One Good Attempt Doesn't Deserve Another:

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

John K. Griswell, MD, FACEP

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 SpO_2 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

Henry E. Wang MD, MPH, , Andrew B. Peitzman MD, Laura D. Cassidy PhD, P. David Adelson MD and Donald M. Yealy MD

From the Department of Emergency Medicine (Wang, Yealy), Department of Surgery (Peitzman), and Department of Neurosurgery (Adelson), University of Pittsburgh School of Medicine; and the Department of Biostatistics, University of Pittsburgh (Cassidy), Pittsburgh, PA.

Annals of Emergency Medicine Volume 44, Issue 5 , November 2004, Pages 439-450

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)

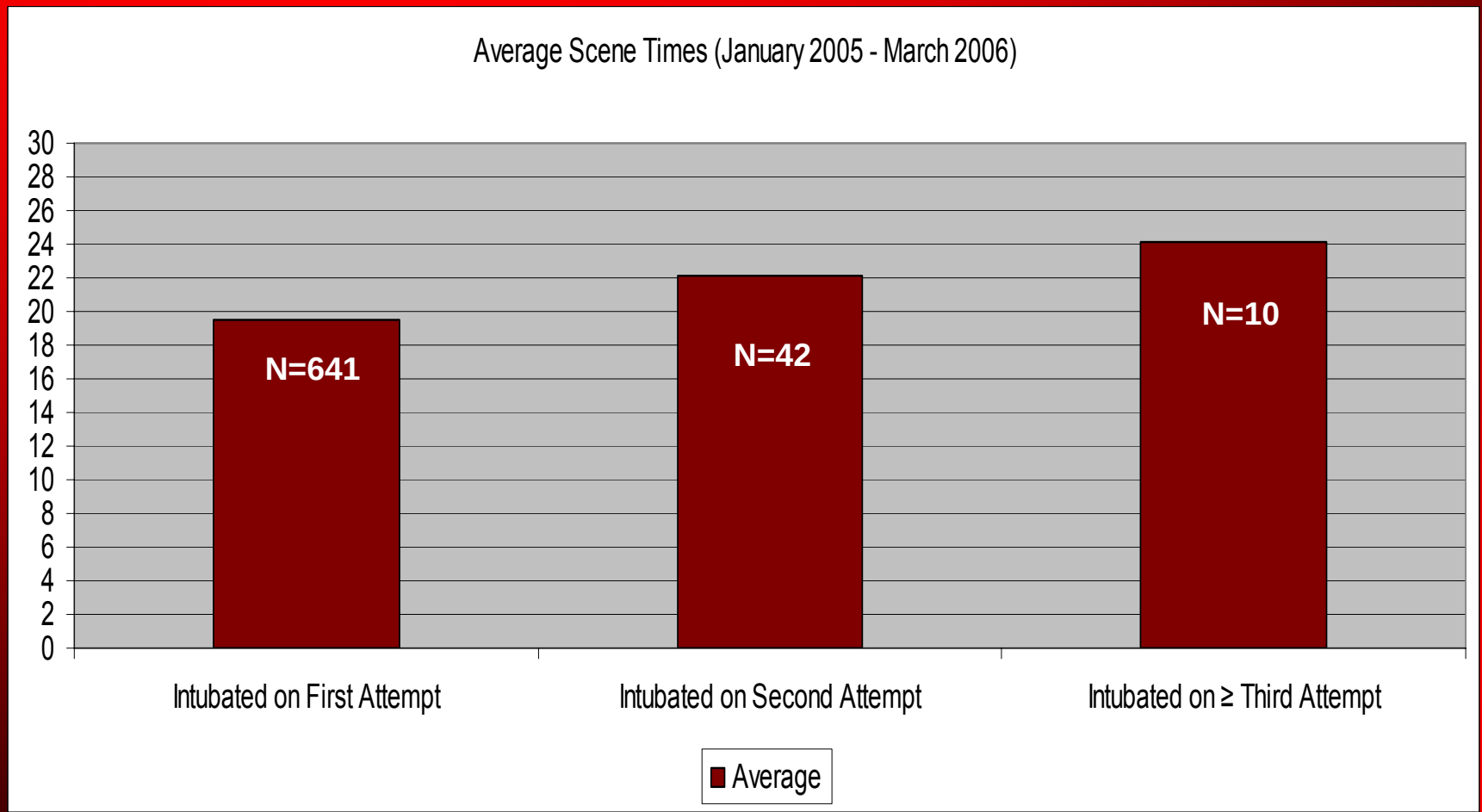
Moderate or severe functional impairment

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

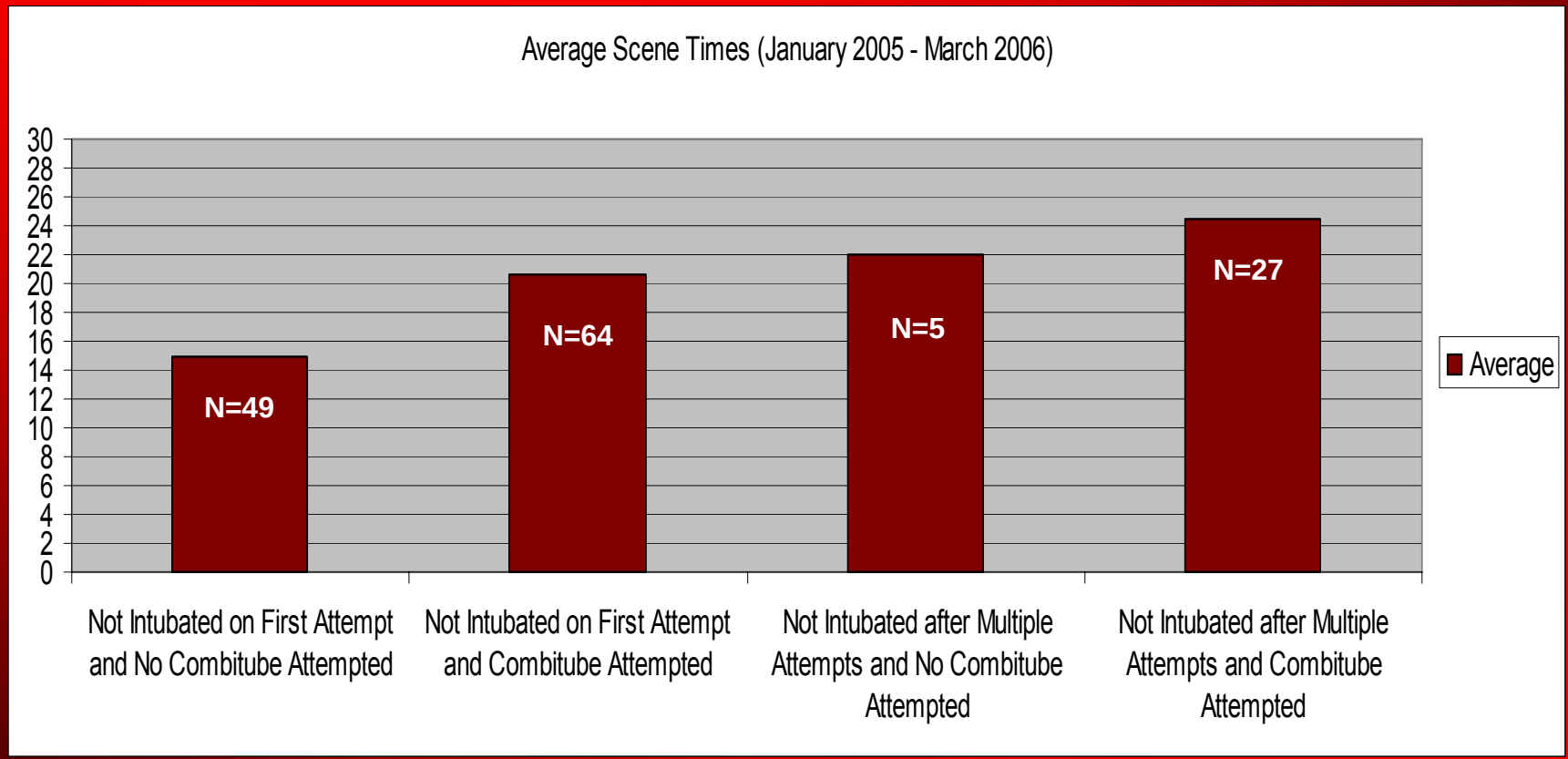
Severe functional impairment

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

Average Scene Times

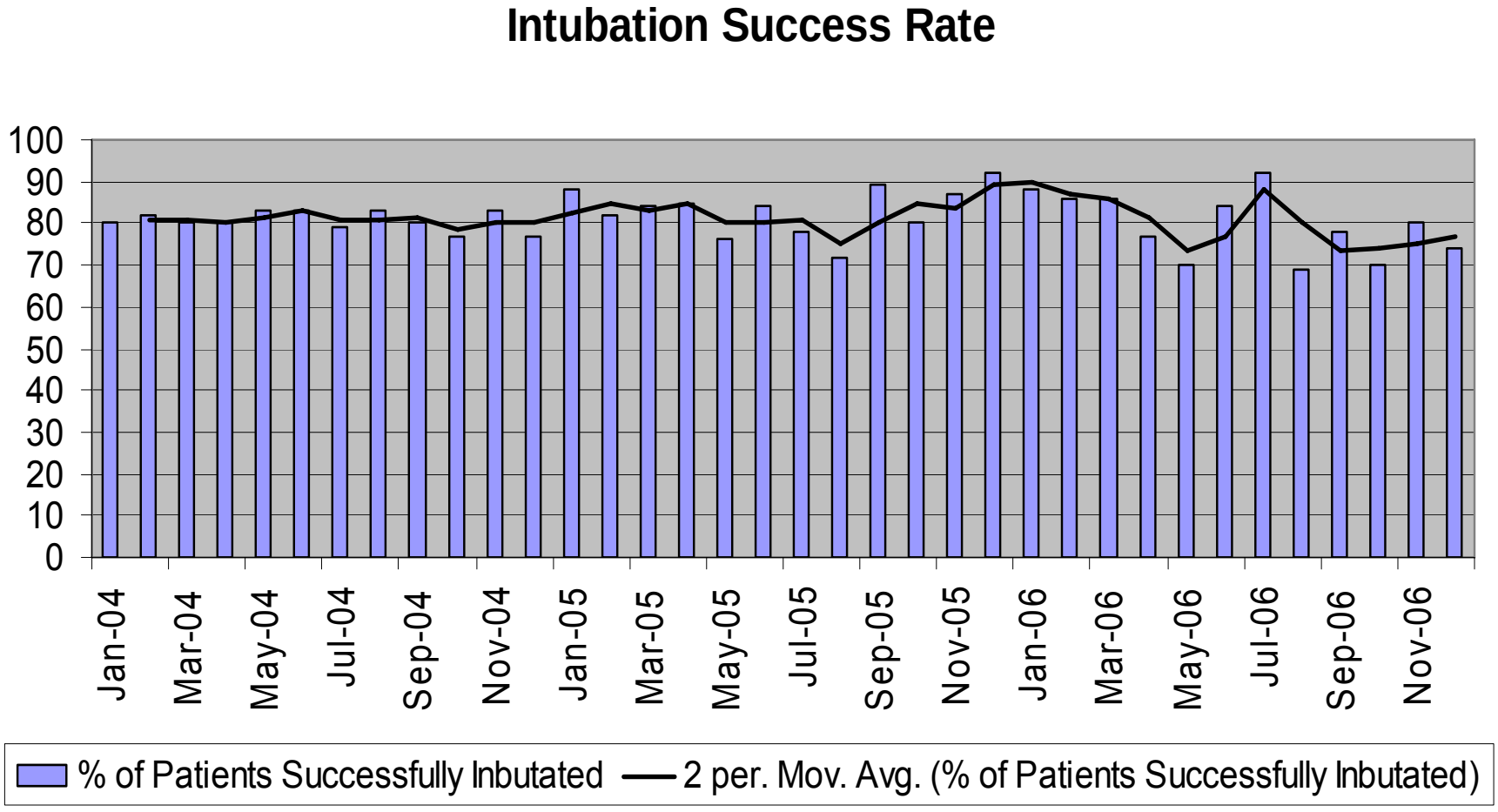


Average Scene Times




What to do?

MedStar
ET Intubation Success Rates
2004 - 2006



ORAL ENDOTRACHEAL INTUBATION

Indications:

1. Respiratory or cardiac arrest
2. Unconsciousness without a gag reflex
3. Decreased minute volume, due to decreased respiratory rate or volume
4. Possible airway obstruction
5. GCS ≤ 8

Contraindications:

1. None in the presence of hypoxia, unresponsive to ventilation, need for advanced airway or cardiopulmonary arrest

Procedure:

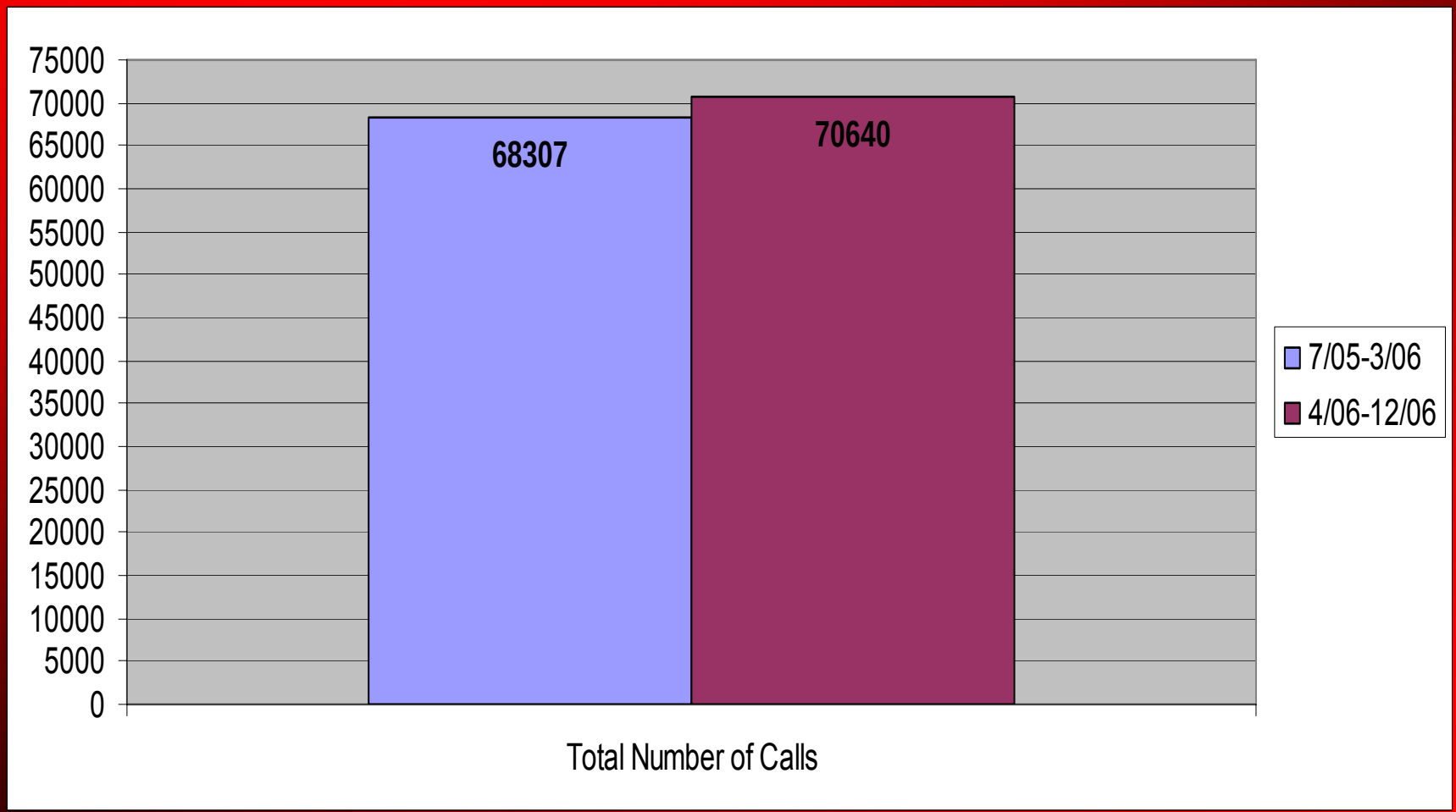
1. Preoxygenate the patient, if possible
2. Assemble and check equipment

15. IF ETT Intubation is unsuccessful after ONE attempt, insert a Combitube.

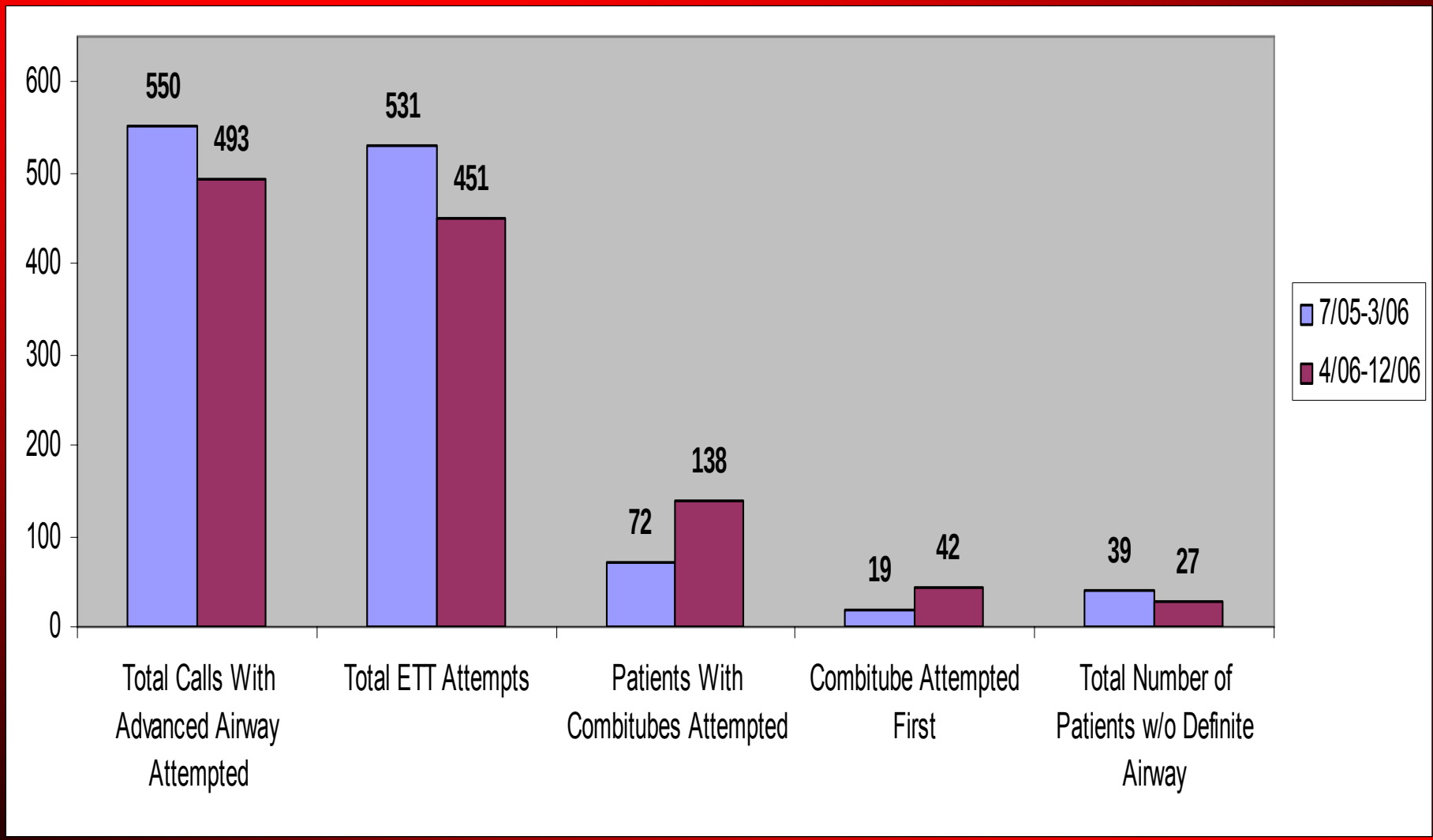
tongue

6. The tip of curved blades should be placed in the vallecula while the tip of straight blades should be extended beyond the epiglottis.
7. Lift the epiglottis either directly or indirectly, visualizing the vocal cords.
8. Slip the endotracheal tube and stylet past the vocal cords about ½ to 1 inch. Gentle, downward pressure on the cricoid cartilage (Sellick's maneuver) may assist.
9. While holding onto the tube, attempt and assess ventilations
10. If the chest rises and breath sounds are present, inflate the distal cuff with 5 to 10 ml of air
11. Confirm proper airway placement and assesses the quality of ventilations
12. Record capnographic change, breath sound locations and chest rise and fall
13. Secure tube with an endolock device
14. Continuously reassess breath sounds
15. If ETT intubation is unsuccessful after **one** attempt, insert a Combitube.

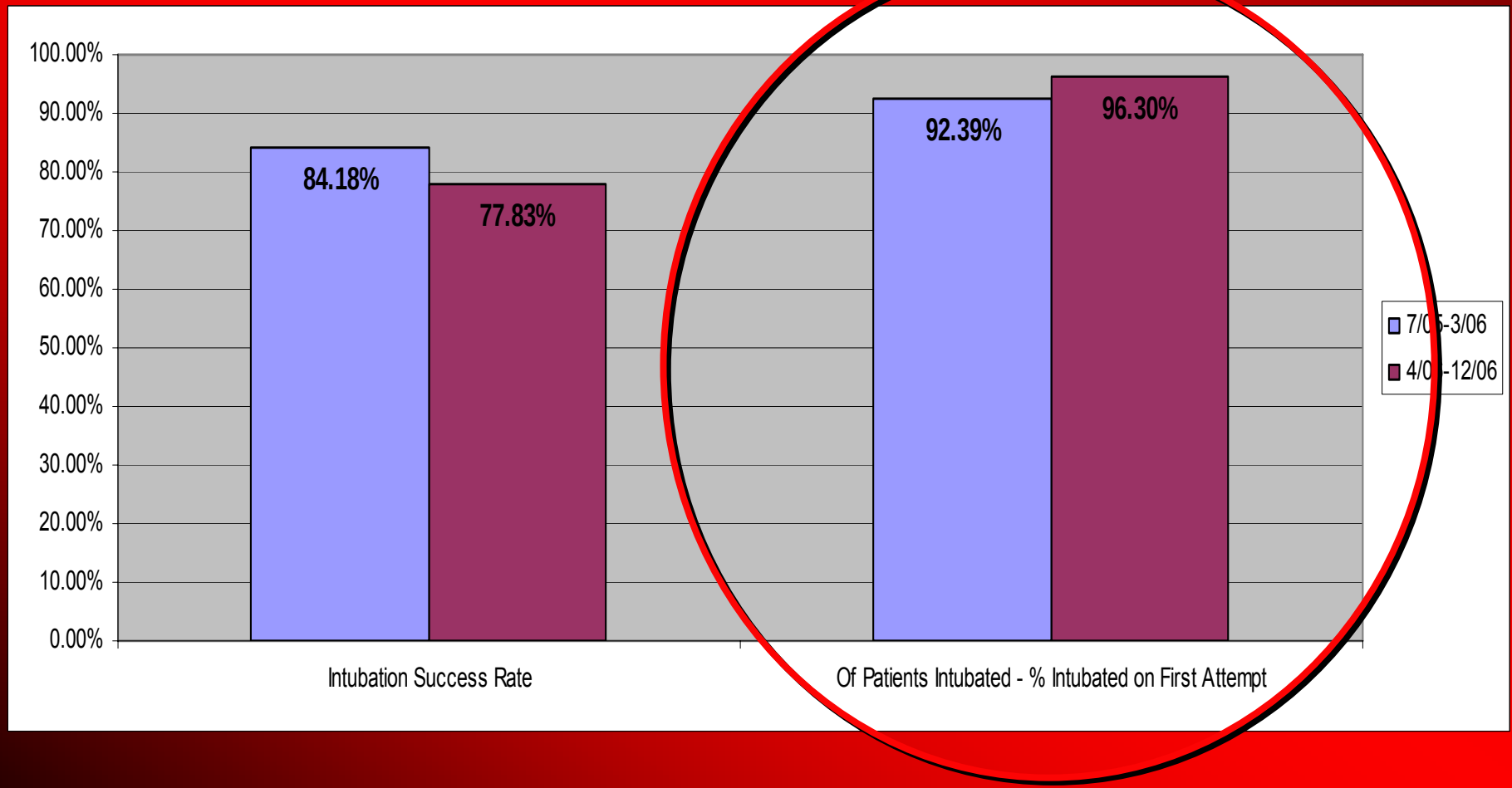
Total Calls
July 2005 – December 2006



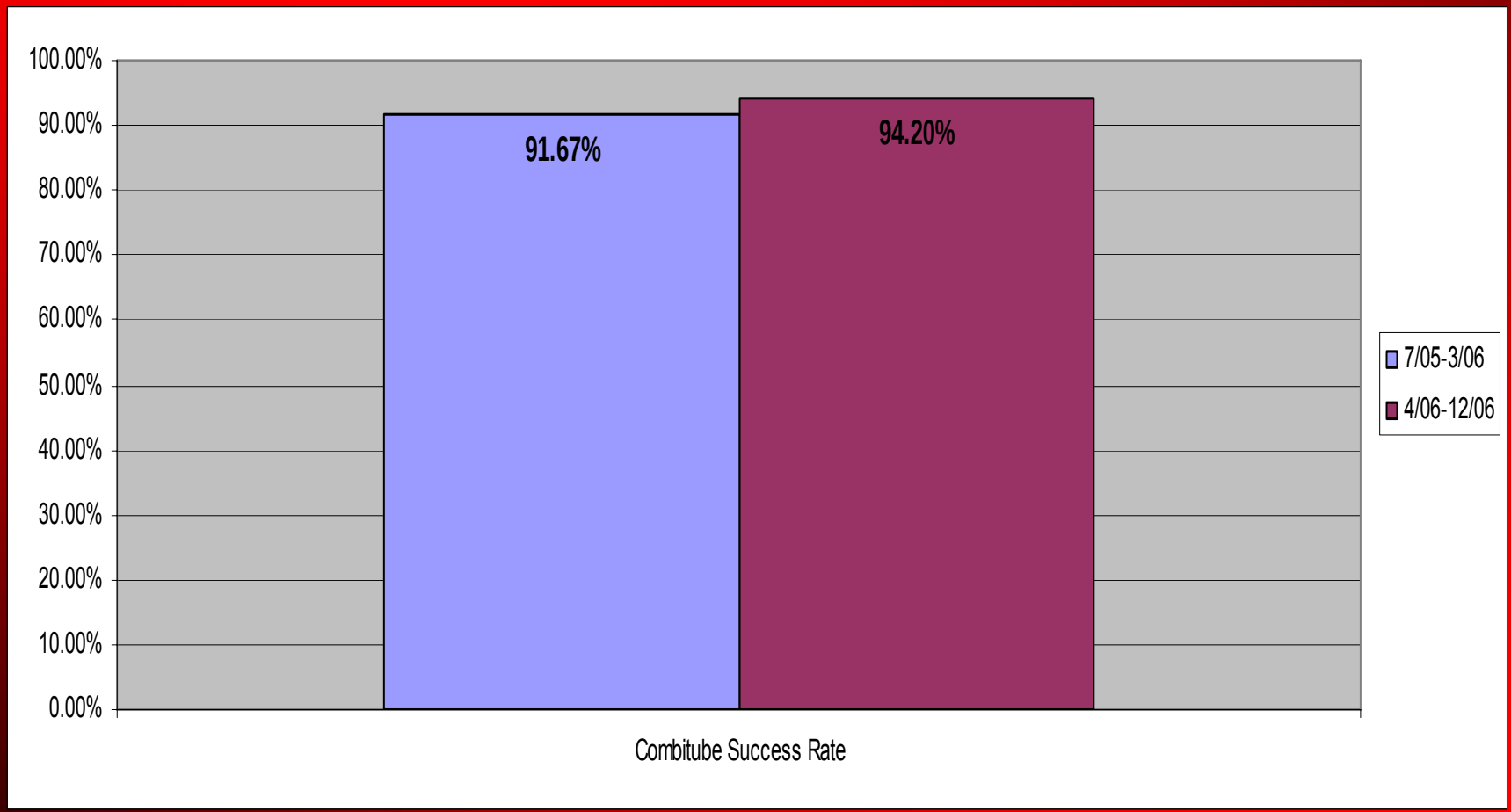
Advanced Airway Attempts July 2005 – December 2006



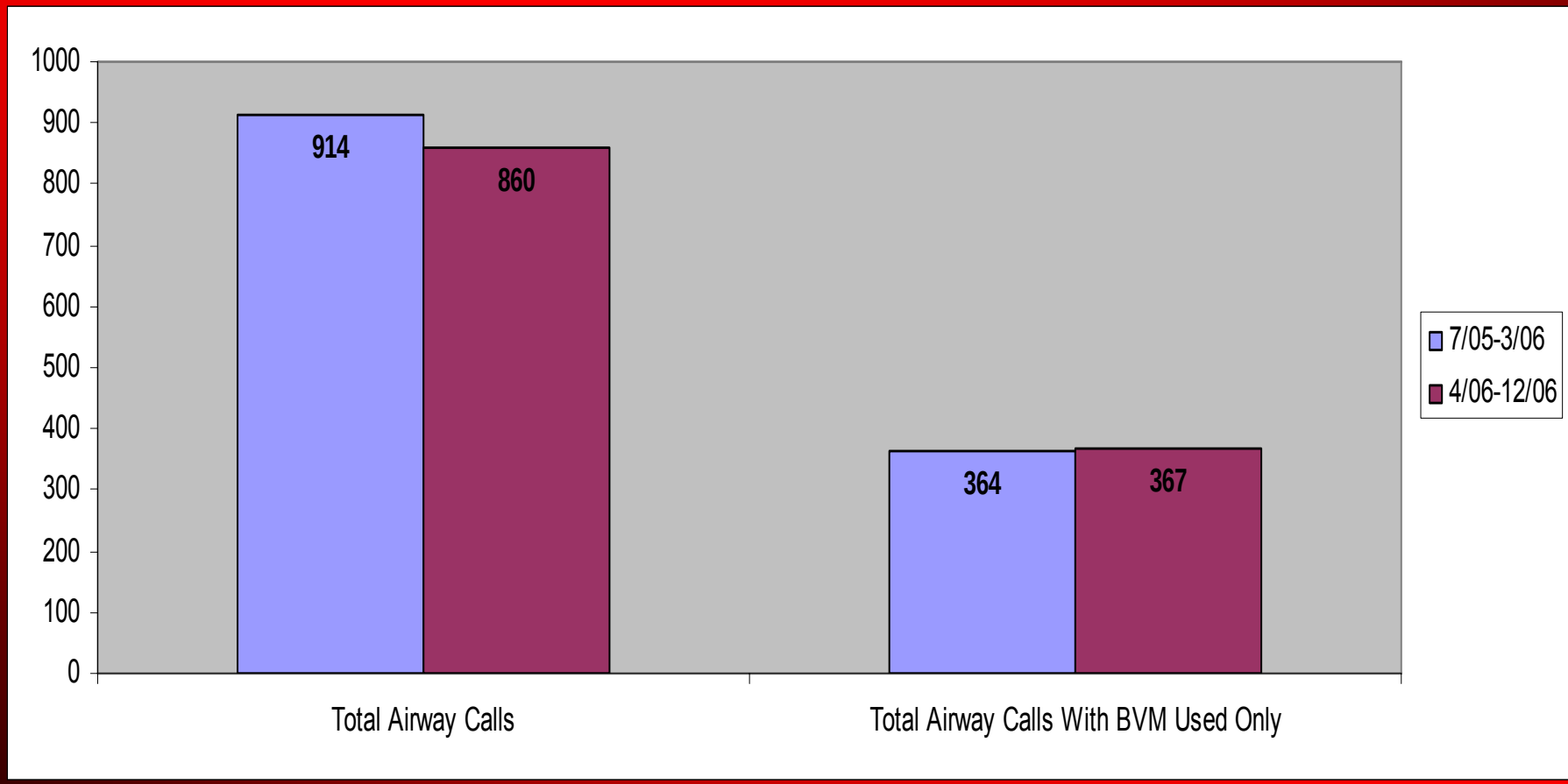
ETT Intubations
July 2005 – December 2006



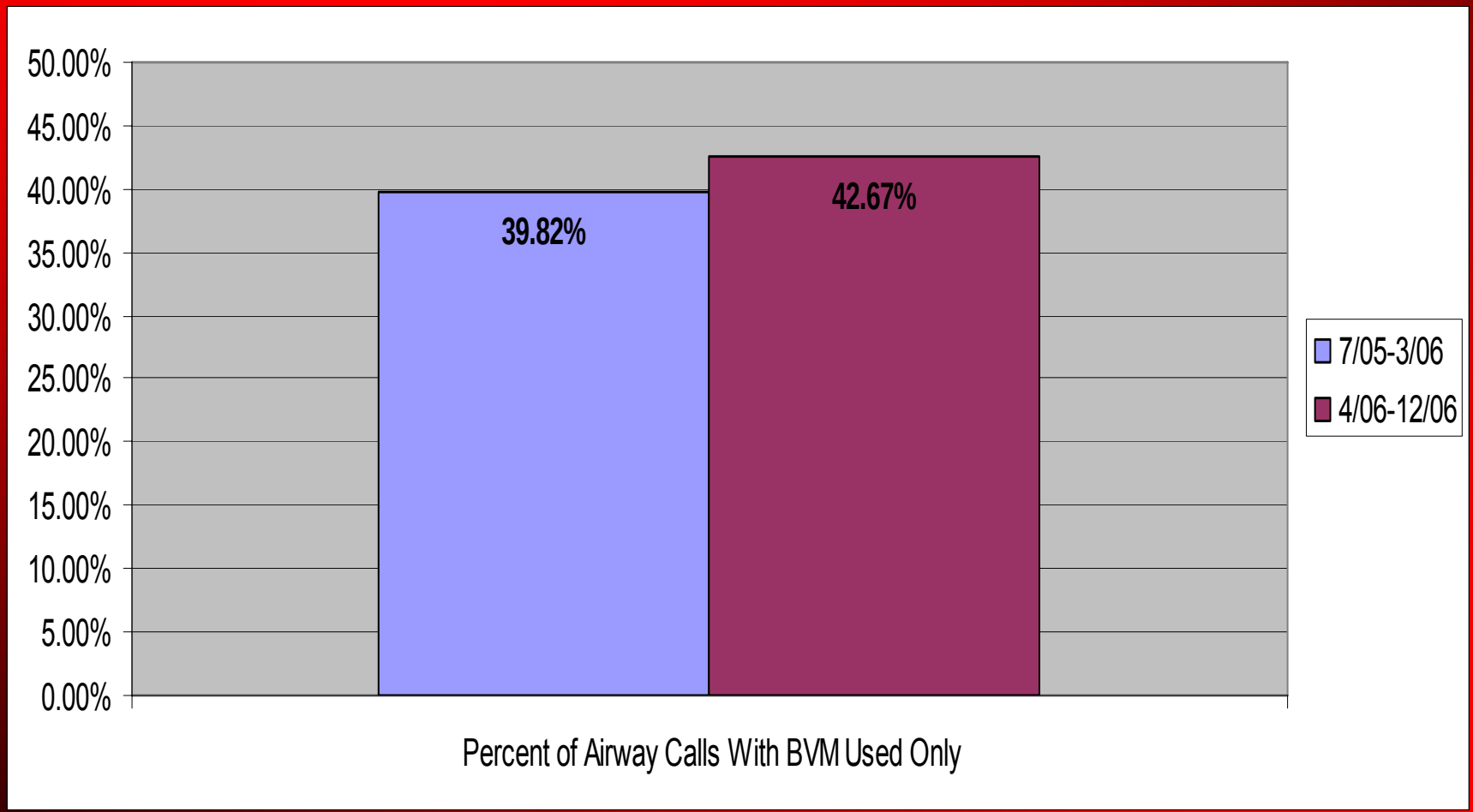
Combitube Success Rates July 2005 – December 2006



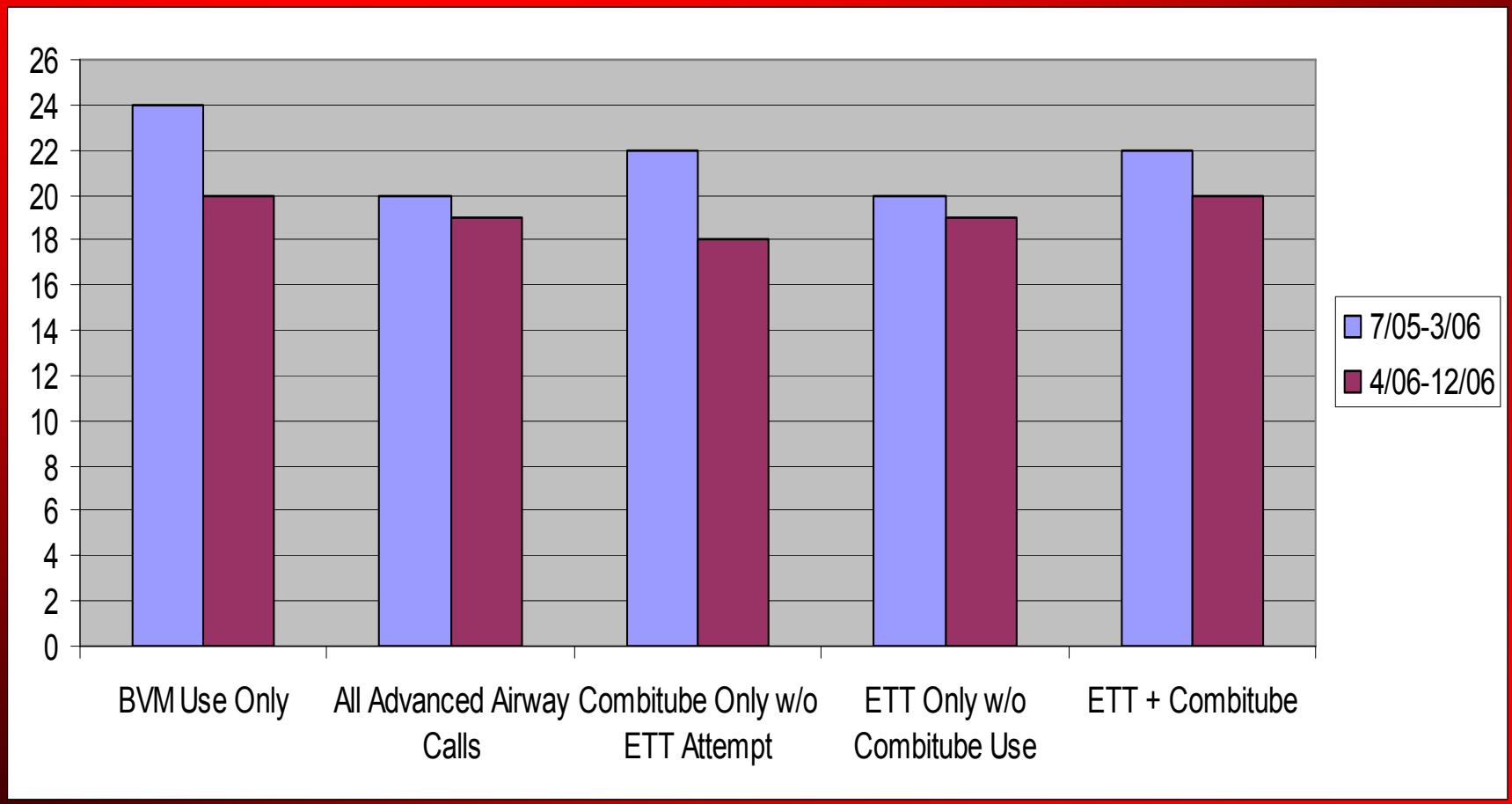
BVM Usage
July 2005 – December 2006



BVM Usage Only
July 2005 – December 2006



Scene Times
July 2005 – 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

Vezina, et al, **Can J Anesth**; Feb, 2007

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)
- sc 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.

Thanks to
Daniel Ebbett, EMT-P
Jon Puryear, NREMT-P

Special thanks to Ray Fowler, M.D.

www.epabonline.org

jgriswell@medstar911.org