RESULTS: Participants generally gave positive feedback. The median scores for effective depth perception, improvement in spatial awareness, and multifaceted view were 7 out of 7. Many participants found the simulation to be enjoyable (median 7) and useful for learning (median 7). However, some participants reported that the holographic lens made them feel nauseous (median 5), had a poor cost-benefit ratio (median 4), and was troublesome because it lacked hand representation (median 4).

CONCLUSION: The use of XR may make depth and space more recognizable and enhance the learning effect of initial trauma patient care simulation.

Factors Associated with Liberation From the Ventilator after Tracheostomy in Severely Injured Trauma Patients

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INTRODUCTION: Tracheostomy is performed in trauma patients in order to expedite liberation from the ventilator. While some patients are quickly freed from the ventilator, other patients will remain ventilator dependent for longer periods of time. The aim of this study was to examine the effect of patient characteristics on the timing of liberation from the ventilator. We hypothesized that specific injury patterns would play a role in this transition.

METHODS: We performed a retrospective study of trauma patients admitted to our level I trauma center from 2015 - 2020. Patients met inclusion criteria if they had undergone a planned tracheostomy. Demographics, injury patterns and outcomes were abstracted from the trauma data registry. Chart review was performed to analyze the exact timing of liberation from the ventilator. Patients who were ventilator free within 48 hours of tracheostomy (early group) were compared to those who required ventilator support for greater than 48 hours after tracheostomy (prolonged group).

RESULTS: A total of 278 (Early: n = 141; Prolonged: n = 137) patients met the inclusion criteria. Severe chest injuries (AIS ≥ 3) were more common in the prolonged group (54% vs 41%, p=0.03). On multivariate analysis, severe chest injuries were independently associated with prolonged ventilator dependence (OR 1.75, CI 1.073 - 2.860, p=0.025).

CONCLUSION: Trauma patients with severe chest injuries require prolonged ventilator support even after tracheostomy. Patients without severe chest injuries should be considered for more aggressive efforts at extubation rather than proceeding with tracheostomy.

Manhandling Injury During Legal Intervention
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INTRODUCTION: Data concerning injuries resulting from physical force during legal interventions is scarce. The purpose of this study was to examine manhandling injuries occurring in both civilian suspects and law enforcement officials (LEO).

METHODS: Retrospective study using data from the National Trauma Data Bank (2015-2017). All patients who sustained manhandling injuries during legal interventions were identified using ICD-10 ecodes. The study groups were injured civilian suspects and LEO. The primary outcome was differences in the type and severity of injuries between the groups.

RESULTS: A total of 507 patients were included in the study. 426 (84.0%) were civilians and 81 (16.0%) were LEO. Overall, median age was 37 years (IQR: 28-48) and 90.3% were male. The median ISS was significantly higher in civilians compared to LEO (5 [4-10] vs 4 [4-9], p=0.023). Civilians were more likely to sustain injuries to the face (49.8% vs 35.9%, p=0.024) and abdomen (8.3% vs 1.3%, p=0.028). LEO were more likely to sustain tibia/fibula fractures (3.5% vs 9.9%, p=0.019). The mortality was 1.2% (5/426) in civilians and there were no deaths in LEO. There was a trend toward higher ICU admission rate in civilians (21.9% vs 13.6%, p=0.091), while the hospital length of stay and overall complication rate were similar between the groups.

CONCLUSION: Injury patterns and overall severity of injuries sustained from the use of physical force during legal interventions are different in civilians and law enforcement officials.

One Trauma Score Rules All: New Injury Severity Score Is Superior in Predicting Trauma Mortality
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INTRODUCTION: Trauma scores are used to give clinicians appropriate quantitative context in making decisions. There is a lack of literature on which trauma scores are the most effective at predicting mortality. We hypothesize that trauma scores have a hierarchy of efficacies at predicting mortality.

METHODS: We performed a retrospective analysis of our trauma patient database at a Level 1 Trauma center from 2016 to 2020 and calculated the following trauma scores: Glasgow Coma Scale (GCS), Revised Trauma Score (RTS), Trauma Injury Severity
Score (TRISS), Injury Severity Score (ISS), Shock Index (SI), and NISS. Receiver operating characteristic curves (ROC) were used to evaluate the sensitivity and specificity of trauma scores for predicting mortality.

RESULTS: A total of 738 patients were included (mean age: 35.7±15.6 years). ROC curves demonstrated that NISS (AUC=0.83, 95%CI: 0.79-0.87, p<0.001) was the best predictor of mortality, followed by TRISS (AUC=0.80, 95%CI: 0.73-0.87, p<0.001) and GCS (AUC=0.80, 95%CI: 0.74-0.85, p<0.001), ISS (AUC=0.76, 95%CI: 0.71-0.81, p<0.001), RTS (AUC=0.71, 95%CI: 0.62-0.81, p<0.001), and SI (AUC=0.63, 95%CI: 0.57-0.70, p<0.001). NISS was superior in predicting mortality for penetrating trauma (AUC=0.86±0.02, p<0.001) compared to blunt trauma (AUC=0.73±0.04, p<0.001).

CONCLUSION: NISS was the best scoring index for predicting mortality in trauma patients, especially for penetrating trauma. Clinicians should consider incorporating other trauma scores, especially NISS, in determining injury severity and the likelihood of mortality. These scores can help physicians determine the best course of action in patient management.

Outcomes of Emergency Department Thoracotomy in Pediatric Gunshot Victims: Designation Matters
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INTRODUCTION: The purpose of our study was to determine if treatment at an adult ACS Level I designated trauma center affects outcomes in pediatric patients with gunshot wounds (GSW) requiring emergency department thoracotomies (EDT).

METHODS: We analyzed the 2017-2018 National Trauma Database. Inclusion criteria included patients ≥17 years. Analyzed variables include basic demographics, insurance status, injury mechanism and severity, Charlson score, and location of abuse. Statistical analysis included bivariate analysis and logistic regression for odds of abuse and mortality.

RESULTS: 199,188 patients met inclusion criteria, of which 12,904 (6%) had a history and injury pattern that resulted in abuse reporting to authorities. Most abuse occurred within the home. American Indians had the highest prevalence of abuse at 11.3%, compared to whites at 7.6%. Upon Logistic regression modeling, abuse victims were compared to general assault patients; women (OR 3.6 p<0.0001), American Indians (OR 2.4 p<0.0001) and whites (OR 2.4 p<0.0001) compared to Blacks, and age > 80 years (OR 1.35 p=0.001 compared to age <65 years). Significant predictors of mortality following abuse include age >65-79 (OR 2.23), Age > 80(3.46), and shock (3.41). Women had lower odds of mortality (OR 0.56).

CONCLUSION: Domestic violence is prevalent among trauma patients. Although female patients were more likely to experience abuse, male patients had higher odds for mortality. Mandatory screening for evaluating domestic violence among trauma patients, particularly in women, Whites, American Indians, and older adults, is imperative.