# OUTCOMES IN PEDIATRIC BURN PATIENTS WITH ADDITIONAL TRAUMA-RELATED INJURIES

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**The addition of trauma to burn injuries can have a synergistic effect, which may result in higher morbidity and mortality. In 2017, more than 84,000 children under the age of 14 were treated for burns in the United States.**

**The association of burn injury with additional major non-thermal injury is uncommon. The prevalence of combined burn-trauma in the general population has been reported to be from 0.4% to 5.8%.**

## OBJECTIVE

- Determine outcomes of pediatric patients who were admitted to our facility with a combination of burn injuries and other trauma

## METHODS

- Retrospective review using our institutional Burn Center and Trauma registries
- All pediatric Burn only, Trauma only, and combined Burn-Trauma patients (age < 18 years) were included
- Patients were admitted between 2011 and 2020
- Primary outcome assessed was mortality
- Secondary outcomes included ventilation days, length of stay (LOS), and ICU LOS

| | Burn only (n = 3931) | Trauma only (n = 3045) | Burn-Trauma (n = 28) | p-value |
|---|---|---|---|---|
| **LOS (Days), Mean (SD)** | 4.76 (11.7) | 3.54 (6.7) | 17.75 (30.7) | **< 0.0001** |
| **ICU LOS (Days), Mean (SD)** | 6.38 (13.8) | 4.26 (5.9) | 19.25 (28.3) | 0.1735 |
| **Ventilation Days, Mean (SD)** | 15.23 (25.1) | 4.59 (6.4) | 25.00 (37.8) | **< 0.0001** |
| **Mortality, n (%)** | 7 (0.18) | 67 (2.2) | 2 (7.14) | **< 0.0001** |

Table 1. Outcomes measures for all patients (n = 7004)

| | Mortality | | LOS | | ICU LOS | | Ventilation Days | |
|---|---|---|---|---|---|---|---|---|
| | **OR (95% CI)** | **p-value** | **RR (95% CI)** | **p-value** | **RR (95% CI)** | **p-value** | **OR (95% CI)** | **p-value** |
| **BT vs Burn only** | 9.77 (1.89, 50.62) | **0.0066** | 3.73 (2.55, 5.44) | **< 0.0001** | 3.02 (1.33, 6.87) | **0.0085** | 1.54 (0.67, 3.53) | 0.3126 |

Table 2. Multivariate estimates after inverse probability of treatment weighting (n = 3959)

## RESULTS

- Patients in Burn-Trauma group had **longer LOS** and **more ventilation days** ($p < 0.0001$)
- When comparing patients in Burn-Trauma group to those in Burn only group, our study demonstrated **higher odds of mortality**
- Results were significantly limited by small number of patients available for comparison
- Of note, **all deceased patients** in Burn-Trauma and Burn only groups had **inhalation injury**

## CONCLUSION

- Findings highlight continued need for future collaborative research, which can help identify best practices and ultimately improve outcomes

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