One Good Attempt Doesn’t Deserve Another:

What Happens When You Limit ET Tube Placement to One Try?

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The challenge ...

How do we take care of the airway needs of our patients without doing harm?
San Diego Trial

- 13 minute LONGER scene time when RSI used on scene vs. en route
- Unrecognized 22% decrease in SpO₂ in 57% of reviewed cases, lasting ~160 sec.
- Intubation described as “easy” by paramedic in 84% of desaturated cases
- Hyperventilation?
Out-of-hospital endotracheal intubation and outcome after traumatic brain injury

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Out-of-hospital (vs emergency department) ET intubation was associated with increased adjusted odds of:

**Death**

(3.99; 95% CI 3.21 to 4.93)

**Poor neurologic outcome**

(1.61; 95% CI 1.15 to 2.26)

**Moderate or severe functional impairment**

(FIS 6 to 15; OR 1.92; 95% CI 1.40 to 2.64)

**Severe functional impairment**

(FIS 11 to 15; OR 1.80; 95% CI 1.29 to 2.52)
Average Scene Times

Average Scene Times (January 2005 - March 2006)

Intubated on First Attempt: N=641
Intubated on Second Attempt: N=42
Intubated on ≥ Third Attempt: N=10
Average Scene Times

Average Scene Times (January 2005 - March 2006)

N=49
N=64
N=5
N=27

Not Intubated on First Attempt and No Combitube Attempted
Not Intubated on First Attempt and Combitube Attempted
Not Intubated after Multiple Attempts and No Combitube Attempted
Not Intubated after Multiple Attempts and Combitube Attempted
What to do?
MedStar ET Intubation Success Rates 2004 - 2006

Intubation Success Rate

% of Patients Successfully Intubated  2 per. Mov. Avg. (% of Patients Successfully Intubated)
15. IF ETT Intubation is unsuccessful after ONE attempt, insert a Combitube.
Total Calls
July 2005 – December 2006

Total Calls
July 2005 – December 2006

- 68307 (7/05-3/06)
- 70640 (4/06-12/06)
Advanced Airway Attempts
July 2005 – December 2006

- Total Calls With Advanced Airway Attempted: 550 (493), 531 (451)
- Total ETT Attempts: 531 (451), 493 (438)
- Patients With Combitubes Attempted: 72 (138), 19 (42)
- Combitube Attempted First: 39 (27)
- Total Number of Patients w/o Definite Airway: 39 (27)
ETT Intubations
July 2005 – December 2006

ETT Intubations
July 2005 – December 2006
Combitube Success Rates
July 2005 – December 2006

Combitube Success Rates
July 2005 – December 2006
BVM Usage
July 2005 – December 2006

- Total Airway Calls: 914 (7/05-3/06), 860 (4/06-12/06)
- Total Airway Calls With BVM Used Only: 364 (7/05-3/06), 367 (4/06-12/06)
BVM Usage Only
July 2005 – December 2006

Percent of Airway Calls With BVM Used Only

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>7/05-3/06</td>
<td>39.82%</td>
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<tr>
<td>4/06-12/06</td>
<td>42.67%</td>
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</tbody>
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Scene Times
July 2005 – December 2006

- BVM Use Only
- All Advanced Airway Calls
- Combitube Only w/o ETT Attempt
- ETT Only w/o Combitube Use
- ETT + Combitube

Graph shows the number of cases for different advanced airway techniques from July 2005 to December 2006.
Results

- 10% decrease in calls with advanced airway attempted
- 15% decrease in ETT attempts
- 113% increase in number of patients with Combitube attempted
- 146% increase in number of patients with Combitube attempt first
Results

- 22% decrease in patients with advanced airway attempted unsuccessfully
- 7% decrease in intubation success rate
- 4% increase in ETT first attempt success
- 2.7% increase in Combitube success rate
Conclusions: Our Experience

• First attempt % improvement suggests that medics may not prepare as much as they should.

• Combitube use increased overall and may reflect a future trend.
Conclusions: Our Experience

- Intubation attempts may be limited to one while possibly improving overall ETT intubation success rates.
- Further study is needed to determine if increased Combitube use is, indeed, safer.
### Complications associated with the Esophageal-Tracheal Combitube® in the pre-hospital setting


- **280 patients**
- **58 patients** had 69 complications (13 insertion trauma):
  - aspiration pneumonitis (n=31)
  - pulmonary aspiration (n=16)
  - pneumothorax (n=6)
  - upper airway bleeding (n=4)
  - esophageal laceration (n=3)
  - sub emphysema (n=2)
  - esophageal perforation and mediastinitis (n=2)
  - tongue edema (n=2)
  - tracheal injury (n=1)
  - pneumomediastinum (n=1)
Conclusions: *Our Experience*

- Further study is also needed to assess whether these airway management trends of more accurate ETT use AND increased Combitube use decreases the adverse outcomes of ETT use reported elsewhere.
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