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Shock Index Pediatric Adjusted Score vs Pediatric Trauma Score in the Emergency Department: So Many Scores, So Little Time

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Triage (OUT) in trauma activations. The CMM depends in large part on the Injury Severity Score (ISS). Another trauma triage tool gaining in popularity is The Need For Trauma Intervention (NFTI). NFTI has been shown to have better model fit and stronger associations with appropriate resource utilization. We are seeking to improve our institutional OUT rates by comparing our institutional criteria with both CMM and NFTI. Our goal is to create institutional triage criteria which meets American College of Surgeon Committee on Trauma recommendation of under-triage <5% and over-triage <35%.

Methods: This quality improvement project utilized a trauma database of state defined metrics. The trauma database generates "raw" OUT rates based on CMM. This "raw" CMM OUT rate was compared to calculations using institutional triage criteria and NFTI. Data was collected over the first 4 months of the institution's period of pursing trauma accreditation and compared descriptively.

Results: From July through October, the institution had 65, 73, 73 and 73 trauma patients per month, with 3, 6, 3, 3 classified by CMM as over-triage. The remaining 62, 67, 70 and 70 patients were used to calculate under-triage proportions. The under-triage rates (percent) as determined by "raw" CMM, institutional criteria and NFTI were as follows for July through October: 12.9/3.2/3.2, 10.5/3.0/3.0, 8.6/0.0/2.9, 7.1/1.4/2.9. Overtriage rates were: 66.7/0.0/66.7, 66.7/0.0/50.0, 100.0/0.0/100.0, 66.7/33.0/0.0.

Conclusion: This preliminary data shows that there are discrepancies in OUT rates between CMM, NFTI, and local institutional criteria. The low N of the dataset limits meaningful interpretation for overtriage. For under-triage, this single site pilot cohort shows some degree of agreement between NFTI and institutional criteria. The use of ISS, available only at discharge, may impact this use of CMM as a triage tool. Further study on the agreement between CMM, NFTI and individual institutional triage criteria may improve both resource utilization and patient outcomes.

712 | Fireworks injuries are increasing in the United States

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Background and Objectives: Injuries due to fireworks can cause significant morbidity. Prior studies have shown that hands and eyes are frequently injured, with loss of hand function and blindness being common after serious injury.

Methods: Fireworks injuries from 2008-2017 were identified in the National emergency department Sample was using the corresponding International Classification of Disease codes. Demographics, timing of presentation, and hospital characteristics were analyzed. Data were weighted to approximate population estimates of injury. Statistical analyses were completed using SAS.

Results: There were an estimated 7699 injuries due to fireworks in 2017 (2.37 per 100,000 population) compared to 5727 (1.88 per 100,000 population) in 2008. The majority of victims were male (74.6%) and injuries were most common in the Midwest and South (both 38.1%) compared to the West (15.6%) and Northeast (8.2%) regions. Most visits occurred in July (71.4%) with smaller peaks in June (6.9%) and January (6.0%). Patients were disproportionately seen in trauma centers (34.0%) and teaching hospitals (49.6%).

Conclusion: Emergency Department visits for fireworks injuries are increasing in the United States. Pediatric patients and young adult males comprise the majority of victims. Injuries are clustered around the 4th of July and New Years holidays. Public health interventions targeted at high-risk groups may reduce the burden of injury.

713 | Shock index pediatric adjusted score vs pediatric trauma score in the emergency department: So many scores, so little time

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Background and Objectives: Different scoring tools have been established to aid in prediction of pediatric trauma patients recovering and survival but not one is used consistently. Pediatric Trauma Score (PTS) is one of the first tools developed & evaluates pediatric trauma rapidly in a comprehensive manner using 6 determinants to help predict outcomes. Shock Index Pediatric Adjusted (SIPA) adapts shock index (SI) in predicting outcomes for trauma patients adjusted to the pediatric population. It is unclear which scoring tool is best at predicting outcomes. SIPA is easier to calculate & will be more convenient to use in the ED or pre-hospital setting.

Methods: This is a single center retrospective electronic chart review study of patients 1- 17 years with level I & II activated trauma between 1/2013 – 11/2019. Outcomes of interest were hospital admission, ICU admission, ICU & hospital LOS and complications of ventilator use, major liver or spleen lacerations, blood product use, high ISS (> 15) and fluid bolus use. Patient visits were scored for both SIPA and PTS, then placed into either high risk and low risk category as predefined by the individual scoring tools: High risk SIPA (elevated SI for age), low risk SIPA (normal SI for age), high risk PTS (scores: −6 to 8), low risk PTS (scores: > 8).

Results: Of 1667 patients, 757 met inclusion. The predominant scores for each tool were low risk. See table 1 for demographics and scoring details. When the scoring systems were compared, there were 36 visits that scored high in both systems and 542 visits that scored low in both systems. A comparison of high-risk scores to low risk scores for both tools, findings suggesting an increased odds ratio (OR) for all outcomes for each scoring tool's high risk group in comparison to its low risk group with the exception of fluid bolus use for PTS. When both high risk groups were compared, PTS had an increased OR for outcomes such as hospital & ICU admission, ventilator use, blood product use, fluid bolus use ($p < 0.05$) & major spleen or liver laceration ($p = 0.16$). SIPA had an increased OR for high ISS ($p = 0.14$).

Conclusion: Both PTS & SIPA seem to be reliable predictors of outcomes for level 1 & II trauma activated pediatric patients, but PTS catches more "high risk" visits. However, is more tedious to calculate than SIPA. Given reliability of SIPA as an outcome predictor, this may be a fast & effective way to triage pediatric trauma patients.

714 | The impact of COVID-19 on United States pediatric emergency departments

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Background and Objectives: Anecdotal experience of frontline pediatric emergency department (PED) staff suggested a significant effect of COVID-19 on all aspects of operations. Limited data was available to quantify this effect. The purpose of this study was to quantify the effects of the COVID-19 pandemic on PEDS across the United States, including its impact on patient volume and characteristics, staffing, and trainee educational opportunities.

Methods: A survey targeting PED directors was created using REDCap database, underwent methodological review, and was approved by institutional IRB. The survey was then sent via 3 national pediatric emergency medicine email distribution lists, with follow-up reminders. Data was analyzed using Microsoft Excel.

Results: There were 36 completed questionnaires from 19 states. Thirty-two sites provided patient volume data and admission percentage for March-July 2020 and March-July 2019. During this time mean volume decreased by >30% each of these months, with maximum reduction (66%) in April. Mean percent of patients admitted increased across each month, ranging from 3-38%, with maximal impact also in April. Respondents reported baseline patient age limits of up to 17-22 years. 21 (58.3%) reported an increase in this age cutoff during COVID, with a median of 25 years (range 21-95). 24 (68.6%) sites report decreasing provider staffing during this time period. All responding sites reported staffing changes, including decreased use of mid-levels (16, 45.7%), increased on-call staff (12, 34.3%), movement of staff between PED and other hospital units (7, 20%), and added video/ televisit shifts (3, 8.6%). Thirty-four sites reported hosting trainees. Of those 29 (85%) reported a decrease in trainee number or elimination altogether between March and July of 2020. Twenty-six (76.3%) sites had restrictions on patient care provision by trainees. Of these twenty-six sites (100%) reported restricting medical student participation in care, 10 (38.5%) restricted residents and 1 (3.8%) restricted fellows. Fifteen sites (42.9 %) placed restrictions on procedures performed by medical students (13, 86.7%), residents (10, 66.7%), or fellows (2, 13.3%).

Conclusion: The COVID-19 pandemic resulted in a marked impact on PEDS with decreased patient volume and increased admission rate, significant alterations in staffing models, and educational restrictions for trainees of all levels.

715 | Evaluating parental understanding of informed consent for procedural sedation in a pediatric emergency department

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Background and Objectives: There is little literature on best practices on the informed consent process in the pediatric emergency department (PED). This study aims to evaluate parent's recall with provider's reported discussion during informed consent for procedural sedation and to compare items provider's reported discussion with written consent documentation.

Methods: We performed a survey of providers and parents after consent for procedural sedation in the PED of an academic children's hospital. Parent's recall of benefits, risks and alternatives discussed were compared to provider's responses of what they discussed. Recall by parental education level was evaluated using Fisher's exact test. We also performed a retrospective chart review of the written informed consent documentation for patients undergoing procedural sedation between January 2017 and December 2019. Encounters were identified by procedural sedation billing code and by medication order for ketamine. One third of the encounters were selected at random. Charts were excluded if the consent form was not available or the consenting provider was not a PED provider.

Results: We received survey responses from 83 providers and 35 parents during the study period, including 30 paired responses. The poorest parental recall was benefit of anxiety control, risk of emergence reaction, risk of failure to complete the procedure and alternative of general anesthesia. Providers reported discussing alternatives less frequently than parents recalled. There was no measurable difference in parent's recall ability based on educational status. From the retrospective medical record review, 2115 encounters were identified, 705 charts were randomly selected and 655 of those encounters met inclusion criteria. Providers report discussing most elements of the consent process more frequently than they document discussion of those elements.

Conclusion: Overall, parents recalled most of the key elements providers report discussing during the consent process in a single PED, regardless of parental education level. Providers report discussing more information than they document. Standardization of the consent documentation could allow for better alignment with verbal discussion.