had an initial shockable rhythm and 42.4% achieved return of spontaneous circulation (ROSC) by arrival at the destination facility; an additional 5.4% achieved ROSC and were not transported.
Conclusions: In this cohort, OHCA occurred in 92 adult patients over 5 years, with approximately two thirds medical and one third traumatic in nature. Initial rhythm was rarely shockable, but sustained ROSC was achieved in almost half the patients. Almost 4 in 10 patients had multiple cardiac arrests under AEMS care, and initial arrest was most likely to occur prior to air transport as opposed to in flight. A high proportion of patients achieving ROSC is possible, even with relatively low rates of shockable initial rhythm. This study suggests that while cardiac arrest in flight is rare, medical teams must be prepared to handle both medical and traumatic arrests as well as multiple arrests during the course of air transport.

Outstanding Research Award

Abstract 3: Comparison of Flight Physician operated Hyper-Angulated and Standard Geometry Video Laryngoscopy Tracheal Intubation on a Helicopter in a Manikin

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Objective: To investigate the efficacy of hyper-angulated video laryngoscopy (HAVL) versus standard-geometry video laryngoscopy (SGVL) during a simulated mid-flight helicopter intubation.
Introduction: Prehospital intubation is often complicated by poor conditions including bad lighting, poor patient positioning, excessive noise, and restricted cervical spine mobility – some of which are known predictors of a difficult airway. These factors are magnified in the setting of a mid-flight helicopter intubation. The specific aim of our investigation was to evaluate if use of a specific video laryngoscopy technique offers advantage in this situation. The SGVL technique requires the creation of nearly a direct line between the oropharynx and glottis in order for endotracheal tube placement. The line must be created by manipulation of the patient's airway by the operator with a laryngoscope. Due to poor operator and patient positioning in a helicopter, this process was hypothesized to be more difficult than HAVL, which allows the operator to pass an endotracheal tube around the natural curvature of the patient's upper airway. There are no studies to date comparing these two distinct techniques by board-certified emergency medicine physicians in a simulated mid-flight environment.
Methods: A single center, randomized crossover trial was performed using attending physician helicopter EMS providers in a simulated environment. After IRB approval and informed consent, physicians were randomized to perform five HAVL or SGVL intubations, followed by the subsequent technique. Intubations were performed in a grounded EC-135 helicopter with an AirsimTM airway management trainer restrained on the cot. Time to intubation (primary outcome) as well as first pass success (FPS) and Cormack-Lehane views were recorded for each attempt. Qualitative data was also obtained for physician preference and perceived difficulty.
Results: Fifteen physicians participated in the study. There was no statistically significant difference in time to intubation with HAVL versus SGVL (16.14 seconds vs. 16.12 seconds; p-value 0.97). FPS was 100% for both techniques. Ninety-seven percent of Cormack-Lehane views were grade one for HAVL versus 88% for SGVL. Despite no statistical significance in time to intubation, participants subjectively reported that SGVL required more physical force to perform intubation. The majority also qualitatively prefer HAVL over SGVL after performing the study for future flight intubations.
Conclusions/Limitations: Our results suggest that both SAVL and HAVL are efficacious techniques to perform intubations in an EC-135 helicopter, should this somewhat rare, but likely difficult procedure, be necessary. Providers did, however, prefer HAVL over SGVL in our group. The discordant quantitative and qualitative results in this study may be due to the static nature and highly favorable anatomy of a manikin, versus the varying anatomy of individual patients.

1st Runner-Up Award

Abstract 4: Predictors of Definitive Airway sans Hypoxia/Hypotension on First Attempt (DASH 1A) Success in Traumatically Injured Patients Undergoing Prehospital Intubation

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Objective: Prehospital intubation success is routinely treated as a dichotomous outcome based on an endotracheal tube passing through vocal cords regardless of number of attempts or occurrence of hypoxia, or hypotension, which are associated with worse outcomes. We explore patient, provider, and procedure-related variables associated with successful definitive airway sans hypoxia/hypotension on first attempt (DASH-1A) in traumatically injured subjects undergoing endotracheal intubation at the scene of injury by a helicopter EMS system.
Methods: This single-center retrospective chart review included patients with traumatic injuries and at least one attempted intubation by helicopter EMS at the scene of injury. Demographic and clinical variables were tested for association with DASH-1A and overall first-attempt success using univariate comparisons and multivariable logistic regression to produce adjusted odds ratios (aORs) and 95% confidence intervals (CIs). Purposeful backwards stepwise elimination was used to develop logistic regression models for outcomes. Initial inclusion of covariates in multivariable models was based on clinical judgement, known or suspected risk factors and confounders for intubation success, and univariate associations.
Results: Of 419 subjects screened, 263 met inclusion criteria. Median age was 34 years and the majority of subjects were Caucasian (95%), male (76%), and suffered blunt trauma (90%). A total of 142 (55.3%) subjects had a successful DASH-1A airway, 198 (75%) had a successful first attempt non-DASH-1A airway, and overall, 246 (94%) had an endotracheal tube passed successfully before hospital arrival. Factors significantly associated with successful DASH-1A were no ground EMS intubation attempt prior to arrival (aOR 2.2), lack of airway secretions (1.9), Cormack-Lehane Score of I and II (12.3 & 3.2, respectively), and bougie use (5.4). For endotracheal tube passing only, the following were significantly associated with first pass success: grade of view I and II (87.3 & 6.8, respectively), lack of secretions (4.9), bougie use (7.8), direct laryngoscopy (5.1) and not using apneic oxygenation through a nasal cannula (2.5).
Conclusions: In our helicopter EMS system, successful endotracheal intubation on the first attempt and without an episode of hypoxia was associated with no ground EMS intubation attempt prior to flight crew arrival, lack of airway secretions, Cormack-Lehane Score, and bougie use.