Health Outcomes and Long-Term Care Following Extremity Injury

Five-Year Health Outcomes Following Upper Limb Combat Amputations

US Service Members who sustained combat amputations to the upper limbs in the Iraq and Afghanistan conflicts present new challenges for military and VA providers. Approximately 90 percent these amputations were caused by blast injuries. Little research has tracked their health outcomes beyond the short term due to the difficulty of integrating military and VA health data. This study described the physical and psychological outcomes for US Service Members during the first five years following upper-limb amputations sustained in Iraq and Afghanistan, 2001–2008. The research team from the NHRC, NMCSD, and San Diego VA, with funding from the BUMED Wounded, Ill and Injured program, compared clinical diagnoses for patients with upper-limb amputations to individuals with serious upper-limb injuries without amputation. The team identified study patients and injury-specific data in NHRC's EMED. Researchers conducted a retrospective review of military and VA health databases for patients who sustained unilateral upper-limb amputation (n = 141) or serious upper-limb injury without amputation (n = 85) in the Iraq and Afghanistan conflicts, 2001–2008. Military and VA health diagnoses were followed for five years post-injury for all patients. The team found that patients with above-elbow amputations had significantly higher ISSs than patients with below-elbow amputations or no amputation. The above-elbow group had significantly higher prevalence of anemia, pulmonary embolism, osteomyelitis, and eye disorders compared with below-elbow amputation patients and/or upper-limb injury without amputation. By contrast, neuroma was significantly more likely following below-elbow than above-elbow amputation or no amputation. The prevalence of heterotopic ossification was 11 to 21 percent and highest following above-elbow amputation. All groups had similar relatively high incidence of lumbago and/or limb pain (40 to 60 percent), hypertension (15 to 20 percent), and obesity diagnoses (12 to 19 percent). The five-year incidence of osteoarthritis ranged between 8 percent and 15 percent with no significant differences between groups. Nearly 90 percent of all groups had at least one psychological disorder. The prevalence of PTSD increased significantly after the first year for the amputation groups, while diagnoses of mood, anxiety, and adjustment disorders declined over the first five years post-injury for all groups.

This is one of the first studies to integrate military and VA health records for five years after combat amputations to the upper limbs. It is also one of the first to describe how physical and mental health outcomes following upper-limb amputation may be unique by comparison to patients with serious upper-extremity injury without amputation. These results can help refine existing treatment strategies to prevent early wound complications and other physical and psychological health complications. The results can also guide development of post-injury treatment pathways for patients with upper-limb amputation versus other serious upper-extremity trauma.