

Relationship between Patient Characteristics and Number of Procedures as well as Length of Stay for Patients Surviving Severe Burn Injuries: Analysis of the American Burn Association National Burn Repository

Conclusion:

This research reaffirms that TBSA is a key predictor of number of procedures and length of stay but also highlights that TBSA is not the only important variable influencing patient outcomes

Figure 1. Average Predicted LOS Days per Percent TBSA for Adults and Pediatrics for Surviving Patients

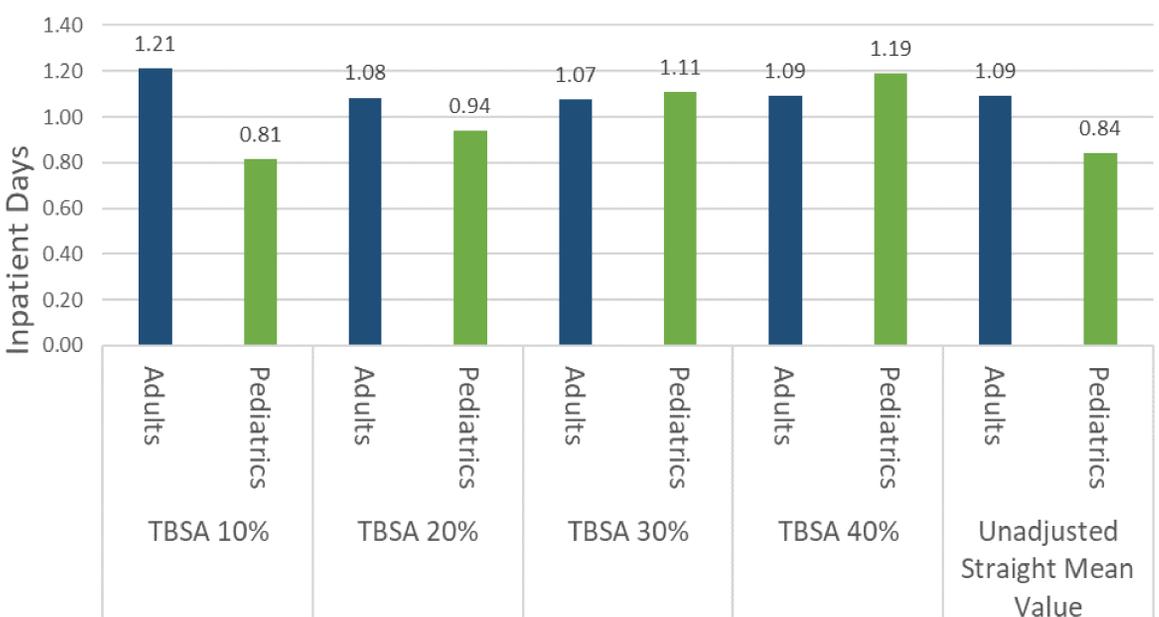
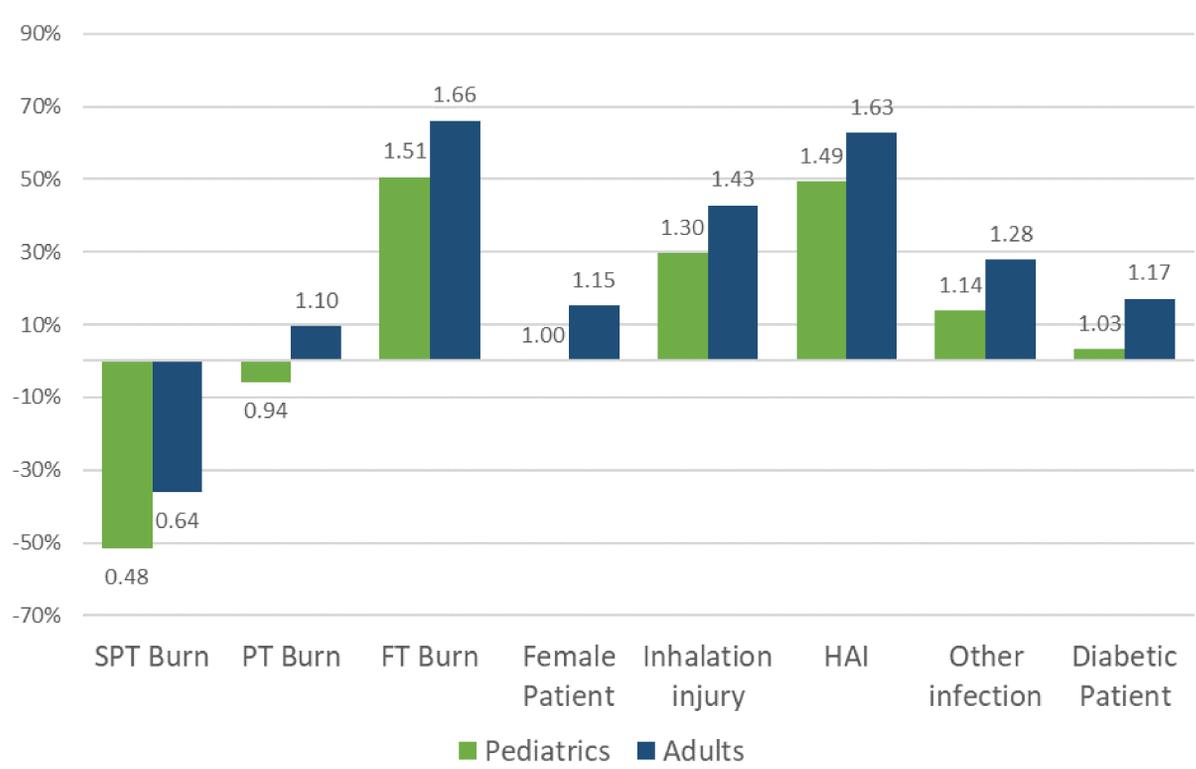


Figure 2. Relative Difference from 1 Day per TBSA Across Varying Patient Characteristics (Labels are Days/TBSA Burned)



Significance Statement:

- This study establishes an important, national benchmark for burn centers to assess length of stay (LOS) as well as number of procedures across key patient profiles treated in their center.
- Further, the coefficients derived through regression analysis can be used in predictive equations to enhance economic analyses of new product interventions.
- Practitioners can better forecast expected procedure and LOS outcomes for patients based on their unique characteristics, adding important granularity beyond TBSA alone

Data Source/Population and Results:

- National Burn Repository (NBR) version 8.0 including ten years (2002-2011) of cumulative data from burn centers was used for the regression analysis to examine the relationship between patient characteristics such as age and total body surface area (TBSA) burned and number of procedures and LOS in the United States
- Acute care patients with burns covering 10% - 60% TBSA were included
- Outcomes included the number of debridement, excision, autograft procedures, and LOS
- Independent variables such as age (linear, squared and cubed to account for non-linearity), TBSA, TBSAs of partial-thickness and mixed/full-thickness burns, sex, hospital-acquired infection, other infection, inhalation injury, and diabetes status were included
- Among 21,175 surviving burn patients (TBSA >10%-60%), mean age was 33 years, and mean injury size was 19.9% TBSA.
- When considering all independent variables, the LOS per percent TBSA is estimated at approximately 1.12 and 1.01 days for surviving adults and pediatrics, respectively (Figure 1)

Lessons Learned:

- Analysis shows that although the 1 day per percent TBSA rule of thumb approximates pediatric burn patients' LOS for a population average, it underestimates for surviving adults with TBSA 10% or more.
- Further, looking beyond TBSA to consider unique patient characteristics, we see that LOS per TBSA can vary by 60% or more compared to existing 1 day per TBSA rule of thumb (Figure 2)
- New predictive equations that consider additional patient and burn characteristics (burn depth, gender, HAI, other infection, inhalation injury, and diabetes status) can be used to better approximate LOS and procedures for burn patients treated in the US today