Extremity Trauma Health Outcomes

A Comprehensive Description of the Combat-Injured Amputation Population

Because of advances in combat medicine and technology, as well as the increased use of improvised explosive devices, the recent conflicts in Iraq and Afghanistan have seen a growing number of U.S. military personnel surviving with amputations of one or more limbs (*Krueger, Wenke, and Ficke 2012*). To better understand and serve this population the researchers at the Naval Health Research Center (NHRC; San Diego, California) conducted a study to comprehensively characterize the combat amputation population injured during Operation Iraqi Freedom and Operation Enduring Freedom, and examine differences in various quality of life (QOL) domains between those with and without amputations.

The NHRC's Expeditionary Medical Encounter Database (EMED), a repository for deployment-related medical encounter information, was queried for all amputations (excluding fingers and toes) from 2001-2015. Additional extracted EMED data included date of birth, date of injury, date of amputation, branch of service, military rank/paygrade, amputation level(s), mechanism of injury, and posture (mounted or dismounted). Descriptive statistics were then obtained to characterize the population. QOL information was provided by the Wounded Warrior Recovery Project (WWRP), a longitudinal research study aimed at investigating the short- and long-term effects of service-related injury on Service members. A total of 1,767 Service members with combat-related amputations were identified from 2001-2015 (Figure 1). Most of the population sustained immediate amputations, performed at the point of injury or within 24 hours (66 percent, n = 1,163). The remainder underwent delayed amputations, occurring more than 24 hours post-injury (34 percent, n = 604). Spikes in the number of Service members with amputations were observed in 2007 (n = 209) and again in 2010 (n = 276) and 2011 (n = 310). The population was relatively young, with 84 percent under 30 years of age at the time of injury. Army (66 percent) or Marine Corps (30 percent) members made up most of the population and 89 percent were junior-to-midlevel enlisted (E1-E6). The majority (90 percent) were injured by a blast (Figure 2). Prior to 2010, 64 percent were injured while mounted in a vehicle. From 2010-2014, 88 percent were injured while dismounted. Lower extremity amputations were the most common type of amputation, with 87 percent of the population undergoing at least one, and 19 percent of the population undergoing at least one upper extremity amputation. Thirty-six percent of the population sustained multiple amputations. Results from the WWRP showed that amputation injury groups reported both statistically and clinically significantly lower health-related QOL, overall and specifically on the domains of chronic and acute symptoms, mobility/self-care, physical activities and usual activities than non-amputation injury groups (n = 2,932) (*Perez et al. 2017*).

This State of the Population Report may be used to inform leadership and decision-makers about the scope and characteristics of the military's combat amputation population.

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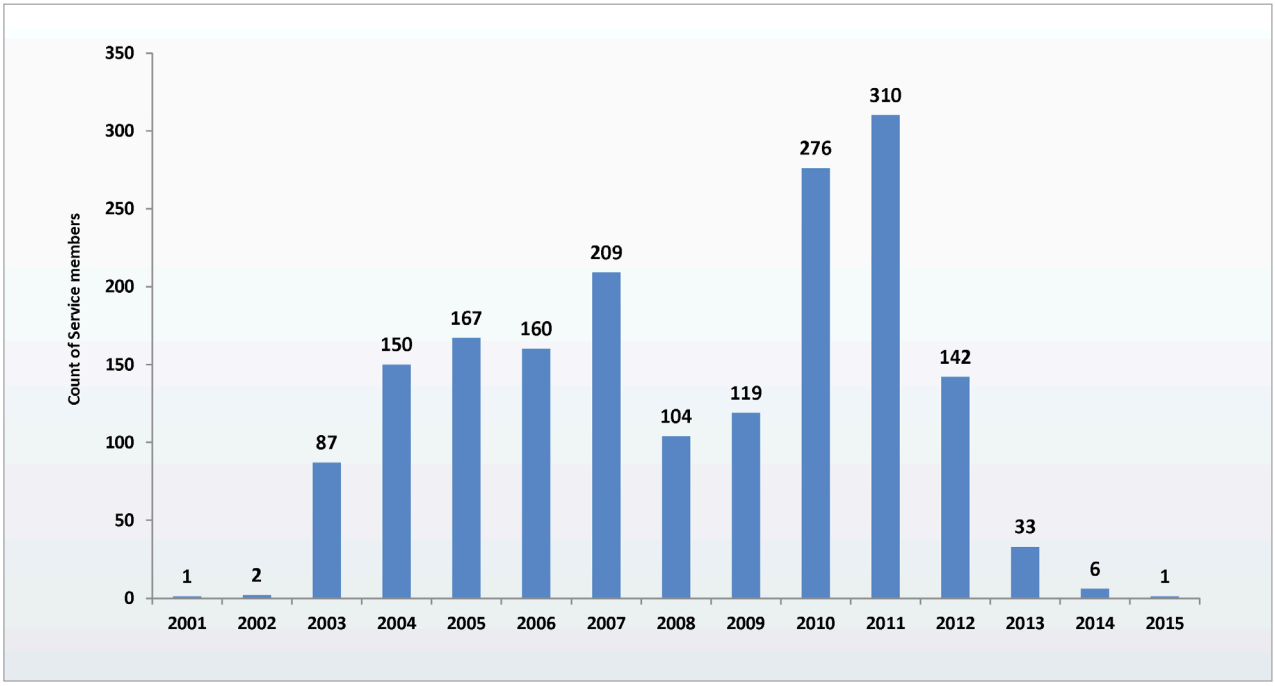

FIGURE 1: Number of deployment-related amputations by year. (Figure used with permission from the authors)

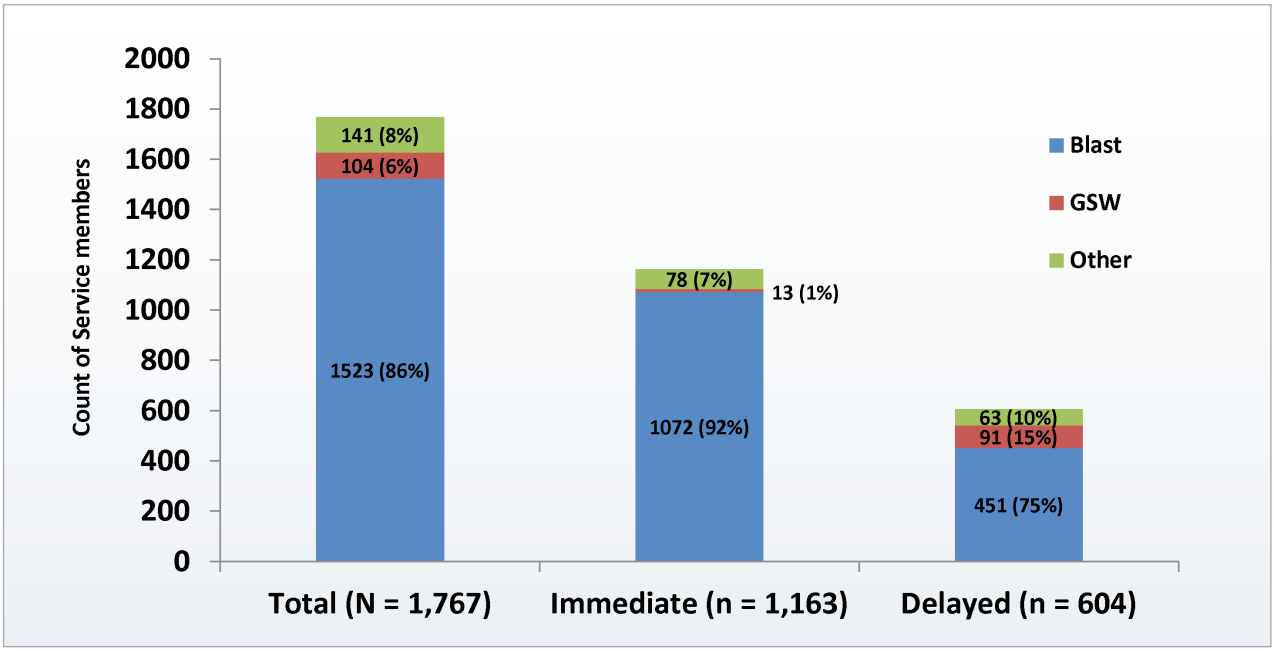

FIGURE 2: Mechanism of injury. (Figure used with permission from the authors)

REFERENCES:

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Perez, K., Shaw, J., McCabe, C., Clouser, M. C., Eskridge, S., and Galarneau, M. R. 2017. "A Comprehensive Description of the Combat-Injured Amputation Population." Military Health System Research Symposium (MHSRS), Kissimmee, FL, August 27-30, 2017.