

(7.3%), pedestrians (3.3%) or bicyclists (1.2%) struck by automobiles, and bicycle crashes (3.5%). 96.8% had GCS of 14 (3.1%) or 15 (93.7%). The CTs were obtained in 36.8% (site-specific range: 9.7%-71.1%), and were positive in 11.2% (30% of these were isolated skull fractures). Neurosurgery was performed on 0.5%, and 0.1% died from TBI. For patients with GCS 14-15, a decision rule for TBI will be reported at the meeting.

Conclusions: Blunt head trauma is common in PECARN EDs. Patients are more commonly male, and falls are the dominant mechanism. Most patients have minor head trauma, and CT use is highly variable. A decision rule to identify patients at very low and high risk of TBI may result in more efficient CT use.

232 **Bag-Valve-Mask Performance Limitations Due to Improper Setup and Use**

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Objectives: Pediatric bag-valve-masks (BVM) have potential performance issues when they are improperly set up and used. These performance issues are compounded when a child with high compliance lungs receives BVM ventilation. This study was designed to demonstrate the effects of improper setup and use in a simulated lung model of a cross-section of commonly used infant BVM devices.

Methods: Five commonly used BVMs were tested on an infant test lung. Pressure and volume measurements were recorded with the pediatric resuscitators under normal, middle and high lung compliances as would be found in various disease states. The four possible combinations of the pop-off valve and manometer port in the open and closed positions were tested. Breaths per minute and lung resistance were standardized. The resulting multifactor study consisted of $n = 180$ runs.

Results: SAS 9.1 was used to analyze the data. Total volume was significantly affected by manufacturer, manometer, rate, and compliance ($p < 0.001$ for each factor). Pressure was a significant co-variate ($p < 0.0001$). Popoff was not significant ($p = 0.086$). Across each of the different manufacturers, and independently of compliance, an open manometer port (improper setup) led to significant decreases in volume delivered. Total volume summary statistics (mean \pm SD) for the four combinations of manometer and pop-off valve are ON:ON (94.4 \pm 27.6), ON:OFF (77.1 \pm 24.5), OFF:ON (53.3 \pm 25.1), and OFF:OFF (50.3 \pm 25.1). Using Tukey-Kramer comparisons all pair-wise differences except OFF:ON versus OFF:OFF were significantly different with 5% simultaneous level of significance; that is, the effect of popoff setting when manometer was OFF was not significant.

Conclusions: This study demonstrates the negative impact of an improperly set up BVM on the delivery of desired lung volumes. Details of BVM design and function and malfunction are discussed.

233 **Withdrawn**

234 **Middle and High School Students Education Regarding the Dangers of Anabolic Steroids**

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Background: Anabolic steroid use by well-known professional athletes has occurred across a wide range of sports. Due to a significant amount of media attention to these athletes, student-athletes have been exposed to the idea that steroid use is prevalent among high-level athletes. At the time of this study, it is not clear if steroid side effects are known to these students.

Objectives: To assess middle and high school students' knowledge of the effects, both intended and unintended, of anabolic steroid use.

Methods: Athletic directors in 13 western New York middle and high schools distributed anonymous surveys to a sample of their students, both athletes and non-athletes, yielding 2,328 surveys eligible for analysis. One-page surveys included demographic information and two open-ended questions assessing knowledge of steroid side effects. All survey data was recorded using Microsoft Excel and analyzed by a statistician.

Results: Eighty-five percent say they have been made aware of risks of taking steroids, however only 79% could give any example on the open-ended question concerning risks. In addition, 48% gave only one risk in their answer. Thirty-three percent were unsure how likely these side effects were to occur. Self-reporting of having "tried" steroids was 0.7% for females and 3.3% for males, consistent with previous studies.

Conclusions: Our data suggest a minimal knowledge of steroid side effects among middle and high school-aged students. Our study is the first to use open-ended questions assessing steroid side effect knowledge. This provides new insight, as answer prompts are not used in the questions. Of the answers given, many were quite vague. From this study, we have learned that there is tremendous potential to educate student-athletes to the potential dangers of anabolic steroid use. Emergency medicine affords unique educational opportunities for the subspecialty of sports medicine during emergency department encounters with these students.

235 **The Emergency Severity Index (Version 4): Reliability in Pediatric Patients**

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Background: The Emergency Severity Index version 4 (ESI vs.4) is a triage system, which has demonstrated reliability in adult populations, however it has not been extensively studied in pediatrics. This updated version of ESI is the first to include fever criteria specific to pediatric patients.

Objectives: The goal of this study is to measure the reliability of the ESI vs.4 in the pediatric population by comparing agreement rates between pediatric emergency (PEM) physicians and pediatric triage (PT) nurses.

Methods: In this prospective cohort study PEM physicians and PT nurses participated in an ESI vs. 4