Research - R165

Poster

Abstract Title:

A Study of Endotracheal Intubation Utilization by a Helicopter Emergency Medical Service

Authors:

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Background & Purpose:

Airway management is one of the essential functions of a HEMS team and endotracheal intubation (Rapid Sequence Intubation or RSI) is the gold standard of airway management. While usually in the skill set of physicians HEMS crewmembers can be adequately trained to safely and effectively perform this advanced skill. Studies are needed that demonstrates how effectively HEMS crewmembers apply this life saving skill and gain insight into their judgment, critical decision making as well as assess the consistent and efficacious application of this complex procedure. The proposed research question: Does a correlation exist between patient Revised Trauma Score (RTS) and HEMS crew member intubation rate?

Study/Project Design:

Retrospective field study

Setting:

Trauma patients intubated and transported by Dartmouth Hitchcock Advanced Response Team (DHART)

Sample:

This was a convenience sample of 512 trauma patients transported by DHART from October 2011 to October 2012.

Procedures:

This study was based on a comparison of HEMS crew members' "intubation ratio" (total amount of trauma patients transported divided by the patients that HEMS crew member intubated) and the Relative Trauma Score (RTS). A comparison was made between the intubation ratio, RTS and trauma patients intubated and not intubated to assess the 'appropriateness' of the crew member's decision to intubated. Trauma patients were chosen over all patients intubated (i.e. medical) because the trauma patient would have a quantitative score associated with it and allows for a more objective and consistent examination of acuity. AeroMedical Software version 18.0 (AMS) and Trauma One version 4.1 were used to collect pertinent data. A simple analysis used Microsoft Excel 10 (Redmond, WA) This data will be shared with the DHART crew members so as to better quantify intubation decisions.

Findings/Results:

This study included 106 intubated trauma patients and 512 trauma patients as the exposure for ezch provider. Their ages ranged from two (2) to eighty-nine (89). The mean (SD) was 37.66 (19.47) years. Twenty-seven (27) providers controlled the airway. The number of intubations per provider ranged from one (1) to eleven (11). Each provider was exposed from five (5) to seventy-eight (78) trauma patients, the mean (SD) was 40.33(18.48). The rate of intubations ranged from 0.02 to 0.4 per provider, 0.11 (0.08). The Revised Trauma Score (RTS) was 5.83 (1.61) and ranged from 2.34 to the maximum of 7.84. There was a positive correlation between intubation rate and RTS ($y = 0.0323x - 0.0701$). This indicates as the RTS increases so do the rate of intubations.

Discussion/Conclusions/Implications:

The results seem to indicate there are other indications for intubation other than the physiological measures in the RTS. Twenty-two (22) intubations or 20.7% had the maximum RTS of 7.84. Further efforts in this study should identify the other indications for intubation through HEMS staff group studies. Results will be shared with the DHART medical directors and crew members to better guide airway management practices as well as possibly serve as a quality assurance tool. Further analysis of the the accumulated data could also yield additional results on crew member intubation decision making.