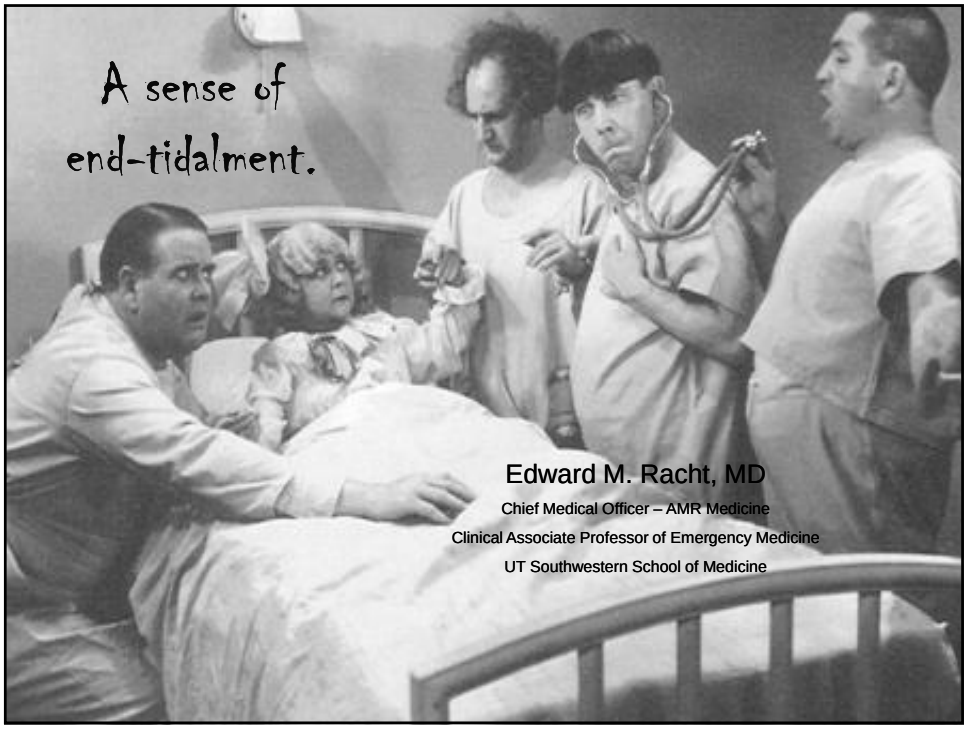

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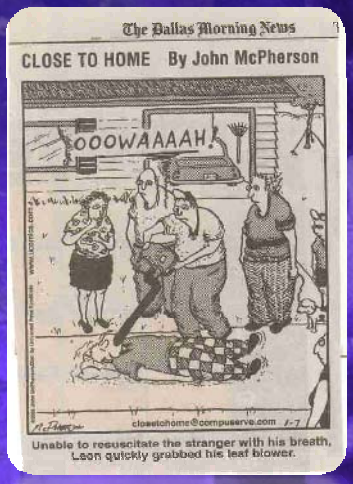
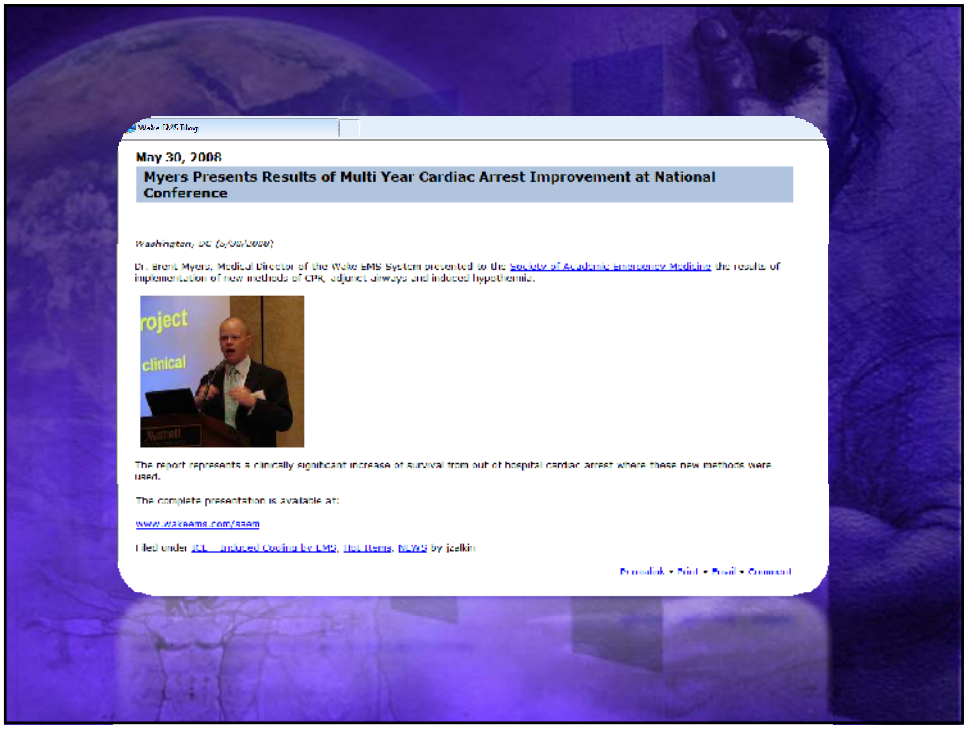
Thanks to Drs. Pepe & Fowler for their innovations...




May 30, 2008
Myers Presents Results of Multi Year Cardiac Arrest Improvement at National Conference
Washington, DC (5/30/2008)
Dr. Brent Myers, Medical Director of the Wake EMS System presented to the Society of Academic Emergency Medicine the results of implementation of new methods of CPR, adjunct airways and induced hypothermia.
The report represents a clinically significant increase of survival from out of hospital cardiac arrest where these new methods were used.
The complete presentation is available at:
www.wakeems.com/saem
Filed under


Study: Intubating Brain Trauma Patients Boosts Mortality
By Ruth SoRelle, MPH
Special Report
With Prehospital Intubation
So Problematic, Experts Say
It May Hurt Patients More tha
By Anne Scheck
American College of Emergency Physicians
ACEP
Study Casts Cloud Over Intubation Outside ED
VITAL SIGNS
Number of Uninsured Americans Rising

Misplaced Endotracheal Tubes in an EMS System

- 108 Intubated patients
- 27/108 (25%) misplaced tubes
- 18/27 esophageal intubation
  - 56% ED mortality
- 9/27 in hypopharynx
  - 33% ED mortality

Katz SH, Falk JL. Ann Emerg Med 2001; 37:32-7

Rates of misplaced endotracheal tubes by EMS
The studies

Jenkins	2/39	5.1%
Bozeman	1/100	1%
Stewart	3/779	0.4%
Sayre	3/103	2.9%
Pointer	5/383	1.3%

Adapted from:
Katz SH, Falk JL. Ann Emerg Med 2001; 37:32-7

Misplaced Endotracheal Tubes in an EMS System *POST implementation of capnography*

- Follow up study
- 153 Intubated patients
- 0 Misplaced tubes with use of capnography

Sylvestri. Annals of Emergency Med. 2005

Pediatric intubation in the field

- 820 pediatric patients (94-97)
- Odd / even randomization to BVM or ETI
- Survival
  - BVM 30%
  - ETI 26%
- Good neuro outcome
  - BVM 23%
  - ETI 20%

Gausche, et.al. JAMA 283(6):783, 2000

San Diego RSI study

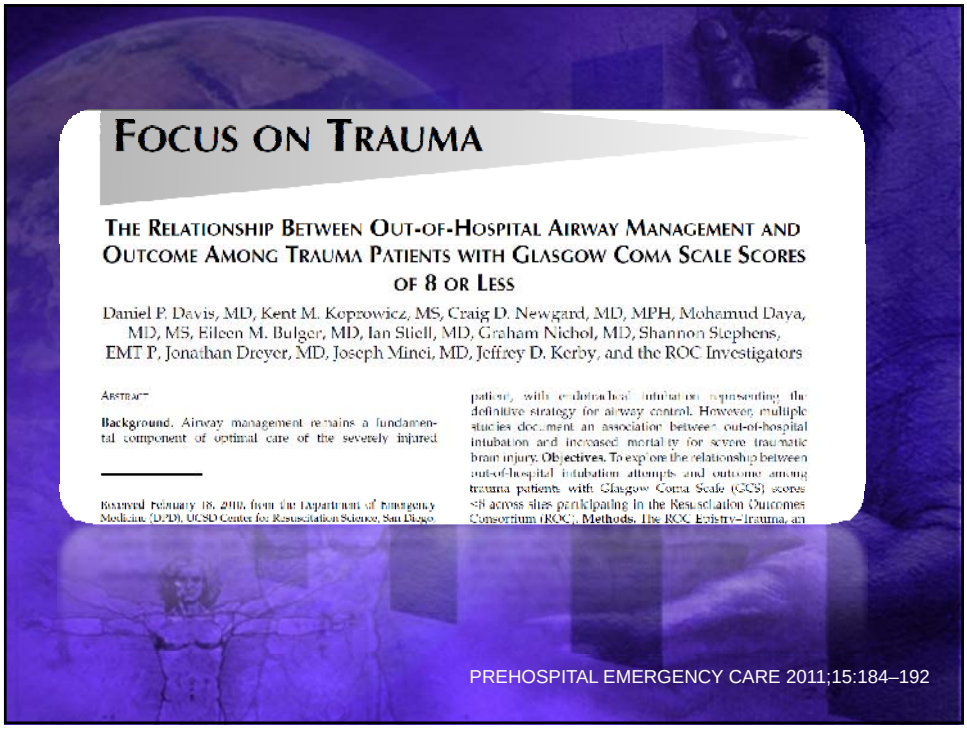
- 31 (57%) of 54 pts demonstrated desaturation during RSI
  - 26 (84%) occurred in pts with SPO2 > 90% with BLS airway skills
  - Median duration of desaturation was 160 seconds
  - Median decrease in SPO2 was 22%
  - 19% experienced marked bradycardia

Dunford. Ann Emerg Med 2003;42(6):729-30

San Diego RSI study

- RSI described as “easy” in 84% of 31 patients with desaturation
- Hypoxic episodes identified after the call

Dunford. Ann Emerg Med 2003;42(6):729-30



FOCUS ON TRAUMA

THE RELATIONSHIP BETWEEN OUT-OF-HOSPITAL AIRWAY MANAGEMENT AND OUTCOME AMONG TRAUMA PATIENTS WITH GLASGOW COMA SCALE SCORES OF 8 OR LESS

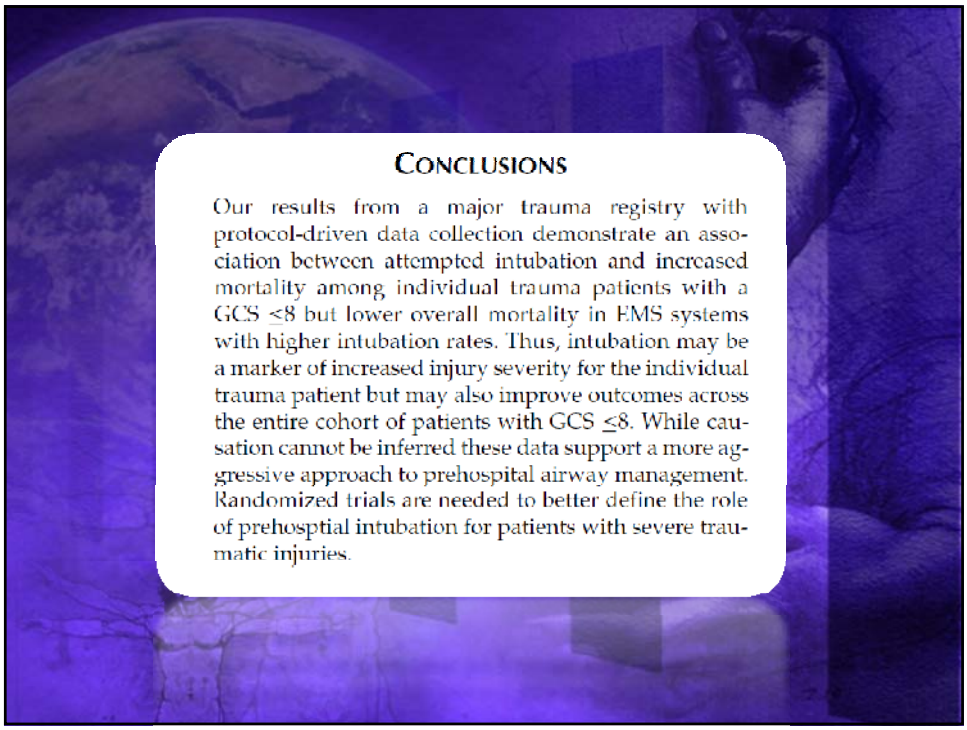
Daniel P. Davis, MD, Kent M. Koprowicz, MS, Craig D. Newgard, MD, MPH, Mohamud Daya, MD, MS, Eileen M. Bulger, MD, Ian Stiell, MD, Graham Nichol, MD, Shannon Stephens, EMT P, Jonathan Dreyer, MD, Joseph Minei, MD, Jeffrey D. Kerby, and the ROC Investigators

ABSTRACT

Background. Airway management remains a fundamental component of optimal care of the severely injured patient, with endotracheal intubation representing the definitive strategy for airway control. However, multiple studies document an association between out-of-hospital intubation and increased mortality for severe traumatic brain injury. **Objectives.** To explore the relationship between out-of-hospital intubation attempts and outcome among trauma patients with Glasgow Coma Scale (GCS) scores ≤8 across sites participating in the Resuscitation Outcomes Consortium (ROC). **Methods.** The ROC Epistry–Trauma, an

Received February 18, 2010, from the Department of Emergency Medicine, (D.P.D), UCSD Center for Resuscitation Science, San Diego,

PREHOSPITAL EMERGENCY CARE 2011;15:184–192

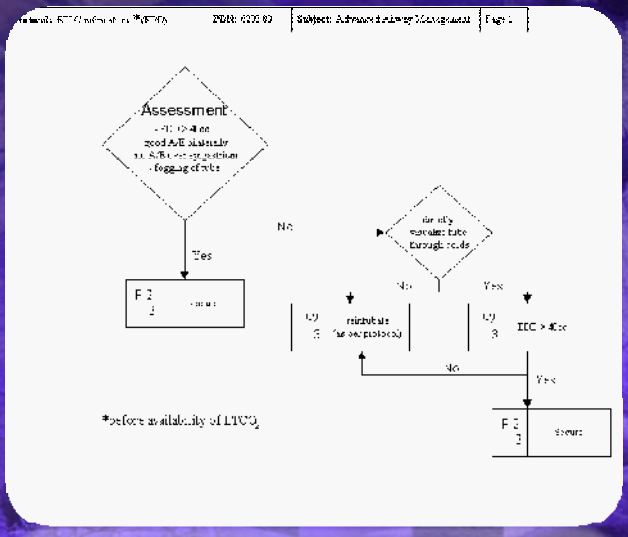


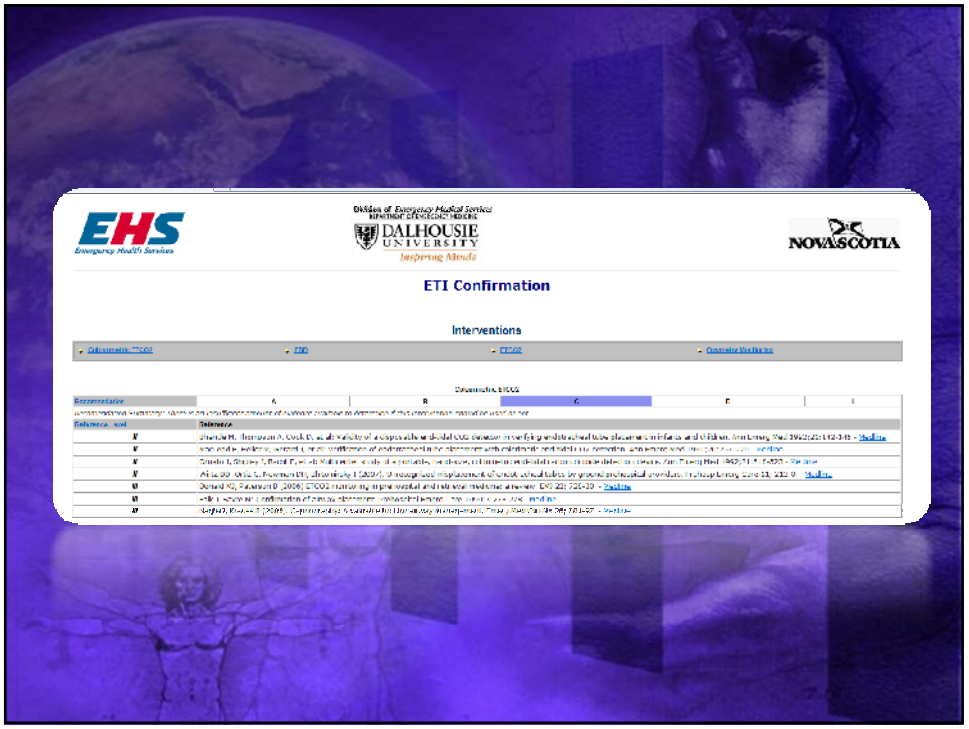
CONCLUSIONS

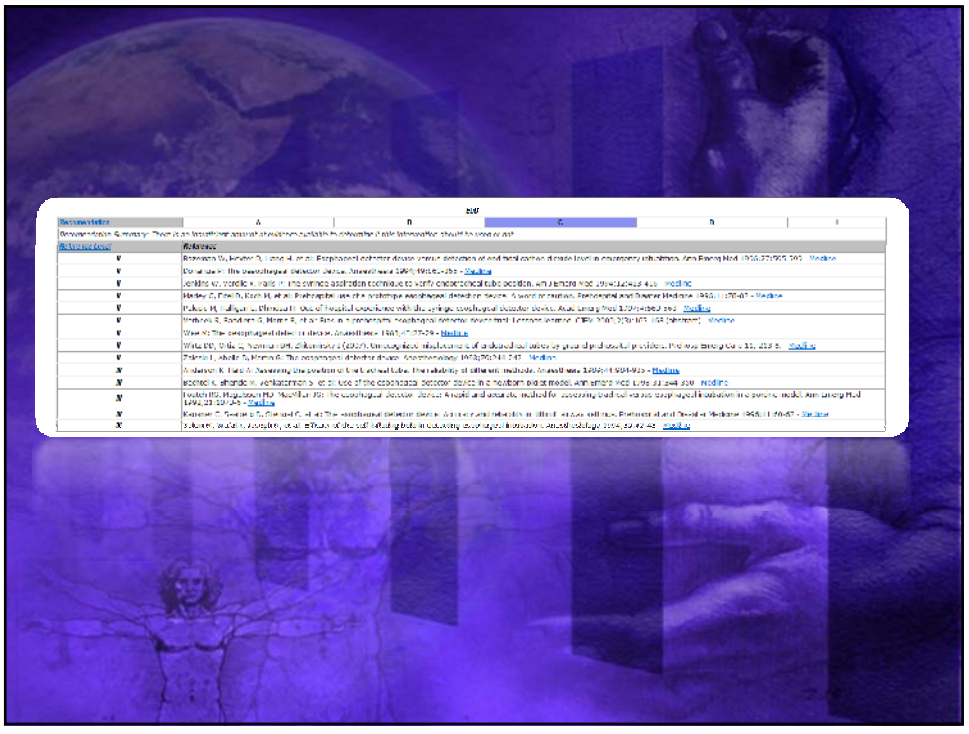
Our results from a major trauma registry with protocol-driven data collection demonstrate an association between attempted intubation and increased mortality among individual trauma patients with a GCS ≤8 but lower overall mortality in EMS systems with higher intubation rates. Thus, intubation may be a marker of increased injury severity for the individual trauma patient but may also improve outcomes across the entire cohort of patients with GCS ≤8. While causation cannot be inferred these data support a more aggressive approach to prehospital airway management. Randomized trials are needed to better define the role of prehosptial intubation for patients with severe traumatic injuries.

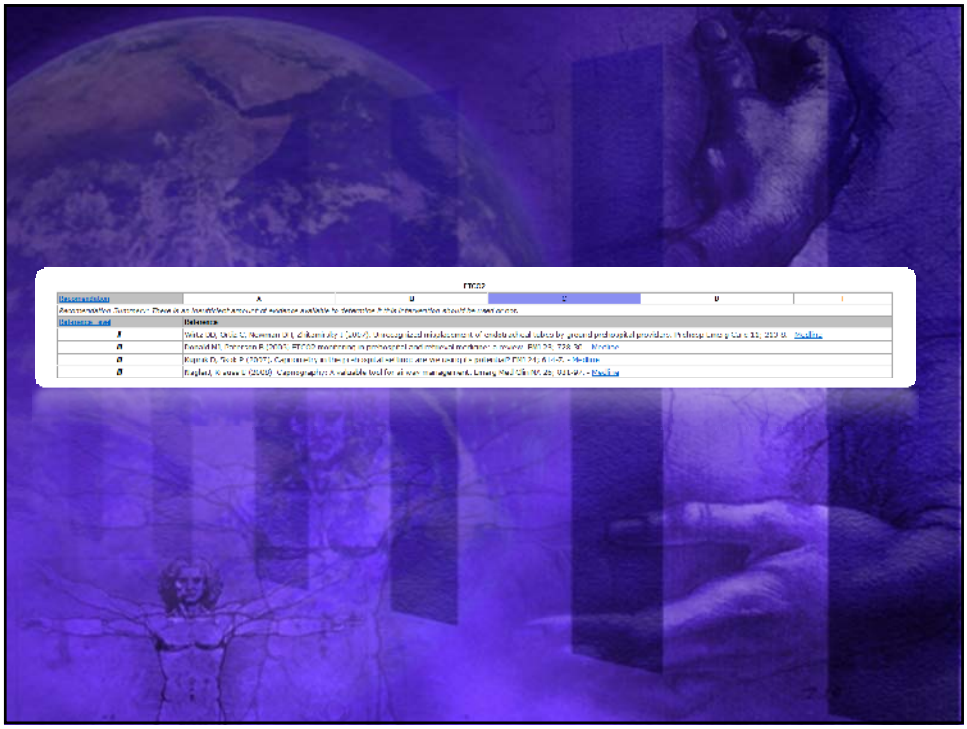
The OOH challenge.

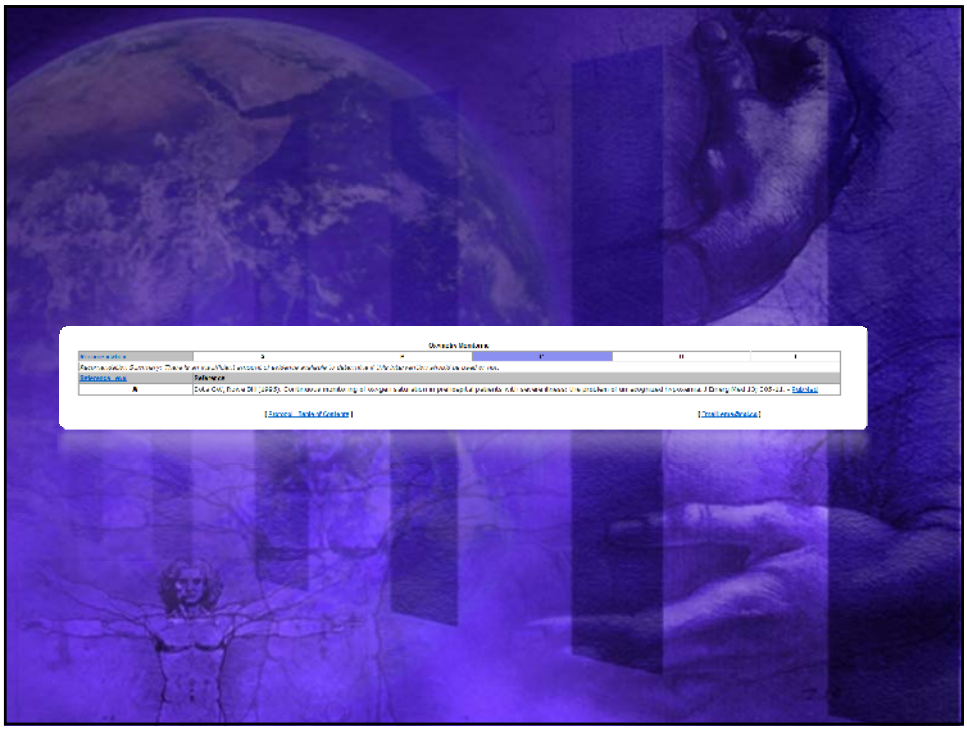
- Impairing necessary physiology
- Unrecognized misplacement

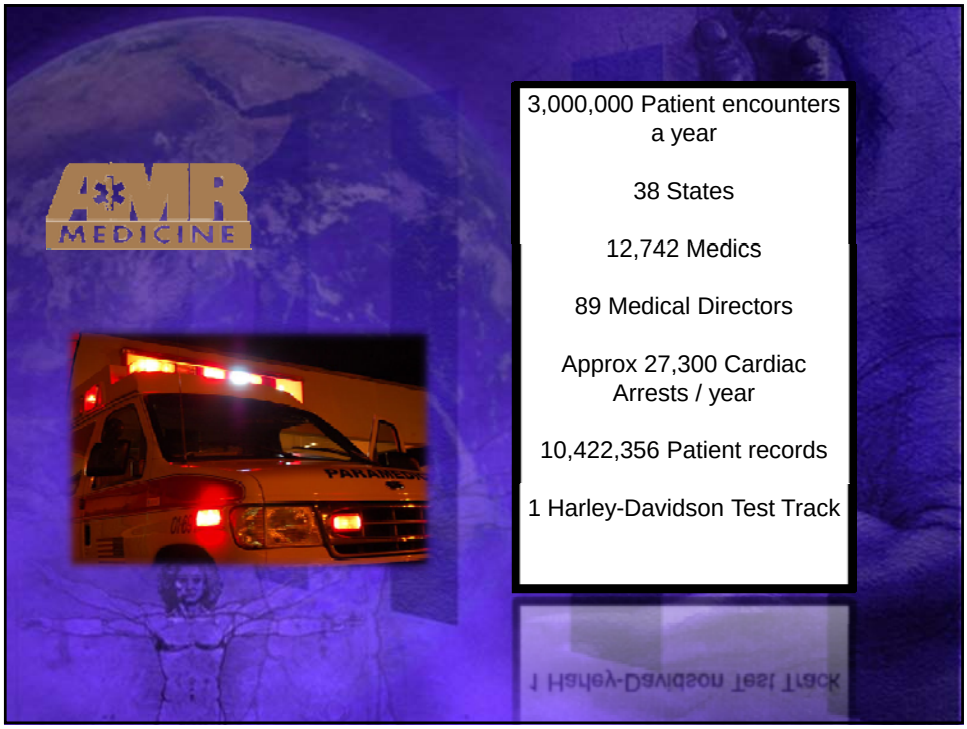


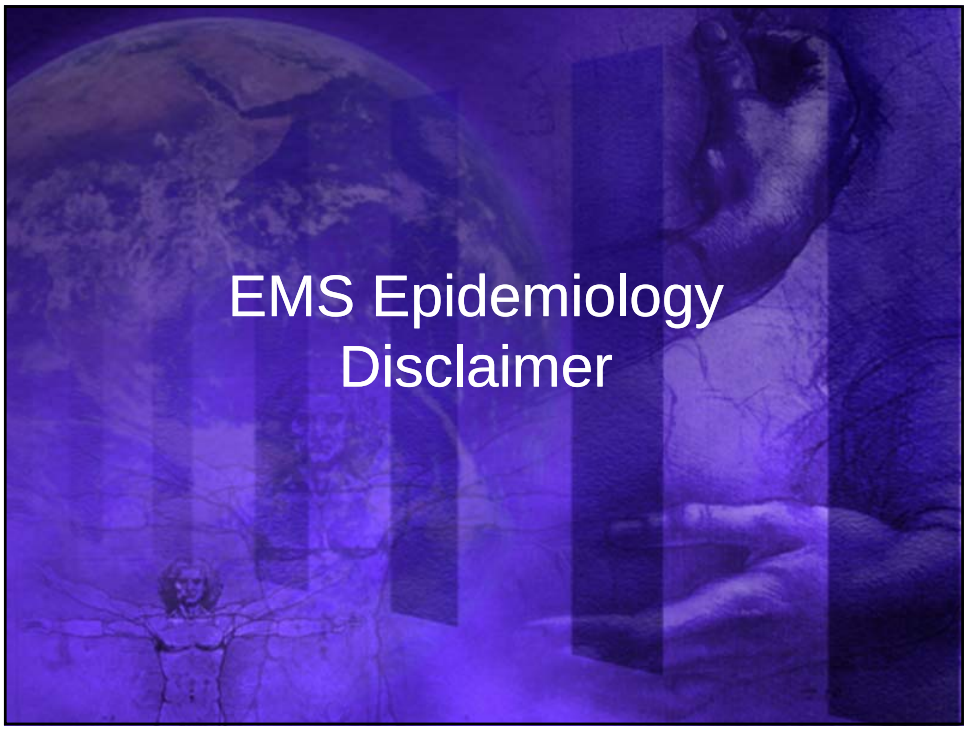

EHS
Emergency Health Services
Division of Emergency Medical Services
DALHOUSIE UNIVERSITY
Inspiring Minds
NOVA SCOTIA
ETI Confirmation
Interventions

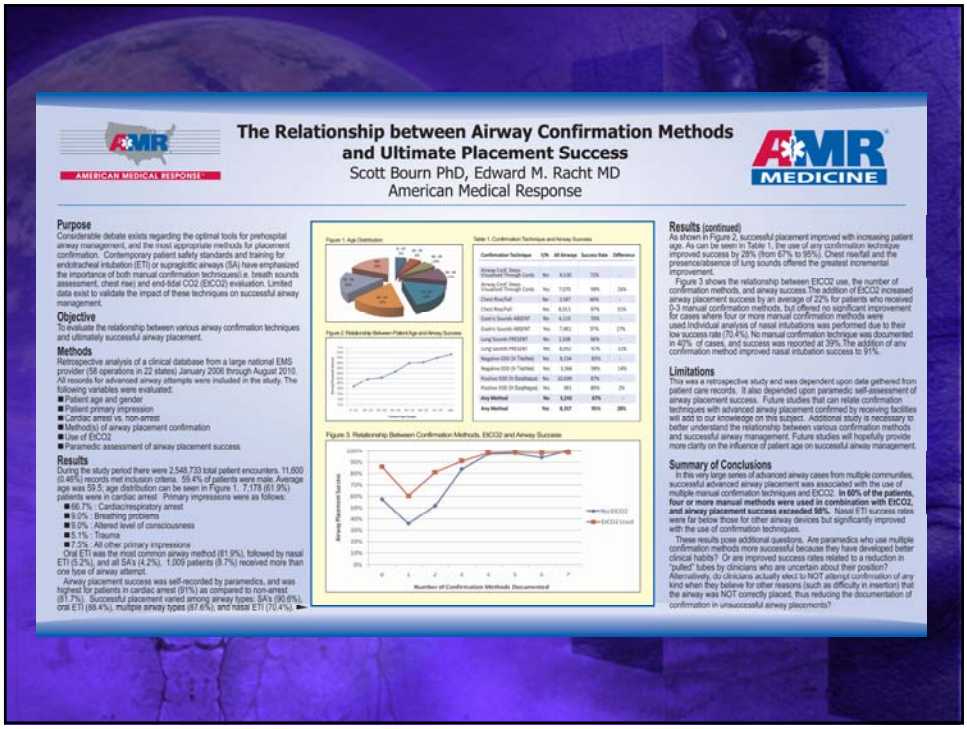







AMR
MEDICINE
3,000,000 Patient encounters a year
38 States
12,742 Medics
89 Medical Directors
Approx 27,300 Cardiac Arrests / year
10,422,356 Patient records
1 Harley-Davidson Test Track


EMS Epidemiology
Disclaimer



The Relationship between Airway Confirmation Methods and Ultimate Placement Success

Scott Bourn PhD, Edward M. Racht MD
American Medical Response

AMERICAN MEDICAL RESPONSE

AMR MEDICINE

Purpose

Considerable debate exists regarding the optimal tools for prehospital airway management, and the most appropriate methods for placement confirmation. Contemporary patient safety standards and training for endotracheal intubation (ETI) or supraglottic airways (SA) have emphasized the importance of both manual confirmation techniques(i.e. breath sounds assessment, chest rise) and end-tidal CO2 (EtCO2) evaluation. Limited data exist to validate the impact of these techniques on successful airway management.

Objective

To evaluate the relationship between various airway confirmation techniques and ultimately successful airway placement.

Methods

Retrospective analysis of a clinical database from a large national EMS provider (58 operations in 22 states) January 2006 through August 2010. All records for advanced airway attempts were included in the study. The following variables were evaluated:

- Patient age and gender
- Patient primary impression
- Cardiac arrest vs. non-arrest
- Method(s) of airway placement confirmation
- Use of EtCO2
- Paramedic assessment of airway placement success

Results

During the study period there were 2,548,733 total patient encounters. 11,600 (0.46%) records met inclusion criteria. 59.4% of patients were male. Average age was 59.5; age distribution can be seen in Figure 1. 7,178 (61.9%) patients were in cardiac arrest. Primary impressions were as follows:

- 66.7% : Cardiac/respiratory arrest
- 9.0% : Breathing problems
- 9.0% : Altered level of consciousness
- 5.1% : Trauma
- 7.5% : All other primary impressions

Oral ETI was the most common airway method (81.9%), followed by nasal ETI (5.2%), and all SA's (4.2%). 1,009 patients (8.7%) received more than one type of airway attempt.

Airway placement success was self-recorded by paramedics, and was highest for patients in cardiac arrest (91%) as compared to non-arrest (81.7%). Successful placement varied among airway types: SA's (90.6%), oral ETI (88.4%), multiple airway types (87.6%), and nasal ETI (70.4%).

Figure 1. Age Distribution

Table 1. Confirmation Technique and Airway Success

Confirmation Technique	Y/N	All Airways	Success Rate	Difference
Airway Cond. Sleep, Visualized Through Cords	No	4,530	72%	
Airway Cond. Sleep, Visualized Through Cords	Yes	7,070	99%	26%
Chest Rise/Pull	No	3,587	66%	
Chest Rise/Pull	Yes	8,013	97%	31%
Gastric Sounds ABSENT	No	4,118	70%	
Gastric Sounds ABSENT	Yes	7,482	97%	27%
Lung Sounds PRESENT	No	3,308	66%	
Lung Sounds PRESENT	Yes	8,092	97%	31%
Negative EtCO (In Trachea)	No	8,154	85%	
Negative EtCO (In Trachea)	Yes	3,366	98%	14%
Positive EtCO (In Esophagus)	No	10,699	87%	
Positive EtCO (In Esophagus)	Yes	801	89%	2%
Any Method	No	3,243	67%	
Any Method	Yes	8,257	95%	28%

Figure 2. Relationship Between Patient Age and Airway Success

Figure 3. Relationship Between Confirmation Methods, EtCO2 and Airway Success

Airway Placement Success

Number of Confirmation Methods Documented

Raw EtCO2

EtCO2 Used

Results (continued)

As shown in Figure 2, successful placement improved with increasing patient age. As can be seen in Table 1, the use of any confirmation technique improved success by 28% (from 67% to 95%). Chest rise/fall and the presence/absence of lung sounds offered the greatest incremental improvement.

Figure 3 shows the relationship between EtCO2 use, the number of confirmation methods, and airway success. The addition of EtCO2 increased airway placement success by an average of 22% for patients who received 0-3 manual confirmation methods, but offered no significant improvement for cases where four or more manual confirmation methods were used. Individual analysis of nasal intubations was performed due to their low success rate (70.4%). No manual confirmation technique was documented in 40% of cases, and success was reported at 39%. The addition of any confirmation method improved nasal intubation success to 91%.

Limitations

This was a retrospective study and was dependent upon data gathered from patient care records. It also depended upon paramedic self-assessment of airway placement success. Future studies that can relate confirmation techniques with advanced airway placement confirmed by receiving facilities will add to our knowledge on this subject. Additional study is necessary to better understand the relationship between various confirmation methods and successful airway management. Future studies will hopefully provide more clarity on the influence of patient age on successful airway management.

Summary of Conclusions

In this very large series of advanced airway cases from multiple communities, successful advanced airway placement was associated with the use of multiple manual confirmation techniques and EtCO2. **In 60% of the patients, four or more manual methods were used in combination with EtCO2, and airway placement success exceeded 98%.** Nasal ETI success rates were far below those for other airway devices but significantly improved with the use of confirmation techniques.

These results pose additional questions. Are paramedics who use multiple confirmation methods more successful because they have developed better clinical habits? Or are improved success rates related to a reduction in "pulled" tubes by clinicians who are uncertain about their position? Alternatively, do clinicians actually elect to NOT attempt confirmation of any kind when they believe for other reasons (such as difficulty in insertion) that the airway was NOT correctly placed, thus reducing the documentation of confirmation in unsuccessful airway placements?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