U.S. Army Researchers Investigate Incidence of Combat Musculoskeletal Injuries Sustained in Operation Iraqi Freedom

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Study series is first to follow one combat unit over time

SAN DIEGO, Feb. 18, 2011 /PRNewswire/ -- A team of U.S. Army orthopedic surgeons is conducting research to better understand the dimensions of injuries sustained by soldiers serving overseas. The most recent paper in their research series, presented this week at the American Academy of Orthopaedic Surgeons (AAOS) 2011 Annual Meeting, followed a single Brigade Combat Team of 4,122 soldiers over 15 months in Iraq. Creating a centralized casualty database by utilizing electronic medical records, the combat casualty rosters of the unit, and the Joint Theater Trauma Registry, the authors looked at the incidence and type of musculoskeletal injuries sustained by the Army Brigade Combat Team during "The Surge" period of Operation Iraqi Freedom.

As of February 2010, slightly more than half of all injured soldiers in Iraq and Afghanistan have reported extremity wounds. The widespread use of improved body armor and a highly integrated military trauma system have meant more lives saved. At the same time, the increasing percentage of injuries sustained from explosions versus gunshots has changed the profile of complex orthopedic injuries on the battlefield.

"The significance of this study is that we can follow one combat unit over time with a clearly defined denominator," explained Lieutenant Colonel Philip J. Belmont, MD, Orthopaedic Surgery Residency Program Director at William Beaumont Army Medical Center/Texas Tech University Health Sciences Center in El Paso and the study's lead author. "Previous research samples have excluded soldiers treated in an ambulatory setting, for example, and therefore obscured the actual scope of injuries. Musculoskeletal combat casualty statistics compiled from hospitals or surgical treatment facilities likely underestimate the magnitude and nature of orthopaedic combat casualties."

The combat unit in this study experienced a rate of 34.2 injuries per 1,000 combat years. Of the 154 soldiers injured, 112 (72 percent) were treated nearby and returned to duty within 72 hours. The most frequent injuries were soft-tissue, fractures and major amputations. Ninety-two surgical procedures were performed for the unit's musculoskeletal injuries, the most common being soft tissue procedures, at 5.6 per 1,000 combat years.

"The Surge was a classic counterinsurgency operation, and the Brigade Combat Team's wound patterns reflect that," added Belmont. "Our research is designed to shed light on the impact of the evolving nature of America's conflicts on our troops and provide recommendations for our military medical system."

The findings, originally published in the November 2010 online edition of *The Journal of Trauma,* are timely as Congress has allocated significant funds in recent years to combat-related orthopedic research, due in part to efforts of organizations like AAOS to draw attention to the need for continued study. The annual AAOS Extremity War Injuries Symposium brings together military and civilian orthopedic surgeons, researchers, government and other medical specialties to advance research and improve patient care. Advances in military orthopedics in the last 10 years have focused on treatment of complex musculoskeletal injuries, compartment syndrome, limb salvage, prosthetics and limb transplantation.

Previous papers by the authors have drawn on the same database they developed to follow this longitudinal cohort of soldiers and describe other types of combat wounds as well as non-combat injuries and diseases. They hope that their current research can be used as a basis for further epidemiologic studies of this type.
LTC Belmont and LTC Brett D. Owens, MD, a co-author of the study, are co-editors of a recently released textbook, Combat Orthopedic Surgery: Lessons Learned in Iraq and Afghanistan, which describes military advances and guidelines in the treatment of combat extremity wounds.
Dimitri Thomas, MD; Gens P. Goodman, DO; Andrew J. Schoenfeld, MD; Michael Zacchilli, MD; Rob Burks, PhD; and Brett D. Owens, MD participated in the study.

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