

040.
Patient Positioning in the Dauphin EMS Helicopter Causes Prolonged Endotracheal Intubation Times

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Purpose: Patient deterioration or endotracheal tube dislodgement may result in need for in-flight oral endotracheal intubation (ETI). Recent study, finding very high ETI efficacy in the in-flight BK-117, suggests deferment of ETI until in-flight to decrease prehospital transport times. The purpose of this study was to determine if the rapid in-flight ETI times found in the BK-117 also were attainable in the comparably sized AS365N2 Dauphin EMS helicopter.

Methods: Eight flight crew performed three mannequin ETIs in stationary BK-117 and AS365N2 helicopters. Three time intervals were assessed: setup, the time required for equipping and positioning for ETI; placement, representing time from laryngoscopy to ETI; and total, representing setup plus placement times. Mean setup, placement, and total times were analyzed with the *t*-test; statistical significance was defined as alpha = 0.05.

Results: Ergonomic difficulty presented by the AS365N2 cabin layout resulted in prolongation of setup (difficulty positioning patient stretcher and crew for ETI), placement (longer times for laryngoscopy), and total times. The table below depicts mean ±SD (95% CI) times in seconds for each study parameter.

Time interval	BK-117	AS365N2	p-value
Setup time	11.2 ±4. (9.3-13.1)	17.0 ±5.1 (14.9-19.2)	0.0001
Placement time	13.6 ±8.4 (10.1-17.2)	22.0 ±15.9 (15.3-28.7)	0.0271
Total time	24.8 ±12.1 (19.7-29.8)	39.0 ±16.2 (32.2-45.9)	0.0011

Conclusions: This study demonstrates that cabin configuration of even large EMS helicopters may impair ability to perform ETI; further study should address cabin space optimization. Air EMS programs are advised to become familiar with in-flight ETI capabilities of their personnel and aircraft before considering deferment of ETI until in-flight as a means to decrease transport times.

028.
Prehospital Clinical Assessment of Spinal Injury

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Objective: To determine if prehospital personnel can determine the presence or absence of spinal injury clinically, without the use of defined clinical criteria.

Design: Prospective cohort study

Methods: Prehospital personnel (PHP) completed a standardized yes/no check-off data questionnaire for trauma patients who have prehospital spinal immobilization performed. For each immobilized patient, PHP were asked to give a yes/no answer to the question, "Do you think this patient has a spinal fracture?" No clinical criteria were used to clear the spine of prehospital trauma patients in areas involved with the study. The presence or absence of spinal fracture was determined for each patient using emergency department and/or inpatient medical records.

Results: During the study period a total of 3,450 data sheets were filled out. A total of 3,348 patients correctly had completed data sheets. PHP correctly identified 41 of the 109 spine fractures present for a sensitivity of 37.6%. PHP correctly identified 3,048 of 3,239 patients without fracture for a specificity of 94.1%. There were 68 patients with spinal fractures that were missed by the clinical assessment of the PHP for a false negative rate of 62.4%.

Conclusion: Using clinical judgment alone, without the use of defined clinical criteria, prehospital personnel have an unacceptably low-sensitivity and high false-negative rate for determining the presence of spinal fracture. Defined clinical criteria will be necessary to accomplish prehospital spinal clearance.