Abstract
Introduction: In recent military conflicts, burn injuries have accounted for up to 10% of combat casualties, and treatment may require significant resources. These casualties were sometimes treated at Role 2 facilities during combat operations in these countries. Moreover, treatment at these facilities may be challenging due to their far-forward locations on the battlefield and their limited personnel and resources. Therefore, the purpose of this study was to characterize burn casualties presenting to Role 2 facilities in Afghanistan, along with the procedures they required, complications, and mortality.

Methods: Data from the Department of Defense Trauma Registry, which includes retrospectively collected data on patient demographics, injuries and procedures (International Classification of Diseases, 9th and 10th Revisions, Clinical Modification codes), resuscitation fluids, and outcomes (complications and mortality) were collected. We included burn casualties treated at Role 2 facilities in Afghanistan between October 2005 and April 2018. We excluded 1st degree burns, cornea burns, and not otherwise specified burns. Procedure codes were categorized into procedure groups using the Healthcare Cost and Utilization Project (HCUP) Clinical Classifications Software categorization scheme to classify nonoperating room diagnostic/therapeutic and operating room diagnostic/therapeutic procedures. Descriptive statistics were used to report the findings.

Results: Of 453 identified casualties, most were battle-injured (n=304; 67.4%) males (n=415, 91.6%) with a median (inter-quartile range, IQR) age of 24 (19-30) years. Median (IQR) injury severity score and percent total body surface area burned was 10 (4-22) and 11 (5-30), respectively. There were 123 (27.2%) casualties with inhalation injury, and 142 (31.3%) casualties required ventilator support. The median (IQR) liters (L) of crystalloid fluid received was 1.9 (0.7-3.7) L. There were 2,529 procedures, and most procedures were non-operating room therapeutic (n=1,246, 49.3%), followed by non-operating room diagnostic (n=835, 33.0%), and operating room diagnostic or therapeutic (n=449, 17.8%). There were 53 (11.7%) casualties with complications, including 10 (2.2%) casualties with complications potentially related to resuscitation: 4 (0.9%) abdominal compartment syndrome, 4 (0.9%) acute respiratory distress syndrome, and 3 (0.7%) extremity compartment syndrome. Mortality was reported in 36 (8.0%) casualties.
Conclusions: In this study, we examined casualties with burn injuries treated at Role 2 facilities in Afghanistan. These casualties required many diagnostic and therapeutic procedures, with most occurring outside of the operating room. Some casualties experienced complications, which included those potentially related to resuscitation. Given the limited personnel and resources of Role 2 facilities, an important focus of future studies will be to obtain more detailed information on the equipment used and supplies consumed by Role 2 medical teams during their treatment of casualties in order to provide guidance to military leadership when planning for future conflicts.

**Learning Objectives**
- Describe the characteristics of casualties with burn injuries treated at Role 2 facilities in Afghanistan
- Describe the procedures performed on casualties with burn injuries treated at Role 2 facilities in Afghanistan
- Describe the complication and mortality rates of casualties with burn injuries treated at Role 2 facilities in Afghanistan

**References**

Comparison of military and civilian burn patients admitted to a single center during 12 years of war. Burns. 2019 Feb;45(1):199-204.