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Oral Presentations

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023.

Field Trial of Endotracheal Intubation by Basic EMTs

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Objective: The 1994 basic EMT curriculum recommended teaching basic EMTs the skill of endotracheal intubation. This study assessed the success and complication rates of field intubations by basic EMTs.

Methods: This prospective clinical trial provided four first-responding engine companies with paramedic backup 10 hours of intubation training split into three sessions spread over at least two weeks. The training module was similar to the 1994 Basic EMT curriculum, including at least 10 intubations on mannequins. Both standard and trauma intubation techniques were taught. The EMTs employed mannequins with closed chest cavities to learn assessment of endotracheal tube placement. Patients were eligible for intubation by the EMTs if they were apneic and older than 15 years. Ninety-five percent confidence interval (CI) was calculated for intubation success rate.

Results: Sixty-four EMTs passed the final exams. While enrollment continues, 48 patients have had intubation attempted by EMTs. Forty-six percent (CI 60%–32%) of the patients were intubated successfully. All patients who were not intubated by EMTs were intubated by paramedics. Forty-eight percent of patients had one attempt at intubation, 46% had two, and 6% had three. There was one unrecognized esophageal intubation. Reported complications included 16 recognized esophageal intubations, 11 patients with emesis during intubation, and one failure of the laryngoscope.

Conclusion: Basic EMTs trained in a short course can intubate successfully about half of patients encountered. This relatively low intubation success rate calls into question the validity of the endotracheal intubation training module in the 1994 Basic EMT National Curriculum.

022.

Endotracheal Intubation Field Experience: Is There a Minimum Amount Required for Paramedics to Maintain Proficiency?

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Objective: Paramedics often are required to perform a minimum number of endotracheal intubations to demonstrate ongoing competence. These requirements are often a condition of continued employment, vary widely, and have not been validated. We conducted this study to determine whether the success rate varies with the opportunity to perform the procedure.

Methods: Paramedics are required to maintain NREMT-P certification. All endotracheal intubation attempts for 1994 were reviewed. An attempt was defined as insertion of the laryngoscope blade with intent to intubate. Successful intubations were confirmed in the field and on hospital arrival. Success rates were determined for medical, trauma and pediatric patients. Attempts per medic were determined based on the number of paramedics in the service. Statistical analysis was performed using the chi-square test for R x C contingency tables for each category.

Results: Endotracheal intubation success rates were determined as follows:

Service	Overall	Medical	Trauma	Peds	attempt/medic/yr
001	559/646 (86%)	514/586 (88%)	45/66 (68%)	11/11 (100%)	646/73 = 8.9
002	130/146 (89%)	121/136 (89%)	7/7 (100%)	1/1 (100%)	146/32 = 4.6
003	193/229 (84%)	173/203 (85%)	15/20 (75%)	5/6 (83%)	229/58 = 3.9
004	19/22 (86%)	9/10 (90%)	9/11 (82%)	1/1 (100%)	22/9 = 2.4
TOTAL	901/1043 (86%)	817/935 (87%)	76/104 (73%)	18/19 (95%)	1043/174 = 6.0
p-value	>0.5	>0.5	>0.5	>0.25	

Conclusion: The paramedic service with the fewest opportunities for intubation had success rates at least as good as the service with the most. Annual experience ranging from 2.4 to 8.9 per medic appears to be associated with equal success rates. Whether or not there should be a required minimum field experience to maintain proficiency in endotracheal intubation remains to be determined.