. Due to the lack of communication and navigational equipment, the evacuation of patients could not be managed. The inability of the medical regulator to manage the evacuation of patients could have led to an inefficient use of hospital beds, and sustainability problems could have resulted in delays in evacuating casualties.

Radios Had Limited Capabilities

Air ambulances were equipped with FM radios that had an effective range of about 15 miles. However, the expanse of the corps area precluded the effective use of distance-limited FM communications. For example, the XVIII Corps area was 250 miles deep and 100 miles wide. In addition, normal FM transmission capability was greatly degraded in the desert, causing the disruption of communication between air ambulances and their bases only short distances away.

The long distances between combat and medical units in the theater dictated the use of AM communications to transmit requests. However, the combat divisions did not have adequate numbers of AM radios and relied heavily on FM ones, though even they were in critically short supply. One ambulance unit deployed without FM secure communications and was totally reliant on unsecured UHF and VHF radio communications.

Officials of one air ambulance company stated that they had had problems being directed to casualties because they had very limited communications.

They said that they had listened to the international disaster channel to find out where casualties were and had flown to those locations for pickups. After patients were loaded, pilots flew directly to known hospital locations over Iraqi tanks and infantry. One pilot stated that if it had been a "shooting war," the company would have lost every Huey and its crew. If these Hueys had been properly equipped with adequate communications equipment, the medical regulator could have routed the pilots over safe ground and away from Iraqi tanks and infantry.

**Poor Communication
Capability Reduced the
Effectiveness of Patient
Regulation**

During Operation Desert Storm, the evacuation of patients could not be managed by the medical regulator because of the lack of communications. For example, an air ambulance company reported that it had never been directed by a medical regulator when transporting a patient to a treatment facility. In an attempt to overcome this problem, the VII Corps established a "racetrack" air evacuation system. Air ambulances made repeated round trips between a forward collection point near the battlefield and a drop-off point in the rear, near two corps hospitals. In XVIII Corps, a different plan was devised whereby C-130 Air Force transports would be used to bring patients back to rear areas from airstrips located near forward positioned logistical bases. However, the speed of the operation and the light number of casualties did not necessitate implementation of this plan.

The inability of the medical regulator to manage the evacuation of patients could have led to an inefficient use of hospital facilities, since ambulances took patients only to the hospitals whose locations they knew. The unmanaged evacuation system could have led to the underuse of some hospitals and the overwhelming of others—a potentially tragic situation if the numbers of patients had been higher, as originally projected. As explained by a chief nurse during Operation Desert Storm, patients would show up at the hospital without notification from the medical regulator or the air ambulances. Because hospital personnel did not know what was coming, they could not prepare for the patients and ensure that the correct specialists were waiting for the patients when they arrived.

**Ambulance Units Lacked
Navigational Aids**

Some ambulance companies experienced delays in receiving navigational equipment such as global positioning systems and Loran gear. An air ambulance detachment purchased Loran gear on the local economy in the United States prior to deployment and contracted with a Saudi Arabian helicopter company to install the equipment; however, the company installed the equipment upside down. An ambulance company commander

said that, though division combat units had been equipped with global positioning and Loran gear, his company had been provided only one global positioning system and no Lorans. An XVIII Corps report stated that receipt of navigational equipment was sporadic throughout the operation.

Personnel from another air ambulance company stated that it had been made a company of 12 helicopters by combining two air detachments only 1 month before being mobilized. Although one detachment had its UH-1s configured with the updated navigational gear, the other had the older models. After being called up, the company tried to get the older UH-1s modified with the updated navigational gear but could modify only one of the six older models. These personnel said they had been told that the other models would be modified when they arrived in Saudi Arabia. The models were modified about 4 days before Operation Desert Storm began.

Ambulance Units Lacked Repair Parts

During Operation Desert Storm, the sustainability of air ambulances was questionable due to the absence of repair parts. While units did not report diminished readiness because of a lack of repair parts, several commanders stated that if the war had lasted much longer, sustainability would have been a problem. The following examples were cited:

- An air ambulance company maintenance officer stated that only about 50 of the company's 500 requests for UH-60 helicopter parts had been filled during Operation Desert Shield/Desert Storm. He added that the company had deployed with an insufficient number of repair parts because it had been assured that parts it had requisitioned before deployment would be forwarded to it in the Persian Gulf. The company never received those parts. The officer added that it had taken 53 days to fill four of the highest priority requisitions, which were for parts whose lack would have grounded the aircraft in peacetime. The officer noted that, though the unit had been able to maintain high readiness rates up to and through the ground campaign, the mission capability of the unit dropped significantly immediately after the war due to the lack of maintenance and repair parts.
- Another air ambulance company reported that the supply system had not worked according to doctrine, resulting in hoarding by some units and the unnecessary grounding of aircraft in other units because of a lack of repair parts.
- A National Guard air ambulance company reported that it had received only 50 of 380 repair parts it had requisitioned in theater and that to maintain its aircraft it had relied almost solely on stocks that it had arrived with.

Conclusions

The Army's patient regulation and evacuation system was not effective during Operation Desert Storm. The Army's medical units could not effectively communicate with one another. Ground ambulance units were ineffective, and the Army had too few air ambulance units to cover the expanse of the Persian Gulf theater and to perform in its environment. Also, the repair parts supply system did not support the maintenance needs of the ambulance units.

Recommendation

We recommend that the Secretary of the Army ensure that the doctrine for employing ambulance units and for regulating patients is consistent with the battlefield of the future and that these units are sufficiently resourced with equipment and support to accomplish their missions.

Agency Comments

DOD concurred with all of our findings and our recommendation, indicating that the development of new air and ground ambulance doctrine was another element of Medical Force 2000. However, upgrading the helicopter fleet from the older UH-1s to UH-60s will be determined on the basis of Army priorities and fiscal constraints.

Units and Commands GAO Visited

The following is a list of organizations we visited during our review of Army medical units' readiness and operations in Operation Desert Shield/Desert Storm:

- Office of the Army Surgeon General, Washington, D.C.
- U.S. Health Services Command, Ft. Sam Houston, Texas
- U.S. Academy of Health Sciences, Ft. Sam Houston, Texas
- U.S. Central Command, MacDill Air Force Base, Florida
- U.S. Army Central Command, Ft. Gillem, Georgia
- U.S. Forces Command, Ft. McPherson, Georgia
- 1st Continental U.S. Army, Ft. Meade, Maryland
- 2nd Continental U.S. Army, Ft. Gillem, Georgia
- 5th Continental U.S. Army, Ft. Sam Houston, Texas
- XVIII Corps, Ft. Bragg, North Carolina
- 82nd Airborne Division, Ft. Bragg, North Carolina
- U.S. Army Europe/VII Medical Command, Heidelberg, Germany
- VII Corps, Stuttgart, Germany
- 5th MASH Hospital, Ft. Bragg, North Carolina
- 159th MASH Hospital, New Orleans, Louisiana
- 31st CSH Hospital, Heidelberg, Germany
- 41st CSH Hospital, San Antonio, Texas
- 128th CSH Hospital, Nelligen, Germany
- 12th EVAC Hospital, Wiesbaden, Germany
- 114th EVAC Hospital, San Antonio, Texas
- 217th EVAC Hospital, San Antonio, Texas
- 312th EVAC Hospital, Greensboro, North Carolina
- 300th Field Hospital, Wilkes-Barre, Pennsylvania
- 316th Station Hospital, Harrisburg, Pennsylvania
- 146th Air Ambulance Company, Parkersburg, West Virginia
- 236th Air Ambulance Company, Landstuhl, Germany
- 374th Air Ambulance Detachment, Little Rock, Arkansas
- 507th Air Ambulance Company, San Antonio, Texas
- 42nd Ground Ambulance Company, Ludwigsburg, Germany
- 429th Ground Ambulance Company, Ft. Bragg, North Carolina
- 651st Ground Ambulance Company, Ludwigsburg, Germany
- U.S. Army Medical Materiel Agency, Frederick, Maryland
- U.S. Army Medical Materiel Center, Europe, Pirmasens, Germany
- Combat Equipment Group, Europe, Mannheim, Germany
- 2nd Corps Support Command, Nelligen, Germany
- 428th Medical Supplies, Optical, and Maintenance, Heidelberg, Germany
- 44th Medical Brigade, Ft. Bragg, North Carolina

Appendix I
Units and Commands GAO Visited

- 32nd Medical Supplies, Optical, and Maintenance, Ft. Bragg, North Carolina
- Mobilization Stations at Ft. Bragg, North Carolina; Ft. Sam Houston, Texas; and Ft. Carson, Colorado

Comments From the Department of Defense

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



HEALTH AFFAIRS

THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301-1200

JUN 16 1992

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and International
Affairs Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report entitled-- "OPERATION DESERT STORM: Full Army Medical Capability Not Achieved," dated March 31, 1992 (GAO Code 393500/OSD Case 9019). The Department agrees with the basic conditions identified in the GAO report. The Department disagrees, however, with the conclusions that have been drawn from conditions because they give a false presentation of the capability of the Army to meet its Persian Gulf mission.

The joint medical response to General Schwarzkopf's tasking was the largest medical force deployment since World War II. It consisted of the assembly of vast amounts of medical manpower, materiel, and equipment, moving it halfway around the world to establish a credible medical response capability in an underdeveloped, harsh environment. That feat alone staggers the imagination when one considers that over 18,000 hospital beds were established and manned in a theater of war over 8,000 miles from the continental United States. Less than a decade ago, this country could not provide adequate combat care for eight out of ten potential casualties arising from a major conflict. The Department has come a long way to produce what was available during Desert Storm. Fortunately, the casualties were not of the magnitude that could have occurred. However, that does not change the fact the Department of Defense medical support in the theater met General Schwarzkopf's requirements and stood ready to meet a worse case scenario.

As expected, the Army medical department had the largest tasking. The Army tasking more than doubled with the decision to build an offensive force. In a period of 2 months,

See comment 1.

Appendix II
Comments From the Department of Defense

See comment 1.

thousands of beds were moved into the theater. When offensive ground action began, the Army Medical Department had 44 hospitals, 13,400 beds, and more than 23,000 trained medical personnel deployed and ready to treat casualties. Had the anticipated casualties occurred, the Army Medical Department could have met its mission.

As successful as the DoD was in meeting the medical support requirements, the Department recognized that not everything went as well as desired. As with any endeavor of such magnitude, problems and shortcomings will surface. Capturing the events of OPERATION DESERT SHIELD/DESERT STORM, especially its problems and shortcomings, to enable the Department to profit from its mistakes is a most worthy endeavor. The GAO has contributed to that objective. However, the conclusions that the GAO derived from the highlighted conditions are unsupported, and do not portray the true capability of the Army field medical units in the Persian Gulf.

See comment 2.

The report does not provide any indication as to the degree that the various problems and shortcomings existed and the magnitude of their effect. With the exception of the finding on the Professional Officer Filler System, the report appears to rely primarily on anecdotal evidence, much of which are statements made by various individuals who either have no expertise in the area in which they were commenting or were not in a position to comment on the issue.

See comment 3.

There is also an apparent lack of understanding that it is the Commander-in-Chief of the U.S. Forces who dictates the priority of all units in the area of operations. In many instances, the report implies that medical readiness could have been achieved faster if conditions, rectified only a few days before the ground campaign, had been given a higher priority. It is, however, the Commander-in-Chief who determines what forces are needed and when. General Schwarzkopf's knowledge of how and when the campaign would commence is what dictated the priorities he assigned to medical throughout the buildup. Based on those priorities, the Army was able to provide the required medical capability to prosecute the war within the spectrum established by the Commander-in-Chief.

See comment 4.

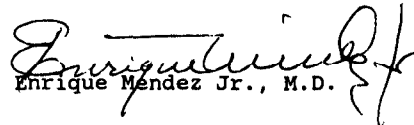
To foster the claim that the Army leadership and the medical community placed the men and women of OPERATION DESERT SHIELD/DESERT STORM at perilous risk is both unfounded and unwarranted.

See comment 5.

Appendix II
Comments From the Department of Defense

The detailed DoD comments on the report findings and recommendations are provided in the enclosure. The Department appreciates the opportunity to comment on the draft report.

Sincerely,


Enrique Mendez Jr., M.D.

Enclosures:
As stated

GAO DRAFT REPORT--DATED MARCH 31, 1992
(GAO CODE 393500) OSD CASE 9019

"OPERATION DESERT STORM: FULL ARMY MEDICAL
CAPABILITY NOT ACHIEVED"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

- **FINDING A: Army Medical Units.** The GAO reported that, to support the combat forces of OPERATION DESERT SHIELD/DESERT STORM, the U.S. Army deployed 198 medical units--such as (1) hospitals, (2) air and ground ambulance companies and detachments, (3) logistic support units, and (4) special surgical teams. The GAO noted that those units were in addition to the medical aides and battalion aid station staff of the individual combat divisions and the size of the hospitals ranged from 60-bed Mobile Army Surgical Hospitals to a 1,000-bed general hospital.

The GAO found that Army medical units deployed to the Persian Gulf area in two phases--the first began to deploy in August 1990, to support the XVIII Corps, and consisted of active duty units. The GAO noted that the second phase, to support the VII Corps and an echelon above corps, involved active duty units from Europe and Reserve and National Guard units from the United States. According to the GAO, approximately 55 percent of the Army medical forces deployed to the Persian Gulf were Army Reserve and National Guard units, while the remaining 45 percent were active duty units. (pp. 2-3, pp. 15-17/GAO Draft Report)

DOD RESPONSE: Concur.

- **FINDING B: Call-up and Mobilization of Army Medical Units.** The GAO reported that, after the Reserve and National Guard units were alerted and called up, personnel were to report to their home stations within 72 hours for processing. The GAO noted that the responsible Continental U.S. Army for the

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Now on pp. 2 and 10-11.

Now on pp. 10-11.

Reserves or the State Adjutant General for National Guard units attempted to fill any shortages of personnel or equipment and units then reported to mobilization stations, where Mobilization Assistance Teams evaluated each unit for deployment preparedness in terms of the Modified Tables of Organization and Equipment, which list unit war-time authorizations for personnel by occupational specialty and equipment required to perform the missions. The GAO explained that, if units were short in either category or if personnel were not qualified for the positions, mobilization stations attempted to correct personnel equipment, and/or training deficiencies to enable the units to deploy to the theater of operation. (pp. 15-17/GAO Draft Report)

DOD RESPONSE: Concur.

- o **FINDING C: Various Types of Army Medical Units Called Up and Mobilized For Desert Shield.** The GAO reported that, to support combat forces in the Persian Gulf, Forces Command alerted and called up a variety of units in the Army medical corps, such as the following:

- hospital units--which provided surgical and medical treatment to patients;
- air and ground ambulance units--which provided transportation for patients to the medical facilities;
- logistics units--which provided needed medical supplies and maintenance of medical equipment;
- area support units--which provided a variety of medical support;
- command and control units--which coordinated and provided support for theater operations;
- combat stress units--which provided prevention or treatment of battle fatigue;
- preventive medicine units--which detected and identified health hazards and minimized their effects;
- veterinary services units--which inspected foods for

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personnel and treated Military animals;

- dental services units;
- medical professional teams--which provided special treatment, such as thoracic surgery; and
- laboratory services units--which examined samples of such things as blood and skin to determine the existence of diseases or other microorganisms.

The GAO explained that, by the time the ground war began the Army had deployed 44 hospital units with various missions--and the hospitals had different bed capacities. The GAO commented that, in general, hospital units provided resuscitative and definitive surgery and specialty treatment for battlefield casualties. (The GAO provided details on the six types of hospitals and the corresponding missions of each.) According to the GAO, initially, five Army hospitals deployed with less than up-to-date hospital equipment and general purpose tents, but it soon became apparent that a change to a state-of-the-art facility should be made because the temperature in the general purpose tents could not be brought below 100 degrees and the sand-and windstorms tore the tents. The GAO reported that the decision was made to convert the five hospitals already in the theater to the Deployable Medical System sets and to field all hospital units, due to be deployed to the theater, with the sets.

The GAO found that, eventually, all of the hospital units in the Persian Gulf--except for those in host nation facilities--operated with the equipment sets (which were designed to contain all the equipment and structures needed to complete the missions). The GAO explained that some hospital units that deployed to the Persian Gulf did not obtain the sets, but rather operated in host nation hospitals or medical facilities and took no equipment with them because everything was to be furnished by the host nation (i.e., Saudi Arabia, the United Arab Emirates, and Oman)--including living accommodations. The GAO noted units that used host nation support facilities were assigned to the echelon above corps in the medical command structure. (pp. 17-24/GAO Draft Report)

DOD RESPONSE: Concur. The deployable medical systems program is the first medical modernization or sustainment

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Now on pp. 11-14.

effort the Army has undertaken since the Medical Unit Self-Contained Transportable was procured during the Vietnam Conflict era--a twenty year period. All units could not be refurbished simultaneously. The five older active component hospitals selected to deploy for Operation Desert Storm had not yet been modernized with the deployable medical systems equipment. However, the decision was made to deploy the units as is, and to modernize and retrofit the hospitals in theater.

- o **FINDING D: Organization of Health Care in Theater.** The GAO reported that Army medical units in the Persian Gulf were assigned to the various major military divisions in the theater and provided the troops with hospitalization and other health services. The GAO found that in-theater medical care was distributed among various levels in the corps. The GAO explained that treatment was provided at the front lines by medics--combat life savers--who were trained in life saving techniques. The GAO noted that battalion aid stations near the front lines also provided immediate lifesaving measures, but did not possess full surgical capabilities. The GAO further noted that, when necessary, patients were evacuated to clearing stations for emergency care and on to a Mobile Army Surgical Hospitals for surgery or stabilization and for subsequent evacuation to Combat Support Hospitals or Evacuation Hospitals if specialized medical care was needed. The GAO explained that, if more intensive care was required, the patient was then evacuated to medical facilities at the echelon above corps level. The GAO noted that, in a General Hospital, for example, the patient received specialized surgical care and could recuperate; however, if more advanced care was required, the General Hospital stabilized the patient for evacuation to a hospital outside the theater of operation or in the continental United States. (p. 25/GAO Draft Report)

DOD RESPONSE: Concur. The statement, "the battalion aid station does not possess full surgical capability" is misleading. The battalion aid station possesses no surgical capability by design.

- o **FINDING E: Medical Supply System Established In Theater.**

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Now on pp. 14-15.

The GAO reported that, to support the medical units in Saudi Arabia, the Army set up an in-theater medical logistics system consisting of five Medical Supply, Optical, and Maintenance units with forward distribution points to distribute supplies to the various medical units. According to the GAO, the units were supplied by the U.S. Army Medical Materiel Center in Europe and the U.S. Army Medical Materiel Agency in the United States. The GAO explained that emergency requisitions were shipped via Desert Express from Charleston Air Force Base, South Carolina. The GAO also noted that two of the units were tasked with providing theater-wide support to all Military Services and became known as the U.S. Army Medical Materiel Center, Saudi Arabia while the other three were designated to supply only Army units within the two corps and the echelon-above corps units. (pp. 25-26/GAO Draft Report)

DOD RESPONSE: Concur. Resupply requisitions from the U.S. Army Medical Materiel Center, Saudi Arabia, were passed to the U.S. Army Medical Materiel Center, Europe. Requisitions could be filled from the Europe stocks were shipped to the theater. Requisitions that could not be filled were passed electronically back to the Defense Personnel Support Center in the Continental United States. Those requisitions were then filled and shipped directly back to the theater. The Defense Personnel Support Center also filled inventory resupply requisitions from the U.S. Army Medical Materiel Center, Europe. Some medical equipment and supply requirements were procured by the U.S. Army Medical Materiel Agency for delivery directly to theater. However, the Defense Personnel Support Center was the main Continental United States source for resupply.

- o **FINDING F: Automated Information for Assigning Medical Personnel Incomplete or Out of Date.** The GAO found that during peacetime, units were required to ensure that U.S. Forces Command is kept aware of wartime needs for medical personnel. The GAO explained that the Health Services Command operates the "Professional Officer Filler System"--the Army automated system for identifying active duty doctors and nurses for assignment to units in the event of war. The GAO found, however, that the information in the system was incomplete and out of date; therefore, the Army could not provide all the doctors and nurses within 72 hours

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Now on p. 15.

as required. The GAO concluded that, during the first phase of deployment in August 1990, the system should have enabled the Army to identify and assign 100 percent of the doctors and nurses for 40 active medical units selected for deployment--but, instead, was able to provide only 449 doctors and nurses to meet the 981 known requirements.

The GAO found that, in the second phase of deployment, when the Army began to deploy medical units from the VII Corps in Europe, similar problems were experienced. The GAO explained that, while the U.S. Army, Europe, was required to use the Professional Officer Filler System, it did not do so--preferring, instead, to use its own "personnel augmentee" system. The GAO concluded, however, that the information in that system was similarly out of date, and about one third of the personnel designated by the system to fill needed positions were no longer in theater. The GAO indicated that, as a result, the U.S. Army, Europe, used medical specialty consultants to identify 236 active duty doctors and nurses for assignment to the units, enabling them to deploy. (pp. 4-5, pp. 28-33/GAO Draft Report)

DOD RESPONSE: Concur. Clearly, the Professional Officer Filler System experienced problems during the early stages of OPERATION DESERT STORM. Although theoretically, this automated information system is a sound approach to management personnel at mobilization, more command interest and intensive management is required by both Health Services Command and Forces Command to improve the accuracy and execution of the system. No unit was delayed in its deployment. Also, the 72 hour standard--a self-imposed standard--may be excessively ambitious.

- o **FINDING G: Personnel Were Non-Deployable.** According to the GAO, many doctors and nurses and other Active duty, Reserve, and National Guard personnel were non-deployable for a variety of reasons, such as unacceptable physical conditions, noncurrent skills, and mismatches in medical specialty requirements assigned to medical units were non-deployable for Operation Desert Shield/Desert Storm. The GAO found that some officers had not taken required basic training; some had incomplete medical training; while some who were called up occupied positions that were excess to the units. (p. 5, pp. 34-36/GAO Draft Report)

Now on pp. 3 and 20-24.

Now on pp. 3 and 24-26.

DOD RESPONSE: Concur. The Department agrees that some personnel were non-deployable. The Department also recognizes that improvement efforts must include methods to track the availability for personnel to deploy and the current status of their skills and training. It must be recognized, however, that any deployment or exercise will find personnel who are nondeployable. Regardless of the reason for an individual's nondeployment status, not a single unit deployment was delayed or canceled because of manpower shortages or availability.

- o **FINDING H: Unit Status Reports Did Not Adequately Reflect Personnel Deficiencies.** The GAO reported that periodic reporting by medical units in peacetime did not reflect the status of personnel in the units accurately; therefore, unit commanders did not know the actual status of the units. The GAO concluded that, if the reports had been accurate, the Army might either not have mobilized deficient units or attempted to have the required personnel at the mobilization stations when the units arrived. The GAO asserted that, even though the Army attempted to fill out medical units with personnel before deployment to the Persian Gulf, many units left at less than authorized strength, and personnel continued to join units in the theater to make the units fully mission capable. (p. 5, pp. 36-37/GAO Draft Report)

DOD RESPONSE: Concur. The current reporting system allows for maximum liberal interpretation of substitution of physician specialties. That practice causes a loss of visibility on required specialties in specific units. To rectify the problem, the Army developed new readiness reporting procedures--which are included in Army Regulation 220-1, scheduled for publication in July 1992. However, keep in mind that, in accordance with Health Services Command Regulation, many specialties are substitutable in combat operations.

- o **FINDING I: Many Personnel Not Trained For Wartime Missions.** According to the GAO, many doctors and nurses in active, Reserve, and National Guard units had not been trained during peacetime to perform the assigned wartime jobs. The GAO explained that, in addition to lacking basic soldier

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Now on pp. 3 and 26.

skills, many doctors and nurses had not participated in field training and were not familiar with unit missions or field equipment. The GAO also explained that, in peacetime, Reserve and National Guard units are required to train on designated weekends and during a 2-week training exercise, however, during the weekend drills and annual training exercises, many Reserve and National Guard doctors and nurses are assigned to Army hospitals to supplement hospital staffing.

The GAO found that ten hospital units were scheduled to operate deployable hospital sets without having trained on the equipment the sets contained because, prior to the war, the units had been assigned older equipment. The GAO reported that the Army established an 8-day "crash" course to teach units how to operate the newer deployable hospitals. The GAO concluded, however, that the course taught little except how to assemble the hospital tents. The GAO noted that the 8-day course was given to four units in the theater, and the remaining units were taught at the mobilization stations. The GAO added that many doctors and nurses received their initial training on how to treat chemical casualties in the Persian Gulf--while some medical officers assumed roles as unit commanders, even though they had not trained for the position or had never been in command positions. (p. 6, pp. 37-39/GAO Draft Report)

Now on pp. 4 and 27-28.

DOD RESPONSE: Concur. The demand for providing peacetime care has resulted in physicians and nurses not being trained with field units. As a result, those health care providers were not familiar with the equipment and field environment. That situation should not, however, be construed to mean the providers do not possess the technical medical skills required to provide health care on the battlefield. This report also states a Deployable Medical Systems course taught little except how to assemble equipment and alludes that was somehow deficient. The cited course was specifically designed for assemblage orientation and some new equipment training. Because all but three items of medical equipment were standard, medical personnel did not require the training of the majority of medical equipment.

- o **FINDING J: Some Deployable Hospitals Were Never Fully Equipped.** The GAO reported that all the deployable hospital

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sets that had been stored for emergencies were short some critical equipment--for example, of the 19 hospital sets deployed from storage facilities in Europe, the average set contained only 60 percent of the required equipment, with one set having only 28 percent. The GAO explained that missing equipment--including x-ray equipment, ventilators, defibrillators, dental equipment, and electrocardiograph monitors--was to be sent to the units in theater in what was called "ship-short" packages. The GAO also found that some hospital units either received the missing equipment late or never received it at all. The GAO noted that equipment was missing or incompatible with the sets because the ship-short packages had not been matched up with the sets for which they were intended. (p. 7, pp. 41-42/GAO Draft Report)

DOD RESPONSE: Partially concur. OPERATION DESERT SHIELD/DESERT STORM caught the Army in the mid-point of the Deployable Medical System modernization program. In order to expedite providing hospital equipment to what were otherwise unequipped units, the Army made a decision to field Deployable Medical Systems assemblages at less than 100 percent fill, rather than wait until every authorized item was on-hand. That decision resulted in the Army Deployable Medical System "ship-short" program. The report states that some deployable hospitals were never fully equipped in the relative sense. The equipment shortages in the GAO referenced sets had been adequately identified before the war. The new Deployable Medical System hospitals were deployed out of prepositional material with an average of 70 percent of their required medical equipment. The Army has automated records documenting the shortages with detail down to the individual assemblage level. Based on the "ship-short" information kept by the Army, by the time of the Ground War, "ship-short" packages had been provided to theater for all deployed hospitals, and all the hospitals were ready to conduct operations.

- o **FINDING K: Shortage of Medical Supplies Delayed Mission Capability.** According to the GAO, Army hospital units deploying to the Gulf were directed not to procure medical supplies prior to deployment because a 10-day initial supply of potency and dated items was to be shipped to each unit in the theater. The GAO found, however, that some units received packages that contained only 3 days' supply of

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Now on pp. 4 and 30-31.

Now on pp. 4 and 31-34.

critical items such as narcotics, anesthesia, antibiotics, and X-ray film while other units received none. The GAO noted that a lack of supply discipline and requisitioning problems exacerbated the shortage of supplies and many hospitals did not receive supplies until just days before the ground war started. (pp. 7-8, pp. 42-47/GAO Draft Report)

DOD RESPONSE: Nonconcur. The DoD does not agree that shortages of medical supplies delayed mission capability of medical units or hindered their capability to sustain medical support operations. Active component hospitals, along with, previously fielded Deployable Medical Systems, deployed with their required medical supplies to include potency and dated materiel. Hospitals equipped with Deployable Medical System assemblages drawn from storage had a package of potency and dated items prepared in the Continental United States, shipped to theater, and married up with the hospital in theater. Additionally, start-up inventories for the supporting medical supply Optical and Maintenance Battalions were also built in the Continental United States and/or the U.S. Army Materiel Center, Europe, and sent to theater to provide the initial resupply materiel for the hospitals. The start-up inventory included potency and dated items. The packages had all been provided to the deployed hospitals prior to the start of the Ground war. The Army had sufficient medical supplies to support all the deployed hospitals by the start of the ground war. The Defense Personnel Support Center processed requests for more than \$500 million in medical supplies in support of OPERATION DESERT SHIELD/DESERT STORM, and the in-theater medical logistics system issued approximately \$300 million in medical supplies to the deployed forces. Prior to the ground campaign, there were 30 days of medical supplies (including all critical items) physically in Saudi Arabia at the start of the ground campaign. Early deployed hospitals had a 30-day level of supply on hand. Later arriving hospitals, with 3 to 10 days of most required medical supplies, were continuing to receive medical supplies to achieve the 30-day inventory. It is critical to recognize that the priority of fill to units was based on their mission and the plan established by the Commander-in-Chief to execute the ground campaign. The war was not delayed for lack of medical supplies.

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- o **FINDING L: In Theater Supply Centers Did Not Operate According to Doctrine and Faced Other Problems.** The GAO reported that Army medical supply centers in the Persian Gulf could not adequately respond to the medical supply demands of in theater units even though the doctrinal mission of the supply centers was to serve as resupply points for Army medical units. The GAO found that, during Operation Desert Shield/Desert Storm, the centers were also required to act as initial supply points for Army medical units and as resupply points for Air Force, Navy, and Marine Corps medical units, however, the centers were neither trained nor equipped to adequately respond to the extensions of the mission.

The GAO also reported that mission capabilities of medical units suffered because (1) the medical supply centers were not established until after hospitals had arrived in the Persian Gulf, (2) hospitals were slow to receive supplies because the medical supply centers lacked supplies, trained personnel, transportation, and had automation problems. The GAO explained as follows:

- **Medical Supply Centers Were Established Late**--According to the GAO, medical supply centers were not established and operational in the Persian Gulf prior to the arrival of many of the hospitals, and therefore, they were unable to provide medical supplies and other logistical support when the hospitals arrived. The GAO explained that the greater-than-anticipated demand for medical supplies during OPERATION DESERT SHIELD/DESERT STORM contributed to supply shortfalls. The GAO found that the Army medical supply system was not prepared for, and could not keep up with, the demand for certain items and the medical supply centers' staffing and equipment initially were inadequate to handle the volume of medical supplies required for the force buildup.
- **Medical Supply Centers Lacked Supplies.** The GAO reported that hospital units did not receive some medical supplies because there were Army-wide shortages during OPERATION DESERT SHIELD/DESERT STORM. The GAO added that medical supply centers in theater also experienced shortages of supplies. According to the GAO, some shortages resulted from the fact that unique wartime medical supplies--immunizations and antidotes to counter the threats of biological and chemical warfare--are only available from single sources within the industrial base. The GAO concluded that the industrial base sources were not capable

of accelerating production capacities to meet the increased demand for the items that had resulted from OPERATION DESERT SHIELD/DESERT STORM.

- Medical Supply Centers Lacked Trained Personnel--According to the GAO, the medical supply centers did not have adequate numbers or adequately trained personnel for the magnitude and type of supply support necessary during OPERATIONS DESERT SHIELD/ DESERT STORM. The GAO also found that the training and peacetime experiences of the medical supply center personnel had not prepared them for the operations of the centers in the Persian Gulf. The GAO observed, for example, that center personnel are trained to manage supplies using national stock number (item numbers), not by the commercial name of the item; therefore the personnel often did not know what was in the inventory and could not provide substitutes when requested items were out of stock. The GAO concluded that the problems was compounded when physicians did not specifically request possible substitutes. The GAO also concluded that, as a result, the medical supply centers did not fill some requisitions when acceptable substitutes may have been on hand.
- Medical Supply Centers Had Automation Problems--The GAO pointed out that the medical supply portion of the Theater Army Medical Management Information System was designed (1) to assist medical personnel by providing timely, accurate, and relevant supply information, and (2) to automate the management and requisitioning of medical materiel required for the support all medical units. The GAO found that headquarters and hospital units did not have the communications equipment required to support the System, and units physically had to transport the automated files to the medical supply centers. The GAO concluded that, not only did the unit personnel lack the training to operate the automated system, but supply center personnel, as well, lacked an understanding of how the system was supposed to function.
- Medical Supply Centers Lacked Transportation--According to the GAO, a lack of adequate transportation assets in the Theater slowed the distribution of medical supplies between the ports of entry, the medical supply centers, and the hospitals. The GAO found that the volume of air and sea shipments of medical supplies sent from Europe into the Persian Gulf had overwhelmed the receiving capabilities of the ground operations. The GAO concluded that the medical

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Now on pp. 4 and 34-38.

supply system must be able to coordinate delivery to distant customers and provide emergency resupply to all customers. The GAO further concluded that the lack of transportation assets at the supply centers and the lack of transportation support were factors that had limited the distribution of supplies to the hospitals. (p. 8, pp. 47-52/GAO Draft Report)

DOD RESPONSE: Partially concur. Although the medical supply problems described existed to some degree during the deployment, at the time of the Ground War, the medical logistics system was firmly established in theater and was meeting operational needs. Five Medical Supply, Optical, and Maintenance Units were established and operating in theater. Two units operated together to form the U.S. Army Medical Materiel Center, Saudi Arabia. The Saudi Arabia Center provided the integrated Class VIII management for the entire theater. Two of the Medical Supply, Optical, and Maintenance Units were positioned in the northern portion of the theater to provide rapid support to the hospitals supporting the two fighting Corps and the fifth unit was positioned in the western region of the theater to support hospitals located in that region. Air transportation channels had been established to ship supplies from the U.S. Army Medical Materiel Center, Saudi Arabia, in the south to the Corps Medical Supply, Optical, and Maintenance Units, and to provide a direct air shipment route from the U.S. Army Medical Materiel Center, Europe, to the Corps Medical Supply, Optical, and Maintenance Units. The medical logistics structure was operational in theater prior to the ground war. During OPERATION DESERT SHIELD/DESERT STORM, the Army medical logistics structure in-theater process more than 160,000 medical supply orders and distributed more than 11,000 tons of medical supplies to the supported units.

The report leaves the impression that the U.S. was unable to support significant amounts of the medical materiel needs arising from OPERATION DESERT SHIELD/DESERT STORM. With the exception of military-unique medical items, such as investigational vaccines and chemical agent threat-equipment materiel, the vast majority of medical materiel needs were available from the U.S. industrial base. The zero balance rate experienced by the U.S. Army Medical Materiel Command, Europe is an inappropriate indicator of the supply position in the theater, or of the capability of the U.S. industrial base to meet the medical materiel needs. The U.S. Army

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Medical Materiel Command, Europe was providing support to the theater, and at the same time was supporting the expanded evacuation hospital beds in Europe, as well as continuing the peacetime medical supply support for the DoD hospitals in Europe. Obviously, this put a strain on the inventory at the European Center and caused the increased zero balances. However, requirements passed from Saudi Arabia Center which could not be met by inventory at the European Center were immediately passed electronically to the Defense Personnel Service Center for processing, and then transported directly to the theater. The fact that an item was a zero balance at the European Center did not mean the item was not available to units in theater. Because of the extent of the medical deployment, there were some problems with rapidly identifying and quantifying all the materiel needs, and then transporting the materiel to the theater.

The report also gives the impression that Theater Army Medical Management Information Systems performed poorly during Operations Desert Shield/Desert Storm. The opposite is, in fact, true. Again, the Army was caught in the middle of the modernization effort. The information system had not yet been fielded to the Medical Supply, Optical, and Medical Units or to most of the medical units deployed to theater. A deliberate decision was made to expedite the fielding of the information system. A team was sent to theater to field as many medical units with the information system as possible. The medical supply centers did not have problems with the system, considering they were fielding the system for the first time as they deployed to the theater. The information system provided sorely needed automation support, to what was an unmanageable paper and pencil task prior to the fielding of the system. Most of the automation shortfalls resulted from inadequate theater communications that prevented the effective communication of automated logistics data--not to an information system shortcoming. A shortcoming associated with the medical logistics automation support was the inability to field the information system to all the deploying units.

It is acknowledged that the Medical Supply, Optical, and Medical Units were not structured with adequate personnel or equipment to support the projected increase support requirements resulting from the army hospital force equipped with Deployable Medical Systems, or to support the integrated theater Class VIII management mission. New

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medical logistics support units, Medical Logistics Battalion, Forward and Medical Logistics Battalion, Rear, with increased personnel and materiel handling equipment had already been developed. However, at the time of OPERATION DESERT SHIELD/DESERT STORM, none of the Medical Supply, Optical and Medical Units had been converted to the new Medical Logistics Battalions. The decision to collocate two such units and have them operate together to form the U.S. Army Medical Materiel Center, Saudi Arabia, was made early in the deployment, and was based on the known shortfalls in capability of the Medical Supply, Optical, and Medical Unit structure.

The DoD does not agree with the conclusion that Army medical units (1) were not adequately equipped and supplied at the start of the ground campaign and (2) were not adequately prepared to support sustained operations. Again, the conclusions drawn show a lack of understanding of the Commander-in-Chief role in dictating priorities for use of resources in the theater. As previously explained, the Commander-in-Chief dictates the priority of all units in his area of operation, including the medical units. In many instances the GAO report implies that medical readiness could have been achieved faster if conditions, rectified only a few days before the ground campaign, had been given a higher priority. However, it was General Schwarzkopf that determined what forces were needed and when. His knowledge of how and when the ground campaign would commence is what dictated the priorities he assigned to medical through the buildup. Based on those priorities, the Army was able to provide the required medical capability to prosecute the war within the established spectrum.

- o **FINDING M: Effectiveness of the Deployable Medical System Limited By Weight.** The GAO reported that Army war fighting doctrine calls for the use of Mobile Army Surgical Hospitals and Combat Support Hospitals in the rear areas of a combat division to offer the first surgical services injured soldiers receive during combat operations. The GAO concluded, however, that moving the hospitals into planned locations became a challenge during OPERATION DESERT SHIELD/DESERT STORM because of (1) the anticipated speed of movement of the front lines, (2) the difficult terrain, and (3) the weight of the hospitals. (pp. 54-55/GAO Draft Report)

Now on pp. 4 and 40-41.

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DOD RESPONSE: Partially concur. The finding is misleading because the effectiveness of the Deployable Medical Units was not limited by weight. Unless some revolutionary technological advance emerges in the immediate future, hospitals will remain large and cumbersome elements on the battlefield. Nonetheless, the medical equipment deployed worked well. The limiting factor was and remains the transportation and material handling equipment. Those assets are controlled centrally by the major subordinate command within a geographic area. By design, not all units - medical or other--are 100 percent mobile; the Mobile Army Surgical Hospital is the only hospital with that requirement. It is not cost effective for every unit to have its own fleet of prime movers because most Corps or higher combat service support units will not move that often under normal envisioned scenarios. The combat commander establishes the priorities for use of transportation assets, in conjunction with successful execution of the operations plan.

- o **FINDING N: Shortage of Support Vehicles Caused Problems in the Setup and Mobility of Hospitals.** According to the GAO, shortages of transportation and support assets throughout the theater hindered the transportation and setup of hospital units. The GAO pointed out, for example, that the transportation of deployable medical systems requires the latest version of the Army 5-ton truck, which were in particularly short supply. The GAO observed that those trucks are the only trucks capable of pulling the dolly sets, which are part of the Deployable Medical System. The GAO asserted that, while medical units were authorized the trucks, the necessary quantity was not available in the Army inventory; as a result, a shipment of 5-ton trucks to the Persian Gulf was necessary.

The GAO further reported that there was an insufficient amount of materiel-handling equipment for hospital units, which can cover up to 32 acres. The GAO found that once a hospital unit arrived at a site to establish operations, materiel-handling equipment was needed to move heavy containers and equipment to the appropriate areas. The GAO concluded that the lack of materiel-handling equipment adversely affected the operational readiness of the hospitals, because the unloading and setup of the medical

system equipment was impossible.

In summary, the GAO concluded that the logistical and transportation support provided by the corps during OPERATION DESERT SHIELD/DESERT STORM was inadequate. The GAO concluded that the lack of transportation and materiel-handling equipment in the units and limited corps support resulted in delays in the transportation and setup of the hospitals. The GAO observed that the corps did not know the transportation and support needs of the hospitals. The GAO pointed out, however, that if the corps had the responsibility to supply those assets to the medical units, it was responsible for training with them to know what their needs were and how to fill them. (pp. 56-58/GAO Draft Report)

Now on pp. 4 and 41-43.

DOD RESPONSE: Concur. The shortage of tactical lift assets within the Army remains a limiting factor in the ability to transport organic equipment of units to include hospitals. Doctrinally, hospital units (less the Mobile Army Surgical Hospital) that need to relocate are moved by Corps/Theater transportation assets. Units do not maintain 100 percent transportation assets because it is not economically sound--many vehicles would go unused daily. Transportation assets are prioritized based on the priorities established by the combatant commander. Therefore, transportation assets are pooled and centrally controlled. Recently, the Army conducted a mobility requirement study to revalidate transportation requirements and practices. An action plan was approved in the 3d quarter FY 92.

Another aspect of Operation Desert Shield/Desert Storm is that, even under optimal conditions, it is virtually impossible to set-up and establish a hospital in 100 hours, the entire length of the ground campaign. Although transportation was a major factor in the ability of medical units to maintain pace with combat units, it was the view of the Commander-in-Chief that, in the execution of his operational plan, the mobility and set-up of hospitals was satisfactory and did not hinder ground forces from their mission.

- o **FINDING O: Employment of Deployable Medical Systems Limited.** The GAO found that, because of mobility problems,

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Now on pp. 4 and 43-44.

some Army hospitals designed to provide the first surgical services to injured soldiers could not be employed during the ground war with their full surgical and bed capabilities intact. The GAO further found that, while some units were able to gain total mobility, only about half of the surgical and bed capabilities could be provided. The GAO also found that only a limited amount of equipment was transported--rather than into Deployable Medical System containers to ensure that the surgical capability of the hospitals was not lost--as it would have been if dolly sets carrying the containers had failed to negotiate difficult terrain. The GAO concluded that, as a result, units were able to get to their positions and establish their facilities in time to support combat casualties. (pp. 58-60/GAO Draft Report)

DOD RESPONSE: Partially concur. One of the most demanding aspects of command is the ability to tailor a unit to accomplish its mission in all environments and conditions. That requires establishing echelon support packages designed to support specific combat maneuver operations. All factors and influences are considered in the development and employment of such specially tailored unit slice, which varies in size and composition with each new mission. It is a commonly practiced doctrine. The DoD nonconcur, however, with the GAO conclusion that, had the war lasted longer or been more intense, adequate care may not have been provided. The GAO report gives a false impression of the Army capability to meet the Persian Gulf medical mission.

- o **FINDING P: Ground Ambulances Were Ineffective.** The GAO determined that, during OPERATION DESERT SHIELD/DESERT STORM, problems also arose (1) in the effective use of ambulances and (2) in the evacuation of patient--because ground ambulances could not be used as much as planned due to the rugged terrain, coupled with the long distances between units and medical treatment facilities. The GAO found that patients were evacuated to medical treatment facilities almost exclusively by air ambulances. The GAO concluded that, given the fast-moving, offensive nature of the ground war, only air ambulances were capable of providing the necessary rapid evacuation of the seriously wounded. (p. 9, 61/GAO Draft Report)

Now on pp. 5 and 45.

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DOD RESPONSE: Concur. The pace of modernized weapons systems, the ability of modernized vehicles to traverse great distances over rugged terrain without the need of an engineered road network had a negative impact on the less modern ground ambulances to perform to the standard of the Abrams tank and the Bradley and cavalry fighting vehicle. This situation demonstrates the requirement to have a balanced and versatile evacuation system with multiple platforms (ground and air) to accomplish the critical battle-field medical mission. Additionally, it reinforces the need to ensure that support units have modernized equipment designed to accomplish the mission of supporting combat maneuver forces in any environment.

- o **FINDING O: Desert Conditions Degraded Air Ambulance Capabilities.** In addition, the GAO found that air ambulance support was neither adequate nor responsive, especially at night, because of the limitations of the UH-1 Huey air ambulances. The GAO reported the following about the air ambulances:

- they were unable to perform day and night missions in bad weather because of the lack of navigational aids and performance capabilities;
- they lacked lift capability in hot weather, had short range and low speed, and frequent maintenance requirements;
- they lacked fuel capacity;
- they did not have additional armor protection; and
- were not equipped with an anti-missile/rocket defense system.

The GAO found that, in spite of the cited deficiencies, units with the UH-1 were given the heaviest workloads--even though the more capable UH-60 was available. The GAO acknowledged that the evacuation capabilities of the UH-60 was limited because of the speed of combat operations and because hospitals were far from the front line. (pp. 61-62/GAO Draft Report)

Now on pp. 5 and 45-46.

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DOD RESPONSE: Concur. The GAO observations are representative of the Army UH-1 aeromedical evacuation fleet. The UH-60 helicopters dedicated to the Army aeromedical evacuation mission have better range, speed, fuel capacity, ballistic protection, and other aircraft survivability equipment than the Viet Nam era UH-1 model. Unfortunately, the UH-60 aircraft only comprises a meager 24 percent of the current aeromedical evaluation fleet. Conversely, the 25 year old UH-1 still remains the mainstay of aeromedical evacuation, with 76 percent of all assets dedicated to that critical medical mission remaining unmodernized. Future Army doctrine and force structure is based on the availability of the UH-60. That is why the air ambulance modernization effort is so important.

- o **FINDING R: Radios Had Limited Capabilities.** The GAO reported that ambulance units were severely effected because radio communication was limited in range to only 15 miles or less, even though conditions required communicating distances ten times that range or more. The GAO indicated that normal FM transmission capability was greatly degraded in the desert, causing the disruption of communication between air ambulances and the bases only short distances away. The GAO found that the long distances between combat and medical units in the theater dictated the use of AM communications to transmit requests; however, the combat divisions did not have adequate numbers of AM radios and relied heavily on FM radios--although they were in critically short supply. The GAO noted that one ambulance unit deployed without FM secure communications and was totally reliant on unsecured UHF and VHF radio communications. (pp. 63-64/GAO Draft Report)

DOD RESPONSE: Concur. Communications across the breadth and depth of the modern battlefield remains a significant challenge for the Army and for the Services in general. Even with the modernization efforts, the radio requirements continue to be difficult to obtain in a reasonable time and in adequate quantities. The impact is well documented and has a severed negative impact on the ability to control the multiple complex dynamics of war. The medical community suffers because the critical aspect of the evacuation chain must integrate the combat operating systems with the field medical services health care units from the division and

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Now on pp. 5 and 46-47.

through out the communications zone. The efforts to modernize will be based on funding availability and priority.

- **FINDING S: Poor Communication Capability Reduced the Effectiveness of Patient Regulation.** According to the GAO, during OPERATION DESERT STORM, the evacuation of patients could not be managed by the medical regulator because of the lack of communications. The GAO noted that an air ambulance company reported that it had never been directed by a medical regulator when transporting a patient to a treatment facility. The GAO concluded that, because hospital personnel did not know what was coming, they could not prepare for the patients and ensure that the correct specialists were waiting for the patients when they arrived. (pp. 64-65/GAO Draft Report)

DOD RESPONSE: Concur. (See DoD response to Finding R.)

- **FINDING T: Ambulance Units Lacked Navigational Aids.** The GAO reported that some ambulance companies experienced delays in receiving navigational equipment, such as global positioning systems and Loran gear. The GAO explained that one air ambulance detachment purchased Loran gear on the local economy in the U.S. prior to deployment and contracted with a Saudi Arabian helicopter company to install the equipment; however, the company installed the equipment upside down. (p. 65/GAO Draft Report)

DOD RESPONSE: Concur. Clearly, modernization of the aeromedical evacuation fleet has not kept pace with the modernization of the rest of the Army rotary wing fleet. That is true of both procuring new aircraft and in obtaining product improvements to aircraft, such as aircraft survivability equipment initiatives. The priority and funds available dictate which units will be modernized.

- **FINDING U: Ambulance Units Lacked Repair Parts.** The GAO observed that the sustainability of air ambulances was questionable due to the lack of navigational equipment or

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Now on pp. 5 and 47.

Now on pp. 5 and 47-48.

Now on p. 48.

the delays in obtaining (as well as the lack of) spare parts. The GAO concluded that, while units did not report diminished readiness due to a lack of repair parts, sustainability would have been a problem if the war had lasted much longer. (p. 66/GAO Draft Report)

DOD RESPONSE: Concur. The availability of spare parts was an issue through the theater and not limited to aircraft or medical units. The ability of the Army and the industrial base to stockpile sufficient inventory of repair parts may not be viewed as economically sound. Efforts to improve aircraft reliability through technology advances and operator maintenance may prove to be more realistic alternatives if they are managed cost effectively.

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RECOMMENDATIONS

- o **RECOMMENDATION 1:** The GAO recommended that the Secretary of the Army establish effective controls to ensure (1) more accurate and complete information in the Professional Officer Filler System and (2) that commanders accurately report the personnel conditions of their units, including deployability and the ability of personnel to perform their occupational specialty and wartime missions. (p.10, p.40/GAO Draft Report)

Now on p. 28.

DOD RESPONSE: Concur. The Army currently is working to improve the accuracy of the Professional Filler System database. On March 5, 1992, the Army Surgeon General initiated the first in a series of exercises designed to validate the accuracy of the Professional Filler System rosters maintained by the major commands and individual units. The first exercise was completed March 6, 1992. The exercises randomly selected medical units for analysis. The unannounced verification exercises will continue in the future. Army policy formalizing the validation process will be issued in March 1993. Additionally, the Army initiated amendments to the Army regulation governing readiness reporting. Army Regulation 220-1 will state that physicians will be assigned to field units based on training and skills associated with the required billet. Further the reporting of status for these positions will not allow subjective

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substitution. However, it should be recognized that, in combat scenarios many specialties are substitutable in accordance with Health Services Command regulation. The changes to Army regulation 220-1 are expected to be published in July 1992.

- o **RECOMMENDATION 2:** The GAO recommended that the Secretary of the Army require realistic mission-related training of the medical corps, including doctors and nurses. (p.10, p. 40/GAO Draft Report)

DOD RESPONSE: Concur. To insure that the Department has a sufficiently trained medical force capable of performing its wartime mission. The Office of the Assistant Secretary of Defense for Health Affairs issued specific FY 1994-1999 Program Objective Memorandum medical readiness guidance and objective that address the training problem. The degree to which these objectives are met will depend on the program priorities and fiscal constraints of the Military Services utilizing the DoD Planning, Programming, and Budgeting System. The Office of the Assistant Secretary of Defense for Health Affairs will monitor the action during the FY 1992 summer program cycle.

- o **RECOMMENDATION 3:** The GAO recommended that the Secretary of the Army develop policies and procedures for equipping and supplying hospitals deployed to a theater of operations to ensure full mission capability upon arrival. (p.10, p.53/GAO Draft Report)

DOD RESPONSE: Concur. The ability to modernize and sustain the force is a difficult challenge. The Army Medical Department was in the process of converting combat hospitals to Deployable Medical Systems before Operation Desert Shield began in August 1990. In fact, the Army was in the third year of fielding what is an ambitious modernization program. The modernization efforts is ongoing and is scheduled for completion in FY 1996.

Now on p. 28.

Now on p. 38.

Now on p. 38.

- o **RECOMMENDATION 4:** The GAO recommended that the Secretary of the Army develop policies and procedures for the established of medical resupply centers in theater, including (1) when they are to be operational and (2) who they are to support. The GAO asserted those policies and procedures should detail the amount of resources such as transportation, automation, and personnel required to carry out the mission. (p.10, p.53/GAO Draft Report)

DOD RESPONSE: Concur. The development of policies and procedures for the establishment of medical resupply centers in theater was in progress prior to Operations Desert Shield/Desert Storm. The Army had approved the design and introduction into the force of new medical logistics battalions. A joint doctrine is being developed that will articulate the functions of the Class VIII, single Integrated Medical Materiel Manager. It is estimated that the joint doctrine will be issued by April 1993. Further, the Army initiated a Total Distribution System Study to review and identify total transportation and lift requirements for the distribution of all classes of supply and automation systems that provide in-transit visibility at all points in the supply line. The amount of resources that can be applied will be determined based on Army priority and fiscal constraints. During the FY 1992 summer program cycle, this issue will be monitored through the DoD Planning, Programming, and Budgeting System.

Now on p. 44.

- o **RECOMMENDATION 5:** The GAO recommended that the Secretary of the Army ensure that the doctrine involving the employment and configuration of battlefield hospital units is consistent with the battlefield of the future and that these units are sufficiently resourced with transportation and support assets to accomplish their missions. (p.10, p.60/GAO Draft Report)

DOD RESPONSE: Concur. At the time Operation Desert Shield commenced, the Army was in the process of completing the doctrine for a new battlefield medical infrastructure known as Medical Force 2000. The various Tables of Organization and Equipment for the medical units that comprise Medical Force 2000 have been developed, and were approved by the Army between 1986 and 1991. The Table of Organization and

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Equipment is the document that contains the unit operating doctrine. The Table of Organization and Equipment addresses such relevant aspects as the units mission statement, capabilities, functional relationships with other units, support requirements, field doctrine guidance and references, etc.

- o **RECOMMENDATION 6:** The GAO recommended that the Secretary of the Army ensure that the doctrine for employing ambulance units and regulation of patients is consistent with the battlefield of the future and that the units are sufficiently resourced with equipment and support to accomplish the missions. (p.10, p.67/GAO Draft Report)

DOD RESPONSE: Concur. The development of new air and ground ambulance units and doctrine for the modern battlefield was another element of Medical Force 2000. The Tables of Organization and Equipment for the new Medical Force 2000 air ground ambulance units have been developed, and were approved by the Army in 1986. The issue of modernization of the UH-1 which comprises 76 percent of the medical evacuation fleet) to the UH-60 aircraft will be determined based on army priority and fiscal constraints. During the FY 1992 summer program cycle, this issue will be monitored through the DoD Planning, Programming, and Budgeting System.

Now on p. 49.

The following are GAO's comments on the Department of Defense's (DOD) letter dated June 16, 1992.

GAO Comments

1. We cannot comment on the Navy's and Air Force's medical readiness for the treatment of casualties during Operation Desert Shield/Desert Storm, since these services were not included in our study. However, the conditions we cite in the report with respect to the Army's medical readiness—for example, the lack of adequate communications equipment in medical evacuation units, the lack of adequate ground transportation for hospital units, the lack of mission training by units, and the lack of equipment and supplies—raise considerable doubt about whether the Army's medical force could have met its mission or met General Schwarzkopf's requirements under a worst case scenario.

2. We believe that our report clearly shows the degree to which problems existed and their effects. For example, the report states that all of the 19 DEPMEDS sets deployed from Europe were missing required equipment. These sets' fill rates ranged from 28 to 82 percent, with an average fill rate of 60 percent. The report also discusses the problems the Army encountered in attempting to fill these shortages and states that these shortages were not filled in some cases. Throughout the report, we provide similar examples to document problems with personnel, supplies, equipment, tactical mobility, medical evacuation, and patient regulation. In all cases, these problems are stated both in terms of degree and effect.

3. As the report states in the "Objectives, Scope, and Methodology" section, we visited a variety of Army medical units that deployed to the Persian Gulf and interviewed numerous personnel from these units, including commanding officers, doctors, nurses, and logisticians. We also obtained written documentation, such as after-action reports, from these units detailing their mobilization, deployment, and in-theater operations. We obtained information from high ranking Army officials from selected Continental U.S. Armies, U.S. Forces Command, Health Services Command, XVIII Corps, VII Corps, and U.S. Army, Europe, all of whom were involved with the mobilization, deployment, and in-theater operations of Army medical units during Operation Desert Shield/Desert Storm. Many of these personnel were deployed to the Persian Gulf. We also obtained information from officials from the Army Central Command and the U.S. Central Command. These personnel and officials had expertise in the areas they were commenting on and were in positions to do so.

4. The report does not take issue with the theater's Commander-in-Chief having authority and responsibility for establishing priorities for units. It does, however, cite many problems Army medical units faced before and during Operation Desert Shield/Desert Storm. These problems raise considerable doubt about the abilities of these units to meet the requirements prescribed by the Commander-in-Chief.

5. We believe the report identifies problems that the Army encountered in developing medical responsiveness in Operation Desert Shield/Desert Storm and improvements the Army can make to its wartime medical operations. The report does not claim or infer that the men and women of Operation Desert Shield/Desert Storm were placed at perilous risk by the Army leadership or the medical community.

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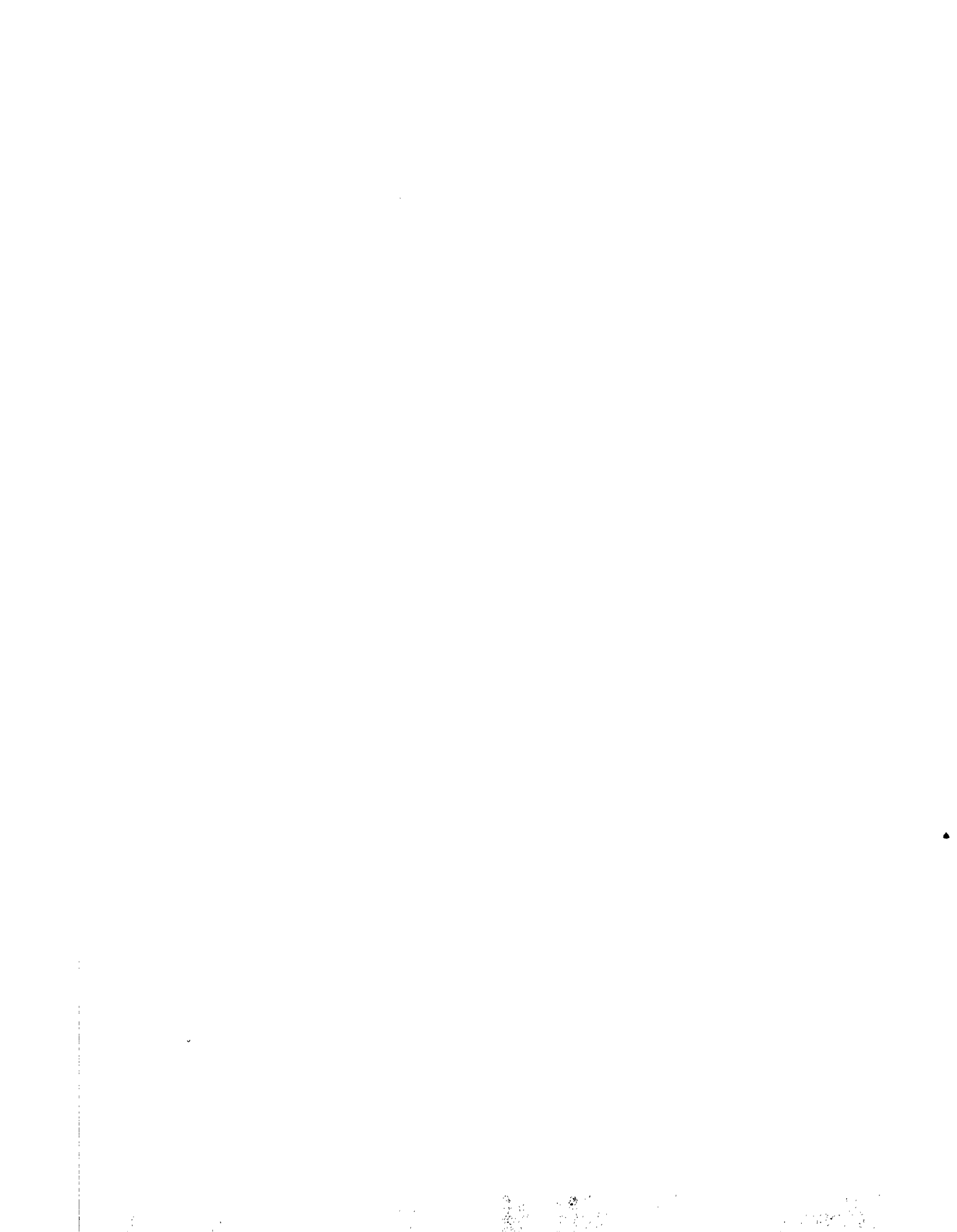
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