

GAO

Report to the Chairman, Subcommittee
on Oversight of Government
Management, Committee on
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August 1993

OPERATION DESERT STORM

Army Medical Supply Issues





United States
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National Security and
International Affairs Division

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The Honorable Carl Levin
Chairman, Subcommittee on Oversight
of Government Management
Committee on Governmental Affairs
United States Senate

Dear Mr. Chairman:

At your request, we reviewed the adequacy of medical supply inventories at Army hospitals deployed during the Persian Gulf conflict. We had raised this issue in testimony and in a report concerning the Army's medical capability during Operations Desert Shield/Storm.¹ Specifically, our objectives in this review were to determine whether (1) Army hospitals encountered medical supply shortages in preparing for Operation Desert Storm and, if so, why and (2) the industrial base was able to supply requested items on time and, if not, whether hospitals experienced shortages as a result. In addition, you asked that we describe how the Army plans to meet wartime requirements for medical supplies during future contingencies.

Background

Medical supplies are critical to the readiness and performance of the mission of Army field hospitals. To determine requirements for hospital and medical supplies, the Army uses data obtained from various Army sources. During wartime or contingencies, the Commander in Chief (CINC) for the theater determines the number and type of hospitals needed for deployment and the priority of deployment. In the case of the Gulf War, according to officials of the Army Surgeon General, the theater CINC determined that eight Army hospitals would be needed to initially support Army defensive operations during Operation Desert Shield, which began August 2, 1990. Logistical support of Operation Desert Shield was greatly accelerated in November 1990, when it was decided to double the troop strength in-theater. The CINC then decided that an additional 36 hospitals would be needed to support Army offensive operations envisioned during Operation Desert Storm. The Army hospital system in-theater consisted of six types of hospitals that had various missions and different capacities ranging from 60 beds for a Mobile Army Surgical Hospital to 300 beds for a Field Hospital.

¹Operation Desert Storm: Full Army Medical Capability Not Achieved (GAO/T-NSIAD-92-8, Feb. 5, 1992) and Operation Desert Storm: Full Army Medical Capability Not Achieved (GAO/NSIAD-92-175, Aug. 18, 1992).

Five Medical Supply, Optical, and Maintenance battalions (hereafter called medical supply centers) were responsible for distributing supplies to the hospitals and other medical units during the Persian Gulf conflict. The medical supply centers received medical supplies from the U.S. Army Medical Materiel Center in Europe, the Defense Personnel Support Center (DPSC), and the U.S. Army Medical Materiel Agency in the United States, and through purchases from sources in-theater.

At the time of the Persian Gulf conflict, Department of Defense (DOD) policy established as an objective that the services maintain pre-positioned war reserve stocks of medical supplies sufficient to last the first 60 days of a conflict. In addition, it required that the Defense Logistics Agency maintain additional war reserve stocks of medical supplies to sustain operations from the 61st day of a conflict until the 180th day, by which time industry would be prepared to meet additional requirements.

DPSC, located in Philadelphia, Pennsylvania, is DOD's wholesale inventory manager for medical supplies. It processed 196,000 requisitions for over 20,000 different types of medical items valued at \$526 million to support military operations during Operations Desert Shield/Storm.

Results in Brief

All 10 of the Army hospitals we reviewed for which data was available reported shortages of some medical supplies during the build up for the ground offensive for Operation Desert Storm.² At five other hospitals, we could not determine whether there were shortages because of the unavailability of records and personnel. Items in short supply included flu vaccines, morphine, and antibiotics, as well as certain lab reagents³ and X-ray film. Although the hospitals reported various items as being in short supply, DPSC had quantities of these items available for issuance, except for sutures.

For the 10 hospitals that reported shortages, 7 received needed medical supplies prior to the start of the ground war; 3 did not. We could not determine whether the other five hospitals received needed supplies. Lack of complete and consistent Army data such as item stock numbers and quantities on hand also prevented us from determining the overall extent of the shortages experienced by all hospitals.

²We considered that a hospital had a shortage if an item that was requisitioned was (1) not received, (2) not received in the time required, or (3) not received in the quantities ordered.

³A substance employed to produce a chemical reaction so as to detect, measure, or produce other substances.

The initial shortages of medical supplies arose because hospitals were shipped to the Persian Gulf without their full complement of medical supplies. Other reasons for shortages included the following: (1) hospital supply doctrine and supply discipline were not followed, (2) there were problems with the transportation and distribution of medical supplies, and (3) medical supply centers lacked trained personnel. War reserve policies also limited the release of medical supplies during the Persian Gulf conflict by requiring deploying forces to have funds to pay for supplies they needed.

According to DPSC officials, commercial medical suppliers filled most requisitions during the Gulf War but they could not meet some large orders in the time frames required. Four medical items—three of which are related to nerve agent exposure—posed problems for the industrial base, DPSC officials said. However, none of the 15 hospitals we reviewed reported shortages of these four items.

The Army plans new initiatives for meeting hospital supply needs during future contingencies. First, according to Surgeon General officials, the Army plans to fully stock from five to eight hospitals and at least one medical supply center with 100 percent of authorized medical supplies, including potency and dated (P&D) items to support rapid deployment.⁴ Surgeon General officials estimate it will cost \$240,000 to stock each hospital with 10 days of medical supplies and \$60,000 each year to maintain the inventory in each hospital. The estimated cost to stock each medical supply center will be \$6 million. An additional \$200,000 would be needed each year to maintain a 5-day supply of P&D's at a medical supply center. Second, the Army has transferred responsibility for war reserve stockpiles from the theater commanders to the Surgeon General and plans to reduce the number of stockpiles from 15 to 5. The Army is also considering a plan to pay for medical supplies used during "peacetime operations" from a special fund rather than from war reserves. We did not evaluate the merits of these planned initiatives.

Some Army Hospitals Reported Shortages of Medical Supplies

Ten of the 15 hospitals we reviewed reported shortages of some medical supplies during the build up for the ground offensive.⁵ Medical supplies reported as being short by the 10 hospitals included antibiotics, flu vaccine, saline solutions, laboratory reagents, morphine, oxygen, plasma,

⁴P&D items are medical items that have a limited shelf-life.

⁵We reviewed "after-action" reports or had discussions with representatives from 15 of the 44 hospitals deployed to the Persian Gulf. (See app. II for details.)

silver nitrate (used to sear wounds and as an antiseptic in treating burns), spinal anesthetics, sutures, X-ray film, and lidocaine hydrochloride (an all-purpose local anesthetic).

Seven of the 10 hospitals that reported medical supply shortages received needed supplies just before the ground war started in February 1991; 3 other hospitals did not. Because of the unavailability of appropriate records and personnel, we could not determine whether the remaining five hospitals experienced supply shortages. Appendix I contains a schedule summarizing our findings concerning shortages of medical supplies at the 15 hospitals we reviewed.

Incomplete and inconsistent data prevented us from determining the extent of shortages experienced by the hospitals. For example, there was no information on the quantities or stock numbers of the medical supplies with which units deployed or that were available at the beginning of the ground war in February 1991. According to Army officials, many units did not maintain inventory records during the Persian Gulf conflict. Moreover, the information provided by units that did maintain records and reported shortages was not always clear and consistent. For example, some units' after-action reports cited the specific types and causes of supply shortages, while others only mentioned that shortages occurred.

For the items reported as being short by the 10 hospitals, we found that DPSC had quantities of these available when the hospitals needed them, with the exception of sutures. Four hospitals reported shortages of sutures but did not identify the items by national stock number. According to a DPSC official, of the 125 different types of sutures that DPSC stocks, 11 were on backorder⁶ during Operations Desert Shield/Storm. However, because the sutures reported as being short by four hospitals were not identified by national stock number, we were unable to determine whether the backordered sutures were the same as those reported as being short by the hospitals.

Hospitals Deployed Without Being Fully Supplied

During Operations Desert Shield/Storm some hospitals were shipped to the Persian Gulf without their full 10-day authorization of P&D items, such as narcotics, anesthesia, antibiotics, and X-ray film. Typically, these units should deploy with 10 days of P&Ds to support their assigned mission.

⁶An item is categorized as being backordered when stock is not immediately available to meet current requisitions but which is ordered or recorded as a commitment for future use.

At the beginning of Operation Desert Shield, the Army initially deployed eight hospital units to the Persian Gulf. According to Army officials, three of the hospital units were deployed with some of the older hospital equipment and a 5- to 7-day supply of P&D items. However, these three units later received more modern medical equipment, which necessitated updating the P&D items to be compatible with the newer equipment. Another three hospital units deployed with a full 10-day supply of P&D items needed to support the modern hospital equipment being fielded by the Army. Two other medical units deployed to the Persian Gulf without medical equipment and P&D items but received the equipment and P&Ds later from the medical supply center in-theater.

Beginning in January 1991, the Army decided to ship only a 3-day rather than the 10-day supply of P&D items to the remaining 36 hospitals, which deployed to the Persian Gulf in what the Army called "push packages." The push packages were to be combined with the hospital sets when they arrived in the Persian Gulf. According to Army officials, push packages were utilized because the Army did not store P&D items with hospital units during peacetime because of a lack of storage facilities at the unit level and the high cost of replacing P&D items when their shelf-life expired.

For the 15 hospitals included in our review, 2 hospitals never received their push packages, and 4 received theirs incomplete. We could not determine whether the other nine hospitals received their push packages.

Other reasons for medical supply shortages in the Persian Gulf are discussed below and in detail in our report on the Army's medical capability during Operations Desert Shield/Storm.⁷ These reasons are summarized below.

- Hospital supply doctrine and supply discipline were not followed. The doctrinal mission of medical supply centers is to serve as resupply points for Army medical units. However, during Operations Desert Shield/Storm they were also required to act as initial equipage and supply points for Army medical units while simultaneously serving as resupply points for Air Force, Navy, and Marine Corps medical units. In addition, Army officials told us that a decision had been made in-theater to provide doctors with what they wanted, regardless of its availability within the military supply system or its authorization in unit sets. In addition, many "sick call" medical supplies were requested because of the lengthy build

⁷Operation Desert Storm: Full Army Medical Capability Not Achieved (GAO/NSIAD-92-175, Aug. 18, 1992).

up period. Sick call supplies are used to treat noncombat illnesses and injuries and are not part of the normal medical supply package for hospitals. Also, some medical units hoarded supplies and requisitioned excessive amounts of supplies from medical supply units. Periodically, the volume of requests overwhelmed the in-theater medical supply system.

- Medical supply centers in-theater lacked transportation. According to a XVIII Corps report, the lack of transportation hampered the supply center's ability to support medical units, and the movement of medical supplies was consistently a fourth or fifth priority. A lack of adequate transportation assets in-theater slowed the distribution of medical supplies between the ports of entry, the in-theater medical supply centers, and the hospitals, some of which were deployed far forward and reachable only over a poor and overused road network.
- Medical supply centers in-theater 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 the Persian Gulf conflict.

War Reserve Policy Limited Release of Medical Supplies

Because of a shortage of medical war reserve stocks⁸ and the Army's policy restricting the use of these stocks for contingencies such as Operation Desert Shield, the Army prepared for the deployment with only those medical supplies that were available within the DPSC wholesale supply system. The Army's policy provides that war reserve stocks can be used in peacetime, but only if funds are available to replace stocks being withdrawn. The Department of the Army considered Operation Desert Shield to be a peacetime operation, therefore, deploying forces had to pay for any medical supplies requisitioned from war reserves. According to an Army Surgeon General official, during the initial phase of Operation Desert Shield, deploying forces did not have the necessary funds to pay for the war reserve stocks withdrawn. The Army eventually distributed \$14.7 million of critical medical supplies from war reserve stocks for Operations Desert Shield/Storm but only after funds became available to pay for the items.

Also, Army Surgeon General officials told us that additional quantities of medical supplies were not withdrawn from the war reserve stocks because supply quantities were limited and may have been needed for other possible conflicts. Additionally, war reserves did not include some medical supplies being ordered by hospital units to support the newer medical

⁸The Army's worldwide requirement for pre-positioned medical war reserve stocks at the start of Operation Desert Shield was \$833 million. However, due to underfunding of the war reserve program, stocks actually on hand amounted to only about \$200 million.

equipment being fielded, since the Army was in the midst of modernizing its hospitals with the deployable medical systems at the time of Operations Desert Shield/Storm. Also, some medical supplies in the war reserve inventories were not compatible with the newer medical equipment because of differences in technology, packaging, and unit of issue.

The lack of detailed data on the Army war reserve inventories at the time of our review prevented us from determining whether procurements being made by DPSC at that time could have been filled from Army war reserves.

Suppliers Filled Most Requisitions but Could Not Meet All in Given Time Frames

Commercial medical suppliers, according to DPSC officials, filled most requisitions during the Persian Gulf conflict, but could not fill orders for 234 P&D items in the required time frame. Four P&D items were the most difficult to provide in the time frames required. However, none of the 15 hospitals we reviewed reported shortages of these four items.

While DPSC satisfied many requisitions from existing stocks, it relied on the medical supply industry to fill many other supply requisitions during the conflict. Consequently, DPSC began awarding emergency/accelerated contracts for requisitions of medical supplies it could not satisfy within days after Operation Desert Shield began. Of the \$526 million in medical supplies requisitioned from DPSC between August 2, 1990, and March 31, 1991, DPSC purchased \$257 million using emergency/accelerated procurement procedures.

Data provided by DPSC separate the \$257 million in emergency/accelerated procurement into items that could be satisfied by the industrial base and items that could not be satisfied in the time required (see table 1).

Table 1: DPSC Emergency/Accelerated Procurement of Medical Supplies During Operations Desert Shield/Storm

Item status	Number of Items	Value of items (millions)
Filled within needed time frame	579	\$151
Not filled within needed time frame	234	106
Total	813	\$257

A DPSC official stated that the 234 items valued at \$106 million represents those orders for which DPSC could not immediately satisfy the total quantity requisitioned in the required time frame. This delay in filling requisitions at the time of Operations Desert Shield/Storm was a matter of

concern to DPSC; however, given the shortness of the war and the absence of major casualties, the delays never became a problem.

DPSC encountered problems in procuring medical supplies with the following characteristics: items that are military-unique, those with a low peacetime demand but high wartime demand, and those that are specific to the theater of operations. Military-unique items are those requiring a different strength dosage or method of administration than that used in civilian practice. Medical P&D items that have one or more of these attributes and for which DPSC had the most difficulty meeting demand throughout the Persian Gulf build up were: (1) Mark I Nerve Agent Antidote Kit, (2) atropine injector (part of the Mark I Kit), (3) pyridostigmine bromide tablets (pre-treatment for nerve gas), and (4) immune serum globulin (a vaccine to boost the immune system).

The first two items are chemical weapon (nerve agent) antidotes. Because of the threat of chemical weapons, these items were in large demand during the Persian Gulf conflict and, according to DPSC officials, were on backorder continuously. For atropine, the military requires a dosage that is three to four times greater than the dosage used in civilian practice. Also, the atropine is administered with an auto-injector that can be used by soldiers on a battlefield.

Pyridostigmine bromide tablets are used to desensitize soldiers to nerve agents. The 30-milligram strength tablets used by the military are not manufactured in the United States and have to be procured from firms in the Netherlands and Great Britain. This drug also required military-unique packaging.

Immune serum globulin was purchased from both domestic and foreign sources. DPSC officials told us that troops deployed to the Persian Gulf were immunized with immune serum globulin, much of which was obtained from domestic sources. The globulin needed to re-immunize Army troops later in the deployment was obtained from foreign sources. However, due to the shortness of the conflict, the foreign-purchased globulin was never used.

Army Initiatives to Meet Future Medical Supply Needs

As requested, we obtained information on but did not evaluate the merits of the Army's initiatives to supply medical units in the future. First, the Army is considering a plan to fully stock a number of hospitals and at least one medical supply center with medical supplies, including P&D items, to

ensure rapid deployment. Second, the Army plans to revise the accountability, management, and policies of its war reserve program.

Army Considering Use of Fully Stocked Hospitals and Medical Supply Centers to Support Deployment

Depending on the contingency scenario, the Army estimates it needs between five and eight fully equipped hospitals, and one or two medical supply centers. The hospitals would be required to maintain 100 percent of authorized items, including P&D items, and would be ready for immediate deployment. The Army estimates it would cost \$240,000 to initially supply each hospital with 10 days of consumable medical supplies (including P&Ds) and an additional \$60,000 each year to maintain the inventory in each hospital.

The Surgeon General tasked the Army Medical Materiel Agency to prepare a requirements list for a contingency force medical supply center. A medical supply center would be stocked with a 5-day supply of P&D items. The Army estimates that the initial procurement cost for a medical supply center would be \$6 million, including P&D items, and that it would cost approximately an additional \$200,000 (30 percent of the initial cost of P&D items) each year to maintain a 5-day supply of P&Ds at each center.

Army Is Revising Its War Reserve Program

The Army is planning several changes to its war reserve program. The Army plans to reduce the number of stockpiles from a current 15-theater reserve to 5 stockpiles to support regional contingencies. The stockpiles would be located in the United States, Europe, Asia, and pre-positioned ships. The Army also plans to reduce the number of items stocked within the war reserve program from 16,000 items to about 3,000 "go-to-war" items. Other items would be ordered directly from vendors. Also, accountability for the war reserves would be centralized at the Army Medical Materiel Agency under the Army Surgeon General rather than theater commanders. Lastly, the Army is considering a plan to pay for medical supplies used during a peacetime military operation, such as the ongoing operation in Somalia, from a special fund rather than from war reserves.

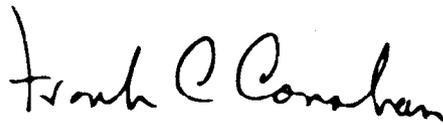
According to Army Surgeon General officials, these changes will provide a centralized control of resources; reduce the size and monetary value of reserves; reduce costs of management, security, and storage; and support contingency requirements.

We conducted our review between May 1992 and February 1993 in accordance with generally accepted government auditing standards. Our scope and methodology appear in appendix II. As requested, we did not obtain written comments on this report. However, we discussed the contents of the report with representatives from DOD and the Army Surgeon General's office. They generally agreed with the information presented.

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

This report was prepared under the direction of Henry L. Hinton, Jr., who may be reached at (202) 512-4126 if you or your staff have any questions concerning this report. Other major contributors are listed in appendix III.

Sincerely yours,



Frank C. Conahan
Assistant Comptroller General

Availability of Medical Supplies at the 15 Deployed Hospitals Included in Our Review

Hospitals ^b	Supply shortages reported ^a		
	Yes	Yes, but received before start of ground war	Could not be determined
5 MASH		X	
10 MASH			X
159 MASH		X	
28 CSH		X	
31 CSH		X	
41 CSH		X	
128 CSH	X		
377 CSH	X		
12 EVAC	X		
86 EVAC			X
114 EVAC		X	
217 EVAC			X
312 EVAC		X	
300 FLD			X
316 STA			X

^aWe defined a hospital as having a shortage if an item that was requisitioned was: (1) not received, (2) not received in the time required, or (3) not received in the quantities ordered.

^bMASH - Mobile Army Surgical Hospital
 CSH - Combat Support Hospital
 EVAC - Evacuation Hospital
 FLD - Field Hospital
 STA - Station Hospital

Scope and Methodology

To address our objectives, we visited (1) the Army's Office of the Surgeon General, which sets requirements for medical supplies and (2) the Defense Personnel Support Center (DPSC), which is DOD's inventory manager for medical supplies and is responsible for filling requisitions. Our discussions with DPSC officials focused on items they had difficulty obtaining from industry during the Persian Gulf conflict. We obtained information from an official from the Army Medical Materiel Agency, which is responsible for managing the war reserve computations and determining the types and quantities of medical supplies that are needed.

To determine which units reported shortages and what medical items were in short supply, we reviewed hospitals' and medical supply centers' "after-action" and "lessons learned" reports. Of the 44 Army hospitals that supported Operations Desert Shield/Storm, we selected 15. These 15 hospitals represented a range of medical unit types and sizes, as well as a mix of both active Army and reserve units. We visited three active Army medical units and one Army Reserve unit that participated in the Persian Gulf conflict. We interviewed a former logistics officer from one of the medical supply centers in the Persian Gulf. We also used information obtained from one of our prior reviews, including discussions with selected hospital commanders.¹ In some cases, we asked follow-up questions of certain former hospital commanders in order to determine whether initial supply shortages were alleviated prior to the start of the ground war. To determine the causes of supply shortages, we interviewed officials, reviewed documentation, and identified industrial base problems.

To determine how the Army handled the surge of requisitions for potency and dated (P&D) items, we interviewed officials from the Army Surgeon General, the Army Medical Materiel Agency, and DPSC and documented the process of how supplies were ordered and filled. To gain a further perspective, we identified the data base used in filling requisitions.

We also interviewed Army Surgeon General officials and obtained documentation to determine how the Army is planning to meet its new mission as the theater medical supplier for the Department of Defense (DOD) during future contingencies. However, we did not evaluate this information.

¹Operation Desert Storm: Full Army Medical Capability Not Achieved (GAO/T-NSIAD-92-8, Feb. 5, 1992)

**Appendix II
Scope and Methodology**

The absence of complete and consistent data from each of the deployed hospitals limited our ability to determine the extent of medical supply shortages for all deployed hospitals.

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