

AIRWAY — BREATHING - CIRCULATION





SOUND SCIENCE MUST BE APPLIED
APPROPRIATELY TO HAVE THE IMPACT
WE DESIRE

SOME CONCEPTS WE HAVE TO AGREE ON...

- The evidence *applicable* to EMS is increasing dramatically
- We must no longer fail to act based on limited data
- We are in the business of making decisions with limited or evolving data
- We need to keep looking

SOME CONCEPTS WE HAVE TO AGREE ON...

- We struggle much more with the “how” than the “what”
- The “how” can dramatically change the “what”

Airway controversies



Wang. Ann Emerg Med 2006

Study	Design	Primary Population	Primary Comparison (Group Sizes)	Primary Finding
Bochicchio et al, 2003 ²⁹	Prospective observational; single trauma center (Baltimore); univariable/stratified	Severe TBI; ETI in field or ED	OOH-ETI (78) vs ED-ETI (113)	Higher mortality (OR 2.1; 95% CI 0.9–5.0) ^{††} in OOH-ETI group
Bulger et al, 2005 ¹⁹	Retrospective; single trauma center (Seattle); multivariable adjusted	Severe TBI; RSI or ETI in field	OOH-RSI (775) vs OOH-ETI (302)	Higher mortality (OR 1.6; 95% CI 1.0–2.4) and poorer neurologic outcome (1.7; 1.2–2.6) in OOH-ETI group
Christensen and Hoyer, 2003 ³⁰	Retrospective; single mobile emergency unit with anesthetist (Denmark)	All trauma; ETI in field with and without drugs	OOH-ETI with (62) vs without (12) drugs	Higher mortality (OR 15.2; 95% CI 1.9–673.2) [†] for OOH-ETI without drugs
Cooper et al, 2001 ³¹	Retrospective; National Pediatric Trauma Registry; univariable	Severe pediatric TBI	OOH-ETI (479) vs OOH-BVM (99)	No difference in mortality (OR 1.0; 95% CI 0.6–1.6) [†]
Davis et al, 2003 ²⁰	Prospective interventional series, historical controls; countywide (San Diego); multivariable adjusted	Severe TBI; RSI in field vs non-ETI historical controls	OOH-RSI (209) vs non-OOH-ETI (627)	Higher mortality (OR 1.6; 95% CI 1.1–2.2) and poorer neurologic outcome (1.6; 1.2–2.3) in OOH-RSI group
Davis et al, 2005 ²¹	Retrospective; countywide trauma registry (San Diego); multivariable adjusted	Severe TBI; ETI in field or ED	OOH-ETI (2,665) vs ED-ETI (2,220)	Higher mortality (OR 2.1; 95% CI 1.8–2.5) [†] in OOH-ETI group
DiRusso et al, 2005 ³²	Retrospective; National Pediatric Trauma Registry; multivariable adjusted	All pediatric trauma	OOH-ETI (1,928) vs non-trauma center ETI (1,647), trauma center ETI (1,874)	Higher mortality for OOH-ETI vs non-trauma center ETI (OR 3.2; 95% CI 2.7–3.7) ^{†§} ; vs trauma center ETI (4.1; 3.5–4.8) ^{†§} ; vs non-

Gausche et al, 2000 ²²	Prospective controlled (pseudorandomized) interventional trial; countywide (Los Angeles)	Pediatrics; ETI or BVM in field vs OOH-BVM	OOH-ETI/BVM (420) vs OOH-BVM (410)	No difference in mortality (OR 0.8; 95% CI 0.6–1.1) or neurologic outcome (0.9; 0.6–1.2)
Lockey et al, 2001 ²³	Retrospective; single air medical service (Great Britain); descriptive	All trauma; ETI in field without drugs	Mortality of OOH-ETI without drugs (36)	Low (0.2%) survival
Murray et al, 2000 ²⁴	Retrospective; countywide trauma registry (Los Angeles); multivariable matched/adjusted	Severe TBI	OOH-ETI (57) vs non-OOH-ETI (57)	Higher mortality (OR 4.2; 95% CI 2.1–8.9) in OOH-ETI group
Sloane et al, 2000 ²⁵	Retrospective; single trauma center (San Diego); univariable	Severe TBI; RSI in field or ED	OOH-RSI (47) vs ED-RSI (207)	No difference in mortality (OR 0.6; 95% CI 0.1–2.6) [†] or neurologic outcome (1.1; 0.3–3.8) [†]
Stockinger et al, 2004 ²⁶	Retrospective; single trauma center (New Orleans); univariable/stratified	All trauma; ETI or BVM in field	OOH-ETI (316) vs OOH-BVM (217)	Higher mortality (OR 18.0; 95% CI 11.2–29.1) [†] in OOH-ETI group
Suominen et al, 2000 ³³	Retrospective; single trauma center (Finland); univariable	Severe pediatric TBI	OOH-ETI (24) vs non-trauma center ETI (13) vs trauma center ETI (22)	Lower mortality for OOH-ETI vs non-trauma center ETI (OR 0.1; 95% CI 0.002–1.1) ^{††} ; no difference vs trauma center ETI (3.7; 0.9–15.8) [†]
Wang et al, 2004 ²⁷	Retrospective; statewide trauma registry (Pennsylvania); multivariable and propensity-score adjusted	Severe TBI; ETI in field or ED	OOH-ETI (1,727) vs ED-ETI (2,301)	Higher mortality (OR 4.0; 95% CI 3.2–4.9), poorer neurologic outcome (1.6; 1.2–2.3), and poorer functional outcome (severe impairment 1.9; 1.3–2.5) in OOH-ETI group
Winchell and Hoyt, 1997 ²⁸	Retrospective; countywide trauma registry (San Diego);	Blunt trauma; GCS score < 8	OOH-ETI (52) vs non-OOH-ETI (565)	Lower mortality (OR 0.6; 95% CI 0.5–0.8) [†] in OOH-ETI group; no

Study: Intubating Brain Trauma Patients Boosts Mortality

By Ruth SoRelle, MPH

Although patients with severe traumatic brain injury intubated outside the hospital were four times more likely to die than those intubated in the ED, the study's investigators said their findings should not yet change paramedic practice.

Their caution is understandable, given that the findings fly in the face of conventional wisdom on intubation. "We have a life-saving procedure we have done for the last 20 years," said Henry Wang, MD, MPH, an assistant professor of emergency medicine at the University of Pittsburgh School of Medicine. "We assumed it would help patients. This was not the

outcome we expected. What does that mean?"

"We could take the radical point of view, and say we should not be doing this procedure. We do not think this should change practice at this time," he said. "We think paramedics need to continue the standard of care."

Donald Yealy, MD, a professor and the chairman of emergency medicine at the University of Pittsburgh School of Medicine, agreed. "I don't think we should do that yet. We do not know the specific causes of the observation, whether it is the selection of patients, the actual performance of the procedure, or the preparation before or the care after. What it suggests is that there is a lot of room for

improvement. It's odd that 30 years into this there are as many people who are enthused about it as there are those who are less enthused."

Brian Zink, MD, an associate professor of emergency medicine at the University of Michigan School of Medicine at Ann Arbor and the associate dean for student programs, called the study well done. "It's one of the better designed and implemented studies that I've seen," he said.

"This is really counter to what we've always believed is the right thing to do. The evidence from their study, along with other information coming out, would support that we don't keep doing things as

Continued on page 43

Advanced airways

14 EMS • February 2004

Special Report

With Prehospital Intubation So Problematic, Experts Say It May Hurt Patients More than Help

By Anne Scheck

It's time to turn back the clock on out-of-hospital intubation? Henry Wang, MD, an assistant professor of emergency medicine at the University of Pittsburgh, thinks so. And he is far from alone.

This past year, Dr. Wang and five colleagues, published an analysis of the success and failure of out-of-hospital intubation outside of hospital. The data paint a startling picture.

Though they were careful to couch their findings as reasonable, even polite, language, there is no mistaking the implications. The report that emerges suggests overconfidence on field personnel who either have too few opportunities to maintain their skills or who are being called on to accomplish a procedure for which they have not been well prepared.

"I think we are more pessimistic than other groups," he concluded, acknowledging that his forecast for the situation is gloomy. Dr. Wang said the statistics are unlikely to change unless technical advances decrease the margin of error in

out-of-hospital intubation. The data seem to affirm a situation some emergency physicians have long lamented: that conventionally trained rescuers such as paramedics often fail in their attempts to intubate patients successfully.

Failure Rates

Unlike those who suggest pessimism that paramedics aren't always effective in providing rapid-response intubation (RSI), Dr. Wang has put his resolve on a potentially powerful investigation, the Journal of Emergency Medicine, where his editorial on the subject seems to lay out the issues in a critical, though provocative way. He and his colleague, Donald Yealy, MD, note that research on RSI shows a failure rate of 12 percent, and they state that field airway success rates have not changed substantially in 20 years (*Ann Emerg Med* 2002;39:1050). They ask, "Can we accept this failure rate when performing RSI—or any other field procedure?"

Now they are getting some answers to that question, though not the final study to end the debate. David Davis, MD, an



San Diego RSI study

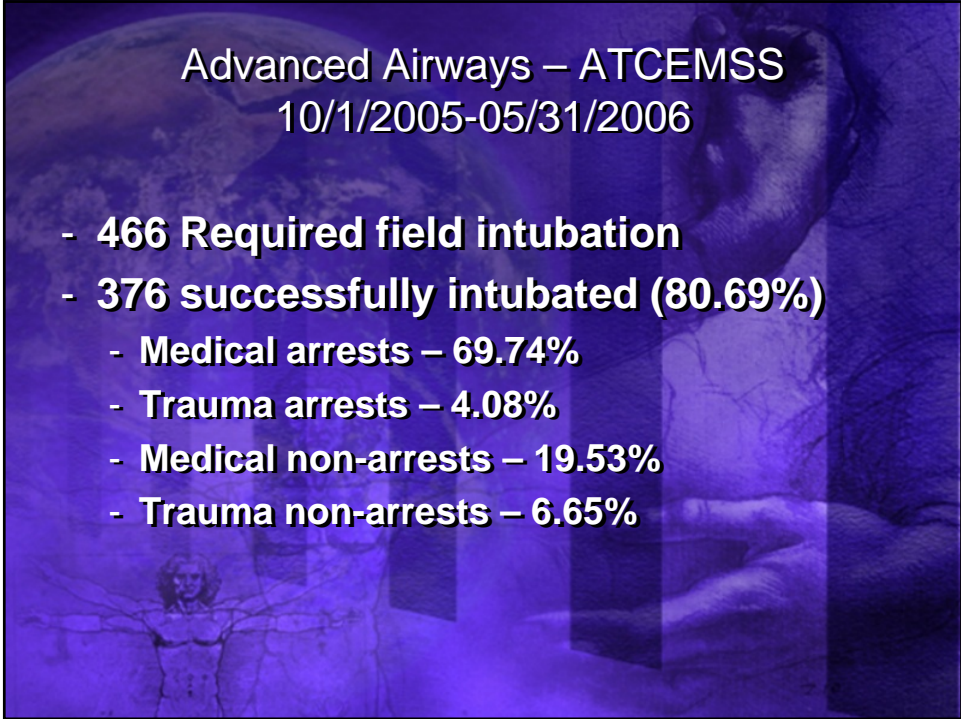
- 31 (57%) of 54 pts demonstrated desaturation during RSI
 - 26 (84%) occurred in pts with SPO₂ > 90% with BLS airway skills
 - Median duration of desaturation was 160 seconds
 - Median decrease in SPO₂ was 22%
 - 19% experienced marked bradycardia

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



Advanced Airways – ATCEMSS
10/1/2005-05/31/2006

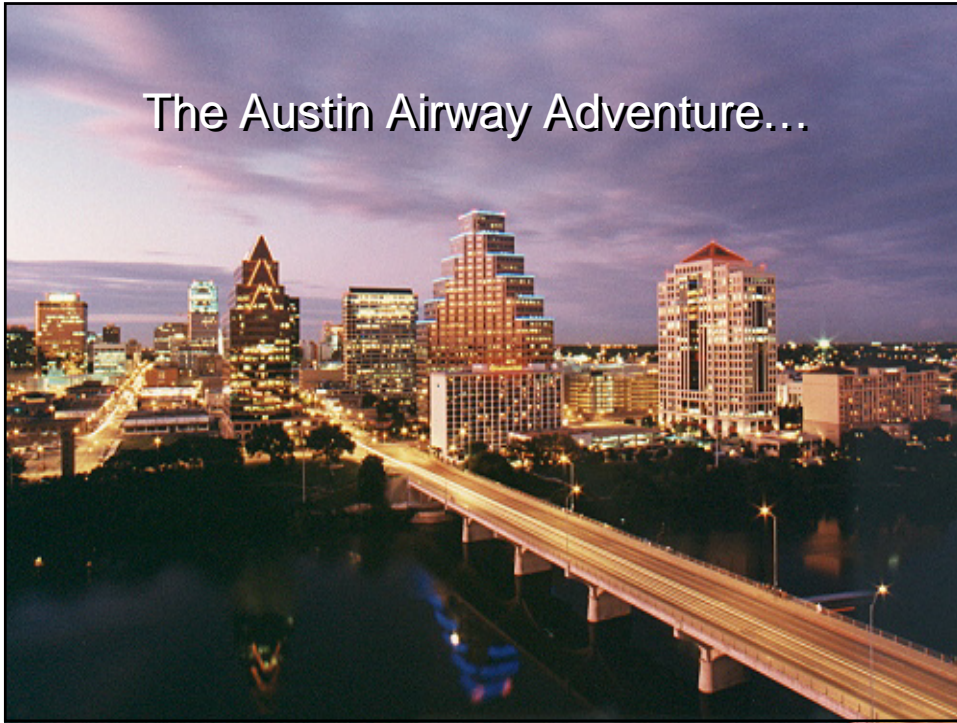
- **466 Required field intubation**
- **376 successfully intubated (80.69%)**
 - Medical arrests – 69.74%
 - Trauma arrests – 4.08%
 - Medical non-arrests – 19.53%
 - Trauma non-arrests – 6.65%



Comprehensive airway management
program

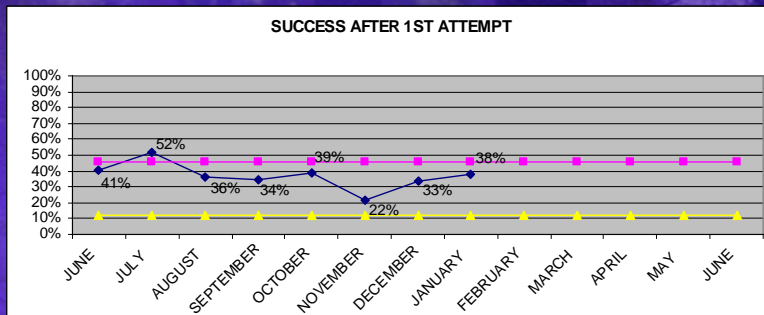
- **1800 Providers**
- **ALS / BLS**
- **Didactic sessions**
 - Uniform message
 - Team Leader
 - Limited attempts (goal)
- **Practical hands on**

The Austin Airway Adventure...

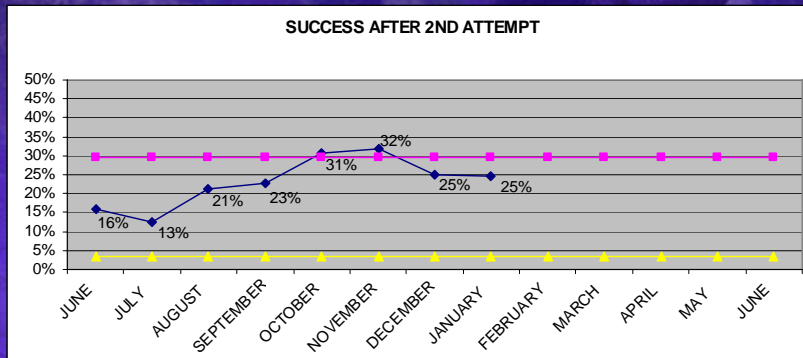


Airway data ATCEMSS

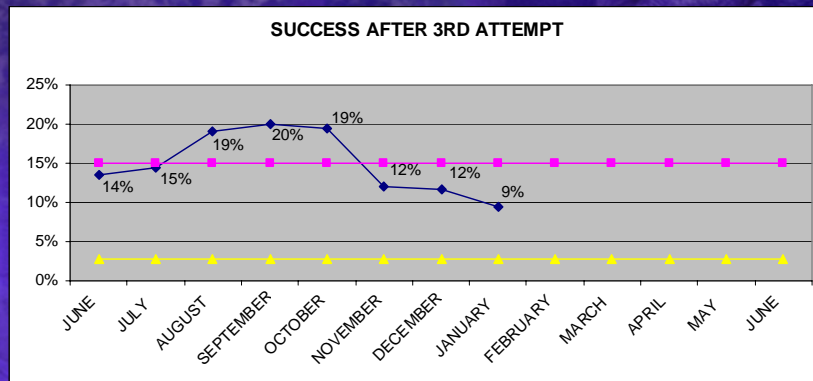
- June 2006 – January 2007



Airway data ATCEMSS

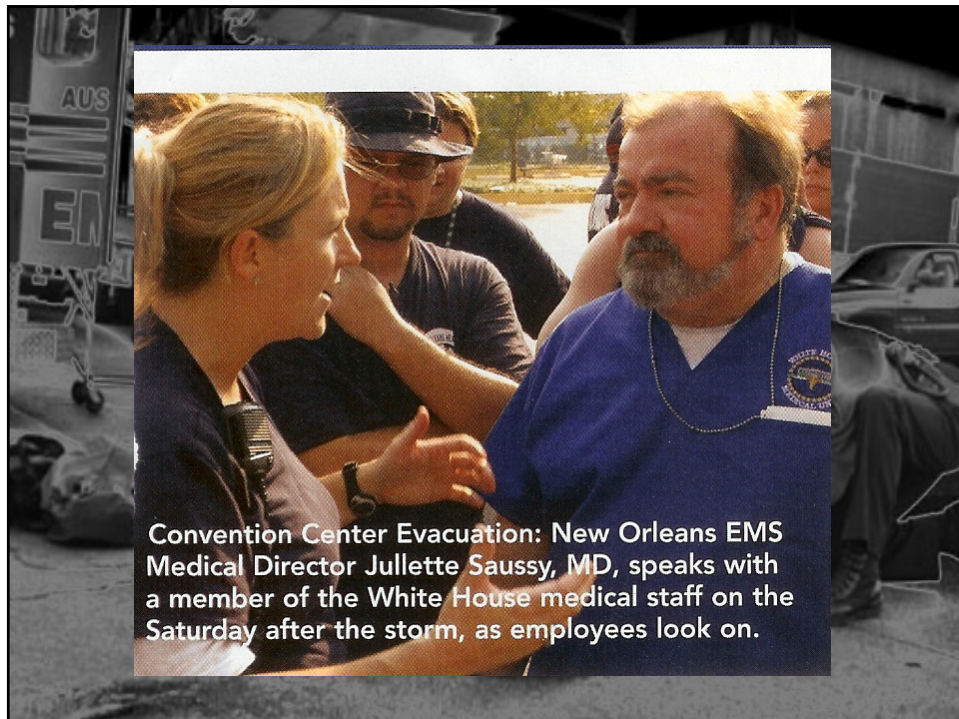


Airway data ATCEMSS



WHERE TO?

- Ongoing competency
- Integration with ACLS / BLS
- Team Leader
- Alternative airway management



THERE IS A MUCH BETTER WAY TO DO THIS...