

should be able to call on. Among other things, that would resolve the problem his FRSS encountered in moving from one unit to another, with both the one they were leaving and the one they were going to thinking the other was providing their food, security, and other support.

"The FRSS was such a new concept, even the medical people weren't sure how to utilize and support them," says Bohman.

Although Shock Trauma Platoons were designed to go onto the battlefield alone, some would link up with a forward FRSS, providing triage so the FRSS surgeons could remain in the OR. Others, such as Lt. Cmdr. Troy Borema's STP-4, were embedded with a CSSC, usually following about 24 hours behind the 5th Marine Regiment. That arrangement provided STP-4 with much appreciated transportation services, fuel, food, water, ammo, maintenance, and even MPs, when security was required.

While the STP concept calls for two ER doctors, Borema is a family practice physician, which he says also worked out well because they never had enough patients to justify two ER specialists or even to divide their duties between the ward tent and the initial treatment tent. The rest of STP-4 included one trauma nurse, one PA with some ER experience, two IDCs, 13 general corpsmen, and five drivers, one of whom also handled communications.

An STP can be used to augment a battalion aid station, work with it if the front line is spread out or, as in STP-4's case, with four battalion aid stations feeding them patients, who then were transported to a surgical company. The STP provides

resuscitation, not surgery, and is intended only to stabilize trauma and keep patients alive until they can reach a surgeon.

"They outfitted us to handle shock and trauma, so we were frustrated when a Marine came in with a twisted ankle or the kinds of things civilians might need. We didn't have pediatric medicines or oral antibiotics; we were poorly set up to handle routine 'sick call' cases or humanitarian care," he says. "We already were carrying a lot of equipment, and they had planned to use us for battle casualties and let the battalion aid station handle the lesser daily duties. We did take care of civilians with gunshot or shrapnel wounds, but that was sometimes difficult because we didn't have an interpreter. We averaged four to six patients a day, about evenly divided among U.S. Marines, Iraqi civilians, and POWs. About half were accident victims rather than battle casualties."

Anchored about 30 miles offshore from Kuwait City and the Iraqi shore in the Arabian Gulf, the USNS *Comfort's* 60 doctors, 250 nurses, 400 corpsmen, and about 500 support personnel, including lab and radiology technicians, provided a Level 3 care facility with sophisticated diagnostic, surgical, and medical capabilities on a par with Bethesda or Walter Reed.

In previous wars, such ships were priceless, providing the most severely wounded with life-saving care that otherwise would have been too far away, able to build on preliminary field treatment, including surgery, often performed in extremely austere conditions and following long delays the battlefield imposed on combatant care.

Medicine on the Move

BY ANA E. LOPEZ

The injured of Operations Enduring Freedom and Iraqi Freedom received medical attention in record time, cutting down on loss of life and limb, but now one company seeks to best those achievements. It envisions a battlefield where hospitals are virtually side by side with military personnel engaged in combat.

Mobile Medical International Corporation (MMIC), a Vermont-based company, is dedicated to delivering hospital and medical capabilities to areas with limited access to health services. With the proven success of its Mobile Surgery Units (MSUs), highly transportable, self-contained trailers that serve as temporary healthcare locations, MMIC designed the 21st Century Military Hospital System (21CMHS). The 21CMHS is an easily deployable, completely sterile medical facility with a structure that revolves around two separate components: a 20-foot, expandable ISO (International Standardization Organization) container, and a Universal Support System (USS). With both its sides expanded, the ISO container provides enough space to house a two-patient operating room (OR) that rivals that of any metropolitan hospital in regard to equipment and support systems including air filtration, environmental control, and medical gases. The USS, a rigid-wall, re-locatable shelter, houses support components, such as telecommunications equipment, and has two large tent areas that deploy from and connect to it to provide patient ward areas. A single 21CMHS unit, composed of one ISO container and one USS unit, can accommodate up to 20 patients (each tent-ward area has 10 beds). The modular design of the 21CMHS allows connection of numerous units to provide as large or as small a hospital facility as needed.

The 21CMHS boasts other qualities that make it battlefield-worthy. Each fully-integrated unit houses all its own supplies and support systems, which increases ease of deployment logistics. The units are constructed of lightweight, durable material, and a single 21CMHS unit can be transported by air via helicopter or C-130 aircraft, by ship, or on the ground, where they can be loaded onto Medium Tactical Vehicles (MTVs) to traverse even unimproved roadways. A minimum number of people can set up the 21CMHS in an hour, and it can be reconfigured to serve other specific functions such as intensive care or burn treatment. They are equipped to provide telemedicine capability; electronic medical records can be accessed, digital imagery can be transmitted, and video conferencing can take place. Safeguards against nuclear, biological, or chemical (NBC) contamination are in place: there is an NBC filter, and airlocks control personnel and patient flow. Redundant electrical power sources, including generators, batteries, and an uninterruptible power-supply component, ensure that the 21CMHS will have back-up power and will stay up and running.

The design of the 21CMHS captured the attention of the U.S. military, which has contracted MMIC to construct a 21CMHS unit. If the military is impressed with the result, MMIC may soon be providing the 21CMHS as a new military field hospital. "From both a medical technology and a rapid deployability standpoint, these systems appear to represent a significant improvement over current medical deployable systems," said Lt. Gen. Paul K. Carlton, former Air Force Surgeon General. "This proposal has tremendous merit."