

Military Burn Research Program

According to the American Burn Association, nearly 500,000 patients in the United States require treatment for burn injuries annually with 40,000 of those patients requiring acute inpatient care; an average of 3000 patients die annually from burn injuries¹⁻². Military burns are often devastating and more severe than burns obtained in the civilian setting. The majority of combat burns result from explosive device detonation, leading to a greater Injury Severity Score, an increase in inhalation injuries, and a larger, full-thickness burn size³. Burns have comprised some 5-20% of the casualties sustained in post-World War II conflicts⁴. From 2006-2018, the Defense Medical Epidemiology Database reports nearly 130,000 ambulatory visits with a primary burn injury diagnosis code among active component Service members. The mean total healthcare cost per burn patient in high income countries has been estimated at \$88,218 (range \$704-\$717,306)⁵.

VISION

Deliver the best burn trauma care to improve health and performance outcomes in support of the warfighter

MISSION

Identify and address gaps in burn trauma care through military focused translational research

PROGRAM HISTORY

The Department of Defense Military Burn Research Program (MBRP) was initiated in 2011 to address capability gaps for treating combat burn injuries. These gaps were identified by the Combat Casualty Care Research Program, and they address injuries obtained from the point of injury to treatment at stateside Military Burn Centers.

MBRP-funded projects explore innovative approaches to accelerate the translation of advances in knowledge into new standards of care for the treatment of injured Service members, Veterans, and those within the civilian community who sustain burn injuries. These continued efforts, in concert with the program's successes, have resulted in more than \$70 million in Congressional appropriations through fiscal year 2019.

¹ Delaplain, P., Joe, V. Problems and Costs That Could Be Addressed by Improved Burn and Wound Care Training in Health Professions Education *AMA J Ethics*. 2018;20(6):560-566

² American Burn Association. Burn incidence fact sheet. <http://ameriburn.org/who-we-are/media/burn-incidence-fact-sheet/>. Accessed March 27, 2019.

³ Kauver DS, Cancian LC, Wolf SE, et al. 2006. Comparison of combat and non-combat burns from ongoing U.S. military operations. *J Surg Res* 132:195-200.

⁴ Kauvar, D. S., Wade, C. E., & Baer, D. G. (2009). Burn hazards of the deployed environment in wartime: Epidemiology of noncombat burns from ongoing United States military operations. *Journal of the American College of Surgeons*, 209(4), 453e460.

⁵ Hop, MJ, Polinder, S., van der Viles CH. et al. Costs of burn care: a systematic review. *Wound Repair Regen*. 2014 Jul-Aug;22(4):436-50. doi: 10.1111/wrr.12189



HIGH-IMPACT ADVANCES SUPPORTED BY THE MBRP

INNOVATIVE TREATMENTS

MBRP-funded research has provided evidence to show:

- Laser delivery of stem cells stimulates dermal remodeling and scar reduction
- Repeated stem cell application delays acute respiratory distress syndrome (ARDS) and decrease severity.
- Restored plasma vitamin E levels increases pulmonary function.
- Fish skin provides effective coverage of a full thickness burn.

IMPACTING STANDARD OF CARE

MBRP-funded research outcomes provide evidence to support:

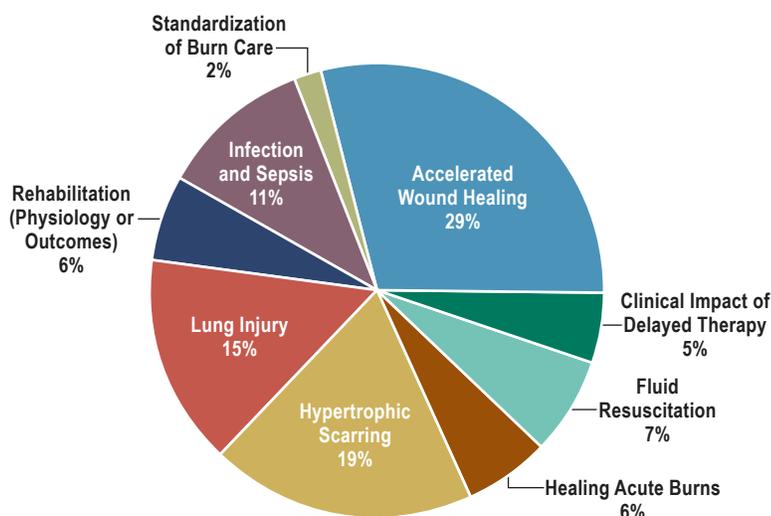
- Recommendation to treat post injury ARDS due to severe smoke inhalation using minimally invasive extracorporeal life support devices as adjuncts to mechanical ventilation.
- Based on an individual's body size and burn wound surface area, the current U.S. Army Standards of Medical Fitness may need to be reconsidered.
- Compared to the current standard of care, nebulized epinephrine improves pulmonary function following burn and smoke inhalation injury.

BURN RESEARCH IMPACTING TREATMENT AND STANDARD OF CARE

The MBRP has supported preclinical and clinical research across nine topic areas that have resulted in the advancement of novel therapies to treat burn wounds while impacting the current standard of care for treating burn-injured Service members, Veterans and the general public.

The MBRP is uniquely positioned to address gaps in the types of severe burn care that are more common in the military and Veteran populations. Alongside scientists and clinicians, active duty Service members and retired Veterans that have sustained significant burns serve on the Program's Peer Review and Programmatic Review Panels, allowing them to have an equal voice in determining the Program's investments in research that will have a real impact on the burn community.

MBRP Portfolio for FY11-FY18
(% based on total dollar amounts per research area)



MBRP STRATEGIC PRIORITIES

In 2018, the MBRP established the following priorities around which it will build its funding efforts, contingent on the availability of future appropriations:

- Development of interventions or therapies that can help, accelerate, or optimize wound healing.
- Development or refinement of interventions or technologies that will enable non-burn specialists, such as field medics, corpsmen, and paramedics, to provide good burn care closer to the point of injury allowing for better long-term outcomes.
- Development of therapeutic interventions that can help treat debilitating scars and prevent contractures.
- Advancement of standard of care practices through conduct of high-impact clinical trials.

Point of Contact: CDMRP Public Affairs, 301-619-9783

usarmy.detrick.medcom-cdmrp.mbx.cdmrp-public-affairs@mail.mil