

---

# Free Communications, Rapid Fire Oral Presentations: Prevention and Management of Emergent Conditions

Wednesday, June 28, 2017, 5:00PM-6:15PM, Room 371; Moderator: David Berry, PhD, ATC

---

## Effectiveness of Different Airway Management Devices at Providing Quality Ventilations in Different Helmet Conditions

Boergers RJ, Bowman TG, Lininger MR, Kearns RC, Stoltz KE: Seton Hall University, South Orange, NJ; Lynchburg College, Lynchburg, VA; Northern Arizona University, Flagstaff, AZ

**Context:** Airway management is a critical step in the management of catastrophic injuries. Patient ventilation has been found to be compromised due to the inability to make a seal of a pocket mask over the chinstrap of football helmets. The impact of supraglottic airways such as the King airway and the impact of lacrosse helmets have not been studied. **Objective:** To assess the impact of different airway management devices and helmet conditions at providing quality ventilations while performing CPR on high fidelity manikins. **Design:** Crossover study. **Setting:** Simulation laboratory. **Patients or Other Participants:** Thirty-six (12 Males: 33.3±9.7 years old; 24 females: 33.4±9.8 years old) athletic trainers with current professional rescuer level CPR (26 American Heart Association; 10 American Red Cross) participated. **Interventions:** Participant pairs performed 2 minutes of 2 rescuer CPR in 12 trial conditions on Resusci Anne Q-CPR manikin (Laerdal Medical Corporation, Wappingers Falls, NY). The two independent variables were: airway management device (PM = pocket mask, OPA = oropharyngeal airway, KA = King airway) and helmet condition (NH = no helmet, CH = Cascade helmet, WH = Warrior helmet, SH = Schutt helmet). All helmets were placed on the manikin with the facemask removed and chinstrap fastened. All data collection sessions were counterbalanced. **Main Outcome Measures:** The dependent variables were ventilation volume (mL) and

ventilation rate (ventilations/minute). A MANOVA was used to evaluate the interactive effects of airway management device and helmet condition on ventilation volume and rate. **Results:** There was a significant interaction between helmet condition and airway management device on ventilation volume and rate ( $F_{12,408} = 2.902, P < .0001$ ). There was a significant interaction between helmet condition and the airway management device for ventilation rate ( $F_{6,204} = 3.468, P = .003$ ). For the NH condition, there were no differences between pairwise comparisons of airway management devices. For the CH and WH conditions, the ventilation rate for both the PM (CH:  $3.0 \pm 2.2$  and WH:  $2.8 \pm 2.8$ ) and OPA (CH:  $2.8 \pm 2.6$  and WH:  $2.5 \pm 2.5$ ) were significantly lower than the KA (CH:  $5.3 \pm 0.9$  and WH:  $5.9 \pm 0.7$ ). There was also a significant interaction between helmet condition and airway management device for mean ventilation volume ( $F_{6,204} = 3.735, P = .002$ ). There were no differences during the NH condition. For all helmet conditions, there were significant differences between the PM (CH:  $277.6 \pm 149.3$ , WH:  $249.3 \pm 269.3$ , and SH:  $354.6 \pm 75.3$ ) and KA (CH:  $254.5 \pm 211.6$ , WH:  $267.2 \pm 215.3$ , and SH:  $404.7 \pm 197.5$ ) airway management devices as well as between the OPA (CH:  $597.1 \pm 217.1$ , WH:  $605.7 \pm 248.8$ , and SH:  $788.0 \pm 294.0$ ) and KA. **Conclusions:** The helmet chinstrap inhibits quality ventilation (rate and volume) in airway procedures which require the seal of a mask with the face. However, the KA, a supraglottic airway, will allow quality ventilation of patients with a helmet on and chinstrap fastened. If a KA is not available, the helmet may need to be removed to provide quality ventilations to the patient.

## Epidemiology of Injuries Requiring Emergency Transport Among College and High School Student-Athletes

Hirschhorn RM, Dompier TP, Wasserman EB, Kay MC, Clifton DR, Kerr ZY, Yeargin S: University of South Carolina, Columbia, SC; Datalys Center for Sports Injury Research and Prevention, Inc, Indianapolis, IN; The University of North Carolina, Chapel Hill, NC; The Ohio State University, Columbus, OH

**Context:** There is a lack of research regarding the epidemiology of emergency transport incidents (ETI) of sports-related injuries in high school and collegiate settings. **Objective:** To determine frequency and type of ETI as a result of athletic participation. **Design:** Descriptive epidemiological study. **Setting:** National Athletic Treatment, Injury and Outcomes Network (2011/12-2013/14) and National Collegiate Athletic Association Injury Surveillance Program (2009/10-2014/15) in 25 male and female sports. **Patients or Other Participants:** High school and collegiate student-athletes. **Interventions:** ETI data were collected by athletic trainers (AT) who attended each practice and game. ATs also collected data on athlete-exposures (AEs) as defined by one athlete participating in one practice or game. **Main Outcome Measures:** Injury frequencies, injury proportion ratios (IPR), and injury rates per 10,000 AEs with 95% confidence intervals (CIs) were reported. For each ETI, the body part, final diagnosis and injury mechanism were reported by the documenting AT. **Results:** A total of 339 ETIs were reported over 2,105 college team-seasons and 146 over 1,845 high school team-seasons. ETIs represented 1.02% and 0.31% of all injuries, respectively. Women's ice hockey had the highest ETI rate at 1.30/10,000 AE (95% CI: 0.72-1.89) of all collegiate sports; however, football had the highest number of ETI ( $n = 121$ ). In high school, football