

## Air Power and Medical Readiness— The Air Force Medical Service

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*This article provides a summary of the Air Force Medical Service in Operations Desert Shield/Desert Storm. The Medical Service deployed extremely rapidly, providing US Central Command's sole medical support for almost one month. The Medical Service then created a full-service aeromedical evacuation system, and by February 1991 provided two-thirds of the contingency hospital beds in Europe.*

On Aug 8, 1990, just six days after Iraq's invasion of Kuwait, the Air Force Medical Service began its largest deployment since the Vietnam War. Operations Desert Shield/Desert Storm created a unique combination of challenge and opportunity for the Medical Service. Although, thankfully, the fighting was short and the casualties few, the enormity of the operation provided an excellent test of Air Force medical readiness. Rapid air deployment of medical assets was a first indication that the Air Force Medical Service would do more than just pass the test.

The first Air Force medical teams arrived in the Arabian Peninsula two days after the combat units. These teams were the main source of medical support to all American forces until the second week in September 1990. All Air Force units had medical support shortly after arrival, either from an air transportable clinic or an air transportable hospital. Most wings were supported by at least the initial components of a 50-bed air transportable hospital within two or three weeks following arrival in the theater.

### Planning for Rapid Deployment—The 1980s

Desert Storm proved the worth of a decade of Department of Defense (DOD) and Air Force planning and preparation for rapid deployment. Air Force preparations for a conflict in the Middle East began in the early 1980s, shortly after the Soviet Army invaded Afghanistan and Iranian revolutionaries seized American diplomats as hostages.

In January 1983, the national defense community established the US Central Command (CENTCOM) to oversee operations in Southwest Asia, including the Persian Gulf and Arabian Peninsula. The US 9th Air Force, the Air Force component of Central Command (CENTAF), relied on the Tactical Air Command (TAC) surgeon and medical assets for mobilization planning and deployment.

Military planners assumed that modern war would likely result in more casualties than past wars. In partial response to that doctrine, the Air Force Surgeon General, in late 1983, approved a five-year program to enlarge the standard 24-bed air transportable hospital to 50 beds. The new design was flexible, providing for 14, 25 or 50 beds. By mid-1990, the Air Force had more than two dozen 50-bed air transportable hospitals. Most were attached to the Continental United States (CONUS) tactical fighter wings for rapid deployment where needed.<sup>1</sup>

All TAC combat flying squadrons were supported by an organic squadron medical element, consisting of one physician and three technicians, and an air transportable clinic containing first aid and emergency medical supplies. These medical personnel elements and clinics deployed as integral parts of their squadrons. Combat or a long-term deployment to an undeveloped region, however, demanded the presence of at least a rudimentary field hospital, such as an air transportable hospital.

In 1985, the CENTAF Surgeon also started to develop aeromedical staging facilities to complement air transportable hospitals deploying to Southwest Asia. These facilities had up to 250 beds for holding patients awaiting evacuation by the Military Airlift Command to more advanced medical treatment in other theaters. Since only a few host nations offered suitable buildings for allied medical units, CENTAF started developing



Figure 1. The C-130 was the primary aircraft used for dedicated medical flights within the Persian Gulf.

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staging facilities constructed mainly with tents. With adequate site preparation, they could be ready in five days.<sup>2</sup>

By the late 1980s, the Air Staff foresaw the scarcity of airlift for major deployments. In response, the Air Force began prepositioning medical supplies and equipment in major foreign theaters. Many of the equipment items for Desert Shield, such as ambulances, were already positioned in Southwest Asia by August 1990.<sup>3</sup> Several complete facilities were also stored in the region.

### Rapid Deployment—August 1990

In August and September 1990, the Air Force placed in-theater the first medical facilities capable of both surgery and chemical decontamination. The overall Desert Shield medical deployment was much faster than during the Vietnam War, even though 175 more hospital beds deployed (925 versus 750). Air transportable clinics and hospitals were the key to rapid mobility. The clinics deployed immediately with their flying squadrons. The first squadron medical elements and air transportable clinics left the US on Aug 8, 1990, just one day after the first fighter aircraft deployments. The first air transportable hospitals departed on August 11 from Shaw, MacDill and Langley Air Force Bases.

In mid-August, because of a shortage of airlift capability, CENTCOM directed less essential support elements to deploy by sealift or at least several days after their lead combat elements.<sup>4</sup> By late August, the air transportable hospitals began arriving about two weeks after their combat squadrons. Most of the air transportable medical facilities were committed to the operation by late October. In November, the Persian Gulf deployment expanded to include hospitals from ten CONUS air bases. The early, rapid and comprehensive deployment by the Air Force Medical Service reflected an unparalleled state of preparedness.

### The Air Transportable Hospital

Before the start of Desert Shield, the 50-bed version of the air transportable hospital (ATH), including personnel and mobility bags, was designed to be transported by six C-141 aircraft. Once on site, weather and other conditions permitting, the ATH staff and base support units could erect the hospital within 24 to 48 hours.

A combination of hardwall shelters and modular tents, the hospital was

equipped with several exterior air conditioning units for operations in harsh climates. The hospital deployed with sophisticated medical equipment and supplies, and a competent staff of 128 medics. The three hardwall shelters of the 50-bed hospital—called ISO shelters after the manufacturer, the International Standards Organization—had two surgical tables, a laboratory, an x-ray machine and blood storage equipment. The hospital's



Figure 2. Saudi personnel offered a friendly welcome and assistance to Air Force medics.



Figure 3. This 50-bed air transportable hospital (ATH) was assembled and fully operational within 24 hours. The ATH is the backbone of the deployable medical treatment system.



*Figure 4. The air transportable hospital ISO shelter houses x-ray and laboratory services and the operating room.*

dental chair could serve as a third operating table. In the early months of Desert Shield, the staff of the deployed hospitals found that most of their equipment worked well in the harsh desert climate. Each air transportable hospital was equipped to function for 30 days without resupply and was supported by a 19-person decontamination team to handle chemical warfare casualties.

The air transportable hospitals were the backbone of the Air Force medical treatment system in the Arabian peninsula, which lacked large prepositioned contingency hospitals. Each hospital could meet the medical needs of a deployed tactical fighter wing with up to 72 aircraft and about 4,000 people. The hospital also assisted the squadron medical elements, air transportable clinics and aeromedical staging facilities that deployed with their tactical and strategic units.<sup>5</sup>

### **The Mobilization— An Area for Improvement**

Clausewitz noted that in war many actions do not go as planned; the simplest things become much more difficult than anticipated. Although Desert Storm was remarkably free of many of the historical "frictions" of war, the US Air Force's postwar analyses have noted some areas for improvement.<sup>6</sup> Shortly after the expulsion of Iraq from Kuwait, the Air Force Medical Service also began to assess the war's lessons for future medical deployments. Mobilization was of primary concern.<sup>7</sup>

The rapid pace of the early deployment revealed deficiencies in CONUS mobility procedures, especially in issuing chemical/biological warfare defense items. Many troops deployed without protective gear for chemical warfare or a full set of chemical warfare antidotes. To fill shortages and make replacements available, CENTAF eventually procured adequate stocks from Europe and the United States and transferred them to sites within the theater.<sup>8</sup>

The rapid medical deployment also created personnel turbulence. Several CONUS medical facilities rapidly lost much of their staff. Although many reservists volunteered immediately,

several weeks passed before the involuntary Reserve call-up brought Air Force hospitals back to pre-deployment strength. Most hospital services were maintained, but in some cases were temporarily reduced, such as several operating rooms being limited to emergency procedures.

The mobilization of individual medics rather than units maximized valuable call-up authority, but also caused some administrative confusion. As the reservists arrived, major command mobilization managers soon wished they had better tracking of secondary specialties to match mobilization unit assignments with requirements.<sup>9</sup> Confronted with so much personnel movement, the CENTAF surgeon, supported by the Strategic Air Command surgeon, concluded that medical groups could leave their commanders and senior staff at the home base. The complicated job of sending most of a unit abroad while backfilling the resulting vacancies necessitated a cadre of experienced managers.<sup>10</sup>

Another difficulty with the deployment of reservists was that many of them had limiting or disqualifying dental and medical problems. The Air Force's comprehensive preventive dental program enabled the active duty troops to deploy in excellent



*Figure 5. This aircraft hangar doubles as a ward in a contingency hospital.*

dental condition. Air Force dental care, however, is an entitlement only for reservists who are on active duty for an extended time. At the beginning of Desert Shield, many of the Air Force reservists needed extensive dental treatment to qualify them for mobilization. Some of the reserve and active duty troops also deployed with a variety of other disqualifying medical conditions. CENTAF had to return these people to the United States and use scarce airlift space to deploy their replacements.<sup>11</sup>

Most mobilization problems, of course, were not unique to the medical deployment, and some difficulties in medical mobilization resulted partly from the unanticipated, higher-level decision to sustain full peacetime care and graduate-level medical training in the United States.<sup>12</sup> In April 1991, the Air Force Medical Service began working either to prevent a recurrence of mobilization problems or to at least minimize their effect in the future.

#### **Aeromedical Evacuation and Rear Echelon Care**

In the days before Desert Storm, CENTCOM expected as many as 15,000 Americans would be wounded in the early stages of a Kuwait invasion. With the help of aeromedical evacuation and staging teams from the Air Force Medical Service, as well as aeromedical units from the Army and Navy, the Military Airlift Command (MAC) established a coordinated, multi-theater chain of aeromedical evacuation for these casualties. The plan was to use medically configured C-130s for dedicated evacuation flights within the Persian Gulf. Both dedicated and retrograde C-141s would evacuate most of the seriously wounded to Europe and CONUS. In fact, because of very light casualties in the ground war, the dedicated C-141 missions proved unnecessary. The staging facilities also worked well, although some were unexpectedly deployed beyond the effective medical support of an air transportable hospital and had to exert extra effort to support themselves.<sup>13</sup>

In Germany and England, several contingency hospitals and smaller tactical fighter wing hospitals were already in place. The Air Force contingency hospitals, containing from 500 to 1,500 beds, were "turn-key" facilities—fully equipped and calibrated, needing only professional staff deployed from CONUS to begin operations. By early February 1991, these hospitals were ready for full operation. A few equipment shortages and

malfunctions had been remedied, and the sewage and water systems in the hospitals had been repaired and augmented. In late January, full staffs from USAF medical centers in the United States had arrived. In addition, several aeromedical staging facilities readied themselves for the fighting.

MAC was also prepared to evacuate casualties from Europe to CONUS military hospitals, where about 6,300 mobilized reserve medics and 28,622



*Figure 6 and 7. Air Force medics transport recent aerevac patients to a mobile aeromedical staging facility during Operation Desert Shield.*

active duty medics were waiting in Air Force hospitals. If military hospitals became full, patients could be sent to Veterans Administration hospitals or civilian hospitals of the National Disaster Medical System.

Preparing for large casualties, the Air Force also fully supported the DOD blood program, including the new frozen blood program. The Air Force transported 6,500 units of its frozen blood to Europe and 7,500 units of frozen blood to CENTCOM. The Air Force also sent 29,000 units of its liquid blood and 2,700 units of plasma to the Persian Gulf theater, as well as 10,200 units of liquid blood and 4,400 units of plasma to Europe.<sup>14</sup> Both Europe and Southwest Asia received blood transshipment centers. In February 1991, the Air Force's aeromedical evacuation chain, blood banks and contingency hospitals stood by ready to serve CENTCOM forces with the best medical care America could offer.

### Desert Storm

Most Air Force planners did not anticipate that the air and ground fighting during Desert Storm would hardly tax the medical system. Coalition casualties were so light that the staff at Air Force contingency hospitals in Europe, like many of their counterparts in the Arabian Peninsula, practiced very little combat medicine. From August 1990 to March 1991, disease and non-battle injuries accounted for most of the patients of Desert Shield/Storm who were evacuated from Southwest Asia to Europe. Aggressive preventive medicine was effective in minimizing the losses to disease. Orthopedic injuries alone accounted for about 43% of the evacuees from the theater.<sup>15</sup>

Final statistics on the size of the Air Force medical deployment are impressive. The 15 air transportable hospitals, with help from a 250-bed contingency hospital staffed by the Military Airlift Command, supplied most of the in-theater hospital beds and staff for the Air Force in Desert Storm. First-stage medical care and evaluation was available at 31 deployed air

transportable clinics, a few from the Strategic Air Command. The Air Force eventually provided 925 beds in Southwest Asia staffed by 4,868 medics, who accounted for 9% of the total Air Force deployment of 55,000. The US Army had most of the hospital beds in Southwest Asia by February 1991, but in Europe the Air Force furnished about two-thirds of the American beds for Desert Storm. The Air Force deployed 6,892 medics to staff 3,740 beds in the Air Force fixed and contingency hospitals in Europe.<sup>16</sup> The medical readiness improvements in the late 1980s clearly proved their worth.

The reserve mobilization and deployment was essential to the medical deployment. One-half of the Air Force medics who went to Europe and Southwest Asia by February 1991 were members of the Air National Guard and the Air Force Reserve. The reserves accounted for almost 97% of the aeromedical evacuation cadre, serving in almost 200 aeromedical evacuation crews and staging teams for an elaborate evacuation chain stretching from Southwest Asia through Europe to the continental United States.

### CONCLUSION

The most substantial Air Force medical contribution to Desert Shield/Desert Storm was the rapid deployment of air transportable medical facilities to the Arabian peninsula in August and September 1990. During the remainder of the year, the Medical Services helped staff the growing tactical and strategic aeromedical system, and then in January 1991, when the fighting was near, deployed thousands of medics to prepositioned medical facilities in Europe. In all these ways, the Air Force Medical Service proved the special importance of air power to the medical readiness of American armed forces.

Although the deployment was extremely rapid and successful by historical standards, the Medical Service was fortunate that hostilities began 163 days after the initial mobilization. Since there is no guarantee

that this lead time will be available in a future war, the Air Force Medical Service is working to ensure that its next response will be even more timely and efficient.

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