

The Mobile Field Surgical Team (MFST): A Surgical Team for Combat Casualty Care in the Information Age

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Overview

The current military medical system is designed to support 20th century combat: the forces involved in the conflict were large, powerful, and ponderous. Medical planning for conflicts such as these included several assumptions about the conditions involved:

- Discrete build-up phase - medical units would have time to assemble their assigned personnel and materials, and would be permitted to set up these facilities *before* use of the facilities would be required.
- Large number of casualties
- Definitive care in theater - lines of battle were fairly stable; thus injured personnel would be treated in-theater until they reached a convalescent phase. At that point they would be returned to duty or evacuated from the theater.
- Traditional evacuation system - the Air Evacuation system would serve to transport patients who had been injured, but had essentially no ongoing requirements for medical care.

The assets that were developed to meet the medical needs of these conflicts (the Air Transportable Hospital (ATH), Combat Support Hospital (CSH), and Fleet Hospital) are very capable and offer a variety of medically oriented services. They are essentially full-service hospitals packaged in a format that can be moved by air or sea. As full-service hospitals, they are quite large and heavy, and they require a significant amount of time and space to set up.

The ATH (for example) is intended to be deployed in a modular or "building block" fashion, but this is implemented by bringing primary care capability into the theater first. Thus a full 50-bed ATH is necessary before trauma surgery or even an appendectomy can be performed. This set of equipment is packaged on 52 pallets, requiring airlift of seven C-141 aircraft.

21st Century Vision

Strategic planners in the US believe that the next era of conflict will be very different. They believe that information technology will allow more accurate, more rapid, and further reaching application of force where necessary. They expect to apply smaller and more potent assets to strike "strategic centers of gravity" which may well be located over the horizon from friendly forces. The expected engagement scenarios include Major Regional Conflict (MRC), Military Operation Other Than War (MOOTW), and Humanitarian Assistance.

The rapidly mobile nature of engagement, and the unpredictable timing and geography, place new demands on the military medical system. Medical planners can no longer rely on prolonged preparation time prior to employment. Because of an increased demand on airlift by the "line" side medical assets must choose to deploy only the necessary capability, and must package this capability in the smallest possible space.

On the other hand, the demands on the medical system are somewhat relieved by a smaller expected number of casualties, and by a revival of the concept of essential care only in theater. There is also a renewed recognition that outcome depends significantly on the amount of time required for a casualty to reach surgical care. This is an extension of the understanding in civilian practice that salvage surgical procedures (distinguished from definitive surgery) can be life saving; this concept is sometimes referred to as "Forward Resuscitative Surgery."

The Mobile Field Surgical Team (MFST)

The MFST is conceived as the smallest possible unit for provision of surgical care to combat casualties. The team has been pared down to a minimum in terms of personnel and equipment, retaining the "high value" resources that allow the team to provide advanced resuscitation and salvage surgical therapy for combat casualties. The very small weight and size of the team makes it possible to respond rapidly and to impose a minimum requirement on transportation and logistics resources.

The team is composed of five personnel, with surgical gear that is strictly man-portable. The surgical gear is carried in backpacks, and the team has a generator to supply power for it's instruments. Total equipment weight (including personal gear) is approximately 600 pounds. The five personnel are:

- General Surgeon
- Orthopedic Surgeon
- Anesthesiologist/CRNA
- Emergency Medicine Physician
- OR Specialist

The team's equipment and personnel are selected to provide initial trauma care and resuscitative trauma surgery. Specific capabilities for early trauma care and stabilization include:

- airway management, fluid resuscitation, and other ATLS skills
- control of hemorrhage in any body cavity or from extremity wounds
- control of intra-abdominal contamination (bowel closure)
- stabilization of fractures
- major wound debridement

Employment of the MFST

The composition and size of the MFST place it on the smallest and most mobile end of the spectrum of units available to provide trauma surgical care. The team may be thought of as a "building block" that may be the first on the scene or may "plug into" medical units already on site. The small size of the team and minimal logistical support required allow the team to comfortably attach to nearly any type of host medical unit ranging from a Casualty Collection Point to a Regional hospital: in every case the personnel and equipment carried by the team will raise the level of combat casualty care available. Again, the rapid mobility and minimal airlift requirement allow the team to reach the area of need and to institute care of casualties before any other unit with surgical capability could.

The MFST has exercised the doctrine of forward resuscitative surgery at the Joint Readiness Training Center in Louisiana. During a simulated combat exercise, the MFST reduced the Died of Wounds rate from 30% (commonplace at JRTC) to 12%, by moving closer to the site of wounding.

The MFST concept has also been tested in a real-world humanitarian mission to Ecuador in October of 1996, after a cargo aircraft crashed into the city of Manta in that country. Three MFST's and three CCATT's (Critical Care Transport Teams) deployed on short notice to South America, where they assisted in both critical care and surgical therapy of the injured civilians.

Mission Summary

We understand this small surgical team to be a single piece of a "building-block hospital." A team such as this one can be used to provide early surgical care in whatever situation it is required, and can be matched up with other mobile medical units as dictated by the situation.

Examples of specific missions appropriate for the MFST are:

- Triage/therapy/salvage surgery at airhead
- Surgical care of critically injured patients within the Air Evac system
- Surge augmentation of an existing deployed facility
- Ramp up/down phases of classic deployments
- Civilian disasters - augmentation of existing resources
- Mobile forward surgery
- Special operations support