



# Medical Dimensions of Joint Humanitarian Relief Operations

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As missions shift from major war to regional conflict, the medical structure is also adopting jointness and a different posture in support. A significant humanitarian focus has been given to regional affairs, and health care plays an important part in it. This analysis examines joint medical operations during Provide Relief, Restore Hope, and support for UNOSOM II.<sup>1</sup>

U.S. Air Force (James Mossman)

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## Provide Relief

The effort to feed the starving masses in southern Somalia began in August 1992 with the arrival of a U.S. Central Command (CENTCOM) humanitarian assistance survey team (HAST) in Mombasa, Kenya. Its role was to determine the command and control and the logistical support necessary for the joint task force (JTF) to conduct relief operations. The team's medical members assessed the medical infrastructure in Mombasa and Nairobi. Based on the relatively small number of personnel who were to deploy in support of Provide Relief—about 700—and the suitability of host nation facilities, arrangements were made to use hospitals in Mombasa for patient stabilization and temporary holding. One hospital stored U.S. blood products in the event they were needed for American personnel. Further specialized care was available from host nation facilities in Nairobi. Definitive care was available within U.S. European Command (EUCOM) or the continental United States (CONUS). Organic assets of deploying units provided initial medical care and treatment.

Aeromedical evacuation (AE) flights were either scheduled or diverted from Dhahran in Saudi Arabia with assets supporting Operation Southern Watch (the no-fly zone in southern Iraq). A costlier alternative was to request a dedicated AE mission from Ramstein, Germany. Because of the arduous ten-hour flight from Kenya to Germany, refueling would take place in Djibouti where a French military hospital was available for patients whose conditions had deteriorated and required care that the AE crew could not provide.

Throughout the operation, food was airlifted to relief centers in southern Somalia as well as northern Kenya near the Somalia border. For four months Provide Relief ran coincident with Restore Hope and concluded at the end of February 1993.

## Restore Hope

Despite providing the equivalent of 112 million meals, the magnitude of the famine and the breakdown of government meant that the Provide Relief airlift could not ameliorate the starvation in Somalia.<sup>2</sup> Consequently, Restore Hope commenced on December 9, 1992, the result of a decision to step up relief with a command and control element known as Unified Task Force (UNITAF).

A surgeon's office was established as part of UNITAF. The JTF surgeon, a Navy captain, was a medical officer with a staff of three medical service corps officers from the Army, Navy, and Air Force. Later the functions of JTF surgeon were assumed by dual- and ultimately triple-hatted medical commanders. Preventive medicine assets, which included an Army problem definition and assessment (PDA) team and a Navy rapid diagnostic forward laboratory, augmented the staff. The early deployment of these teams was a lesson learned in the Gulf War.

From a medical outlook, Restore Hope was more logistically intense than Provide Relief and required expanded resources. Because its scope had changed, a new medical mission was developed to accommodate joint and combined operations in Somalia. It would involve a range of medical services for disease and for both noncombat and combat injuries. Theater medical services would include evacuation, hospitalization, logistics, laboratory, blood management, veterinary, preventive medicine, dental care, and unit command, control, and communications. Planning was to include routine care of U.N. forces and humanitarian medical care of local citizens though these were not specified tasks. The following assumptions guided medical planning for Restore Hope:

- casualties were to be expected, as were illness and injuries
- host nation medical infrastructure would be inadequate or nonexistent
- medical capabilities of troop contributing nations would not meet U.S. standards
- U.S. medical forces would be required to treat Somalis
- hospital capabilities would be afloat (on Navy ships) for the first 30 days
- shore-based capabilities would be most vulnerable to Somali requests for assistance (not a significant factor)
- some continued hospital capability afloat would be a haven for U.S.-only casualties (also not a factor)
- hospital beds would be manipulated by type of specialty
- a public assumption that we would treat Somalis was not assessed
- afloat hospital capability would require alternative capability ashore
- too much medical support would be recoverable, but too little would not.

The deployment of a hospital ship was considered in the planning stage of Restore Hope. The chief advantages of deploying a hospital ship were to reduce the possibility of being inundated by host-nation patients like shore-based facilities, providing a more secure environment for medical resources, and reducing requirements for shore-based logistical support. In lieu of a hospital ship,

## Restore Hope was more logistically intense and required expanded resources

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a shore-based deployed hospital was chosen after consulting with the Joint Staff.

Medical capability in the area of operations (AO) was austere and limited to treating patients with illnesses or injury of short duration. This was done to expedite their return to duty or stabilize wounds before evacuation from theater. During phase I of Restore Hope (approximately the

**Make-shift pharmacy in Somalia.**



Medical civic action in streets of Mogadishu.

Joint Combat Camera Center (Terry Mitchell)



Loading patients on board C-141.

Joint Combat Camera Center

Joint Combat Camera Center (Terry Mitchell)

first 25 days), Marine collecting and clearing companies offered limited medical care ashore. Enhanced medical care was provided afloat. Host

**American personnel were to treat coalition and Somali casualties on an emergency basis only**

nation hospitalization in Somalia was not considered for use by U.S. personnel.

*USS Tripoli*, an amphibious assault ship, provided support until a shore-based hospital became operational in mid-January 1993. Medical facilities aboard *USS Tripoli* consisted of two operating

rooms, two intensive care unit beds, 29 ward beds, and 144 overflow beds which had been Marine bunks prior to disembarking. With appropriate staffing, medical care was provided to casualties with minimal injuries using these bunks.

Early in the operation two surgical teams (with a total of 23 medical personnel) augmented the ship's company of one medical officer and ten corpsmen. Among the members of these teams were an orthopedic surgeon, three medical officers, an anesthesiologist, and a nurse anesthetist.

During phase II (days 25 to 91), organic medical support accompanied forces deploying to Baidoa and other major interior relief centers.

Personnel assigned to an Army evacuation hospital established shore-based hospitalization capability using deployable medical systems (DEPMEDS) equipment ashore at Mogadishu International Airport. The equipment for the land-based hospital was initially to come from a pre-positioned ship, *Green Valley*. Difficulties in off-loading because of inadequate berthing facilities resulted in transporting equipment from the United States by air. The evacuation hospital's capabilities included orthopedic, thoracic, neuro, and general surgery.

An Army medical group provided command and control for the evacuation hospital as well as two veterinary and four preventive medicine detachments, a medical clearing company, a dental detachment, a medical logistics battalion, a surgical detachment, a mental health detachment, and both an air ambulance company and ground ambulance company. The medical group commander also assumed the duties of JTF surgeon. Three battalion aid stations and three medical companies were also located ashore.

In addition, an aeromedical evacuation system composed of active and Reserve personnel was established early in the AO during phase I. Its major components consisted of an aeromedical evacuation control center (AECC), a mobile aeromedical staging facility (MASF), an aeromedical evacuation liaison team (AELT), and aeromedical evacuation crews. AECC provided the command and control for the deployed AE system. MASF provided a holding and treatment facility for up to 50 stabilized patients for 4–6 hours before evacuation. AELT provided a communication link, and aeromedical evacuation crews consisted of flight nurses and technicians. Because of the distances, an aeromedical evacuation operations team (AEOT) and six AE crews deployed to Cairo West Air Base to provide mission support and strategic crew staging for transiting AE missions.

Aeromedical evacuation personnel and flight surgeons primarily used C-130 aircraft within Somalia to evacuate patients to Mogadishu. Retrograde C-141 aircraft were used for patients who needed further medical care in EUCOM or CONUS. Flight surgeons deployed to provide clinical assessments of the suitability of casualties for aeromedical evacuation.

On March 10, to conserve the system strength of aeromedical evacuation, AECC functions at Mogadishu transferred to AEOT at Cairo West. One AELT and two modified AE crews (each with a flight nurse and two technicians) remained in Somalia. Aeromedical evacuation personnel, based at Cairo West, rotated in and out of Somalia as mission requirements dictated.<sup>3</sup>

An air transportable hospital deployed to Cairo West provided resuscitation, basic surgery, and emergency dental capability at the intermediate staging base level. The function of the hospital, like the French military hospital in Djibouti, was to attend to patients requiring medical care beyond the capability of the aeromedical evacuation crew at the refueling stop.

A field hospital replaced the evacuation hospital on April 23, shortly before operations in support of UNOSOM II began. It was situated in the American embassy compound because of the crowded conditions at the airfield and was replaced by a combat support hospital on August 14. The medical group rotated without replacement. A newly established medical task force (MTF) absorbed its functions. MTF was controlled by a field hospital commander who was dual-hatted, having assumed the responsibilities of JTF surgeon.

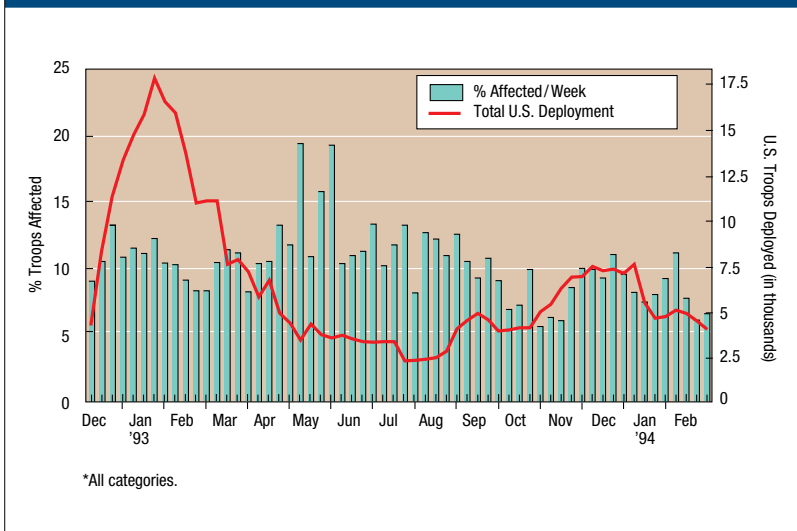
## UNOSOM II

When U.S. Forces Somalia Command was established as part of UNOSOM II to support the transition of humanitarian relief operations to U.N. control, which began on May 4, the MTF commander became the U.S. Forces Somalia surgeon, a third hat. Terms of reference developed by CENTCOM stipulated that medical assets were provided specifically for U.S. forces. American personnel were to treat coalition and Somali casualties on an emergency and exception basis only. UNOSOM coalition hospitals from Sweden, Pakistan, and Romania cared for all other personnel and treated a small number of Americans during mass casualty situations. When Pakistani troops were ambushed on June 5, the U.S. MTF supported U.N. medical facilities. This mass casualty incident was a turning point for the forces supporting UNOSOM II.

On October 3, three UH-60 helicopters were downed in an unsuccessful effort to capture Mohammed Aideed. Eighteen Americans were killed in this action and in the ensuing combat and rescue operations. MTF treated 73 patients during mass casualty operations that day. A few days later, a second mass casualty operation was initiated after a mortar attack on Mogadishu's airfield. Thirteen patients were treated by MTF. From October 3 to 9, the workload included 96 hospital admissions, 70 evacuations, and 45 surgical procedures, with five deaths.<sup>4</sup> This week represented the highest U.S. combat casualty load during the operation.

As the situation turned hostile, transporting casualties from the medical task force hospital to Mogadishu airport became unsafe, and Army medical evacuation (Medevac) assets were used to complete safe and timely transfers of evacuees.

**Figure 1. Restore Hope: Disease/Non-Battle Injuries.\***



**Preventive Medicine**

Like the Desert Storm/Desert Shield theater in its initial stages, current and specific disease prevalence information concerning Somalia was not available from medical intelligence sources or even international health organizations. Compounding this deficiency was the virtually complete degradation of health care infrastructure in Somalia. This necessitated a preventive medicine effort to not only support U.S. forces but assist in providing limited support for other U.N. troops and those civilians who are invariably involved during such operations.

Since health care providers were not familiar with diseases in Somalia, diagnostic problems

were anticipated. Moreover, most U.S. troops were immunologically naive to endemic diseases and hence more susceptible to increased morbidity and mortality than the indigenous population.

Drug resistances were a known and expected treatment problem. To counter the infectious disease threat, some preparatory measures were taken. Information was distributed to heighten awareness of disease potential, immunizations and chemoprophylaxes were addressed, an in-country disease surveillance program was readied, and redeployment disease precautions were planned.

Two publications that addressed the disease threat were widely distributed at the start of the deployment. One was aimed at medical and preventive medicine personnel as well as commanders and troops. It assessed both infectious diseases and environmental health factors with

operational import, disease vector ecology information, personal protective measures, and preventive medicine countermeasures. The other publication dealt with anticipated diagnostic difficulties. It reiterated clinical aspects of significant diseases, including clinical presentation, laboratory test interpretation, treatment, prognosis, and prevention of infectious diseases. It also addressed malnutrition, stress, and neuropsychiatric problems.

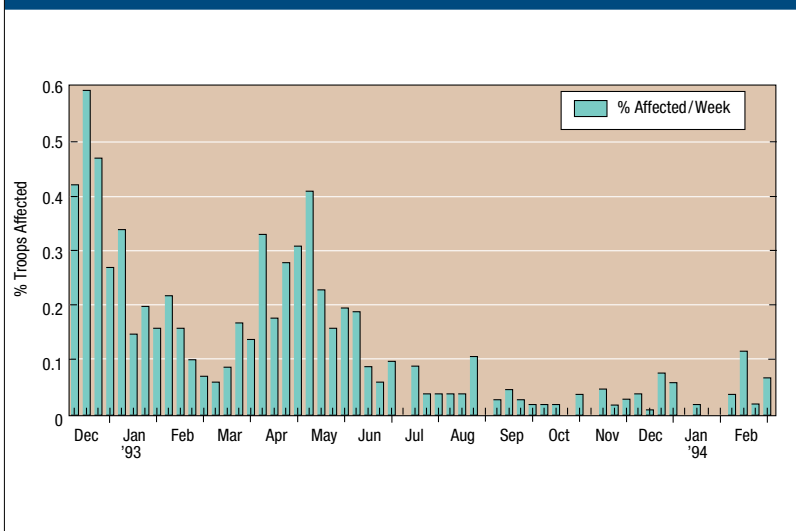
The first line of defense against some diseases is immunization. Administering a range of immunizations in a compressed period of time prior to deployment was a challenge that continued in-theater in the form of administering immunizations missed during the rush of deploying. Drugs for malaria chemoprophylaxis were chosen based on scant geographical distribution data. In May 1993, a number of soldiers and marines who had served in Somalia surfaced at medical clinics in CONUS with malaria. Noncompliance with chemoprophylaxis and poor protective measures were the most notable causes. But prophylaxis breakthrough noted in several patients was consistent with similar findings in other malarious areas of the world.

Predeployment tuberculin skin testing was also required. The extreme flurry of activity due to the immediacy of deployment resulted in a notable loss-to-follow-up in reading many tuberculin skin tests. Early 1992 tuberculosis (Tb) mortality rates among Somali refugees were reported to be extremely high. Even prior to the civil unrest the disease was a major health problem, moderately to highly endemic, and known to be resistant to multiple drugs. In addition, some U.N. personnel came from countries in which Tb is a major health problem. Thus importing drug-resistant Tb into the United States was a serious concern.

Redeployment screening procedures for Tb and other health hazards were implemented for all personnel. Some units reported minimal to high (about 5 percent) rates of skin test conversions because of Somalia exposure, although many cases were ambiguous with regard to predeployment tuberculin-reactive status. Documentation on measurements (or even positive/negative readings) of tuberculin tests was traceable to flawed immunization records that could have led to over-estimating exposure. Also, various units which were retested three months after redeployment from Somalia showed an unexplainable loss of reactivity.

Obtaining immediate disease surveillance data was key to establishing disease prevalence in Somalia and early identification of disease/injury

**the Somalia experience resulted in significant progress in conserving mission strength**

**Figure 2. Restore Hope: Heat Injuries.**

trends. The PDA team, augmented with a rapid diagnostic lab-capability (joint forward laboratory), deployed with the initial JTF directly under the control of the theater surgeon. Through their energetic efforts, a disease surveillance network that reached all service medical treatment facilities was established immediately and continued until the major withdrawals ended in March 1994. As a result, timely outbreak information was obtained for trend analysis and disease investigation that also was performed by the PDA team in its first non-exercise utilization. Its merits were conclusively proven by remarkably low disease/non-battle injury (DNBI) rates throughout the operation.

The level of activity associated with rapid deployment as well as the mental stress which accompanied Restore Hope and operations in support of UNOSOM II were predictable problems. The factors that increased health risks included: time zone adjustment, heat acclimatization, dietary change, increased accident rates from moving/packing/unloading and the high tempo of activity in new surroundings, and the psychological strain from family separation, culture shock, geographic disorientation, uncertainty about mission duration, threat of bodily harm, et al. A combination of chaplains, combat stress teams, briefings, and publications for commanders, servicemembers, and health-care workers addressed these challenges. Although many factors were difficult to measure, DNBI surveillance data was far lower than predicted (see figure 1). Specifically, orthopedic/minor injury, gastrointestinal disease, and psychological complaints were very low. Though heat injuries were high during initial deployment when compared to the balance of the operation,

this number was still extremely low, given the risk in the AO (figure 2).

Because of the temporary nature of the operation, redeployment was considered early in the game and potential problems were addressed: general health during deployment by means of health questionnaires (filed in health records); messages alerting health care workers to potential disease considerations (also recorded); briefings to alert troops of disease manifestations; implementation of terminal malaria chemoprophylaxis; and repeat tuberculin skin testing 10–12 weeks post-return. Moreover, servicemembers, commanders, chaplains, social workers, and families were alerted to the psychological adjustment problems of returning to normalcy.

Preventive medicine influences are typically easy to measure only when ineffective. Given numerous adverse factors in theater (for example, the austere environment and logistical character of the area, difficult climate, unknown threats from a range of diseases, and unpredictable nature of the operation), preventive medicine efforts reflected by low DNBI rates must be regarded as unprecedented. While this triumph was partly due to lessons learned during Desert Shield/Desert Storm, the Somalia experience resulted in significant progress in conserving mission strength, which must be remembered.

### Medical Logistics

The Gulf War was a starting point for planning medical logistics support. Marines initially provided class VIII (medical supply) support. After thirty days of Restore Hope, the Army picked up the mission as single integrated medical logistics manager (SIMLM) for class VIII support to all units in theater. Just as in Desert Shield/Desert Storm, coordination was effected with EUCOM to utilize the U.S. Army Medical Material Center, Europe (USAMMCE), as the source of class VIII material to sustain medical logistics battalions (MLBs) in Somalia as well as the air transportable hospital in Egypt. Class VIII support for emergency requisitions and routine items that were not stocked by USAMMCE also were provided by the Defense Personnel Support Center.

Overall, medical supply support was deemed a great success, with the single item manager concept proving more effective than in Desert Storm/Desert Shield mainly because medical units deployed with the appropriate initial support supplies plus resupply packages of 15–30 days. This allowed MLBs to more easily sustain the force without outfitting units with class VIII at the outset of the operation. In addition, MLBs not only deployed early but carried their initial inventories.

Casualty transfer  
in Somalia.



Joint Combat Camera Center

which logistics would have been ineffective. It combines government proprietary message handling software and off-the-shelf hardware for satellite communications and message preparation. This system can send and receive requisitions, supply status, and various transactions over landlines or satellites under the defense automatic addressing system (DAAS). It operated via satellite communications offered by the IN-MARSAT commercial system that is linked by portable, collapsible terminal with telephone and data transmission service.

### Some Lessons

The creation of a JTF surgeon element during the initial days of Restore Hope was critical. The surgeon's staff expedited coordination of joint medical support and requirements. During a lull in activity, the functions of the surgeon were passed to the medical group commander, and later to MTF commanders. When the level of unfriendly activity in Somalia increased, it was difficult to augment the staff. The surgeon was faced with a herculean task of acting as hospital commander, U.S. Forces Somalia surgeon, and JTF Somalia surgeon. The retention of a dedicated skeleton surgeon's office would have constituted a significant asset in the coordination of medical activities as the operational tempo increased.

Relying on *USS Tripoli* for emergency hospitalization was crucial during the first month of Restore Hope. Lacking medical infrastructure in Somalia, the capability aboard *USS Tripoli* was the only source of hospitalization prior to land-based support. Because the weather, darkness, and other conditions could have compromised evacuations, a rapidly deployable land-based facility was needed. Establishing a pre-positioned hospital aboard *Green Valley* was problematic. High seas and shallow harbors prevented unloading. DEPMEDS equipment from CONUS provided an alternate land-based hospital to be deployed and set up in the 30-day planning window.

Predeployment preparations must include preventive medicine assets during the early stages of planning. Education was a cornerstone in predeployment preparations for Somalia. It involved reacquainting health care workers with diagnosing diseases endemic to the region and education in local medical threats/countermeasures. Immunizations, Tb testing, and chemoprophylaxes are high priority measures that must be emphasized. The illusion that chemoprophylaxis offers total safety must be replaced by awareness that protective measures are vital in preventing many vector-borne diseases. Units targeted to specific regions should be maintained at 100 percent



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Surgical module,  
Mogadishu.

In the deployment phase of Restore Hope, communications in the tactical AO were austere, a characteristic of modern contingency/humanitarian operations. Communications thus took place over tactical single channel ultra high frequency satellite communications (SATCOM), commercial SATCOM-international maritime satellite, single channel radio (SCR), high frequency radio, and limited super high frequency SATCOM links. Units communicated in the AO predominantly over voice links. Limited data communication was available via facsimile or data transfers over tactical satellite or SCR, a constraint which medical logistics units overcame. MLBs utilized a prototype system, known as the quad-service satellite transmission and receiving system for medical supply support, without



medical readiness for deployment. While this is the best tactic to counter a failure to complete medical predeployment processing, units do not always enjoy the prior knowledge of their target destinations.

There appears to be a shortfall in medical intelligence which is probably a problem inherent in any intervention. PDA teams provide dynamic disease data on which constant adjustments in medical tactics can be made. Deploying a team early with initial forces, forming a comprehensive disease surveillance program, immediate disease outbreak investigations, and command level of recognition (directly under the theater surgeon) were factors that contributed immensely to success. Similar use and control of PDA teams should be the standard in future military deployments.

Finally, the most important factor in all military preventive medicine endeavors, command support, must be secured. It ensures timely and regular reporting of disease surveillance data and enforces recommended countermeasures as problems are identified. Command support is the only effective means of ensuring implementation of preventive measures. But it can be optimized only by educating commanders, a developmental process in which health care workers must ensure that commanders understand the priority of prevention over treatment.

Dedicated Medevac helicopters were indispensable not only for evacuating casualties from the interior to Mogadishu, but within the capital itself. They were not available in the early days of the deployment, and such support was provided by general support helicopters whenever possible. Competing requirements would have seriously detracted from the medical mission if combat had increased. The Medevac helicopters came by sea from Europe necessitating ship deck qualification training for Army Medevac pilots.

Aeromedical evacuation was another critical element that performed well during this effort. Air Force medical personnel at Cairo West and Mogadishu airport, in concert with other medical task forces and ships, provided timely support to evacuees. The establishment of staging bases at Djibouti and Cairo West was an important factor in safe and successful aeromedical evacuation.

Communications austerity in the early stages of force projection is a characteristic of rapid tactical military operations today. It is essential that medical communications contingency planning be closely integrated with the total contingency communications planning process. In addition, it is crucial for the medical communications personnel, supported command J-6, and JTF J-6 to work closely during the deployment and execution phases to ensure that suitable communication assets are allocated to the medical mission.

Medical support for forces engaged in humanitarian relief operations in Somalia was highly successful because of forward thinking and flexibility in the planning and delivery of health service support on all levels. Joint medical planning expertise and activities were crucial in meeting health requirements. As the Armed Forces evolve in the post-Cold War era, the medical lessons drawn from Somalia may prove to be typical and thus should be carefully evaluated for future application. **JFQ**

#### NOTES

<sup>1</sup> The authors collaborated with CAPT Sterling E. Garnto, USN; LTC John T. Harris, USA (Ret.); MAJ Douglas S. Phelps, USA; and LTC Steven J. Yevich, USA, in the preparation of an earlier version of this article and gratefully acknowledge their support and comments.

<sup>2</sup> Joseph P. Hoar, "A CINC's Perspective," *Joint Force Quarterly*, no. 2 (Autumn 1993), p. 58.

<sup>3</sup> See 1<sup>st</sup> Aeromedical Evacuation Squadron, "Operation Restore Hope After Action Report," June 15, 1993, and 32<sup>d</sup> Aeromedical Evacuation Group, "Medical After-Action Report for AEOT: Operation Restore Hope," March 18, 1993.

<sup>4</sup> Headquarters, Medical Task Force 46, "Situation Report for Operation Continue Hope, October 4-10," October 11, 1993.