# Improving Battlefield Triage And Transport To Raise Survival Rates

Wounded soldiers who sustained chest injuries in Operation Enduring Freedom and Operation Iraqi Freedom had higher mortality rates than soldiers in Korea and Vietnam, according to a military trauma study presented at the 2012 American College of Surgeons Annual Clinical Congress. However, better battlefield triage and transport may have meant that severely wounded soldiers whom would have been considered killed in action in previous conflicts are more likely to get sent to trauma centers in the United States sooner in their course of care, study authors explained.

Trauma surgeons from the U.S. Army Institute of Surgical Research in Fort Sam Houston, TX, compared mortality rates from chest injuries in conflicts dating back to the Civil War, when 63 percent of such injuries resulted in death, compared with 10 percent in World War II, two percent in Korea and three percent in Vietnam. The rate of mortality from chest injuries in Iraq and Afghanistan was 8.3 percent.

The researchers focused on injuries of the thorax and analyzed data from the Joint Trauma Theater Registry for U.S. soldiers who sustained a chest injury in Iraq and Afghanistan from January 2003 to May 2011. The analysis did not include soldiers killed in action. “We feel that these findings are likely a reflection of our ability to get more severely injured soldiers - whom otherwise may have died on the battlefield - to a medical facility,” said Capt. Katherine M. Ivey, MD, a resident in general surgery at San Antonio Military Medical Center and presenter of the study. “We have the capability now of moving sicker patients from theater to the United States that we didn’t have before.”

One observation from analyzing study results that may be applicable in civilian trauma care involved how medics and field surgeons approached chest wounds. “We have found that most penetrating fragmentation injuries of the thorax are managed solely with a tube thoracostomy, or a chest tube, as opposed to an actual thoracotomy, or opening of the chest,” Dr. Ivey said. The surgeons further concluded that advances in prehospital care, rapid transport and protective equipment for combat personnel may have resulted in more severely injured patients arriving alive at a field hospital or other medical facility, which contributed to increased mortality after admission.

While the study did not analyze specific transport factors that contributed to improved survivability of battlefield wounded, Dr. Ivey noted that the use of helicopters and fixed-wing aircraft have long played a role in evacuating battlefield wounded. However, with the Iraq and Afghanistan wars, the military has acquired the ability to move wounded patients to higher-level care centers in the United States "within days or weeks of injury as opposed to weeks or months,” Dr. Ivey said. “Just as an observer working in the medical field in the military, it’s amazing

how quickly we're getting these soldiers back home."

Of 2,049 chest injuries analyzed in the two conflicts, 70 percent occurred in Operation Iraqi Freedom. Most chest injuries were caused by penetrating trauma (61.5 percent) followed by blunt trauma (26.7 percent) and blast injuries (11.6 percent). The most common thoracic injuries were collapsed lung, pulmonary contusions and rib fractures. In all, 1,412 operations were performed at combat support hospitals, which provide a range of surgical and medical specialties and have intensive care units. The researchers did not analyze why more chest injuries occurred in Iraq, Dr. Ivey explained.

Other researchers who participated in the study were Christopher E. White, MD, FACS; Timothy E. Wallum, MS; Jeremy W. Cannon, MD, FACS; Kevin K. Chung, MD, FACP; Jeffrey D. McNeil, MD; Stephen M. Cohn, MD, FACS; and Lorne H. Blackbourne, MD, FACS.

**Source URL (retrieved on *04/17/2014 - 1:58am*):**
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