

# ADVISORY

**Title:**

**Confirmation of ETT  
Required Capnography**

**Issue Date:**

**01/02/2009**



**Number:**

**08-01**

**Replaces/Supersedes:**

**02-01**

**Purpose**

To establish a standard of treatment and promote the use of adjuncts to confirm proper placement of Endotracheal (ETT) Tube intubation. SEMAC has endorsed and recognized as a standard of care that all out-of-hospital adult and pediatric patients who require ETT intubation must have waveform capnography in place at the time of intubation and throughout the entire time the ETT is in place. This advisory becomes effective state-wide on June 1, 2009.

**Background**

Endotracheal intubation in adult and pediatric patients with severe respiratory failure or arrest can be a vital intervention for the prehospital advanced life support provider. However, since failure to detect improper placement or dislodgement of an ETT or other advanced airway device can be fatal, utmost care must be taken to ensure proper placement. Use of definitive confirmation and continuous monitoring devices are of utmost importance in the prehospital setting and ambulance environment where movement of the patient at the scene and during transport increases the potential for unrecognized dislodgement. Advanced life support providers should use the following confirmation techniques during and after ETT placement to reduce the chance of unrecognized misplacement or dislodgement.

**Confirmation Procedures Include**

- ETT use should be confirmed by direct visualization of the ETT passing through the vocal cords.
- Visual inspection of the chest for the presence of symmetrical chest rise.
- Auscultation at the epigastrium for absence of gurgling sounds.
- Auscultation at the anterior and lateral chest walls for the presence of bilateral breath sounds.
- Use of an exhaled carbon dioxide detector device or esophageal detector device.

## **Definitive Confirmation & Continuous Monitoring**

- Continuous End Tidal CO<sub>2</sub> waveform capnography monitoring. The capnography device must have the ability to print and/or store the data of the continuous waveform monitoring documentation as well as QA/QI purposes. The ability to print the data should be accomplished at the hospital when ever possible.

### **Limitations**

Adjuncts for confirmation of proper ETT placement may not be reliable under certain circumstances. As with many devices, there are limitations and special considerations that can affect results and interpretation. Providers must follow the manufacturer's guidelines for proper use and storage of these devices. When used properly these devices may further verify successful intubation and help to eliminate unrecognized esophageal intubation.

### **QA/QI**

The REMAC will develop and implement a process to monitor the success rate for the placement of advanced airway devices by pre-hospital providers. The REMAC shall report the results annually to the SEMAC. This will include at least the following:

1. Develop and implement a process to track use of confirmation devices by type in adult and pediatric patients who are intubated.
2. Develop and implement a process to record physician verification of proper tube placement on arrival at the emergency department.
3. Develop and implement a process to provide continuing education and appropriate remedial training based on the results of 1 and 2 above.

### **References**

1. American Heart Association Committee on Emergency Cardiovascular Care in collaboration with the International Liaison Committee on Resuscitation: Guidelines 2005 for cardiopulmonary resuscitation and emergency cardiovascular care.
2. American Heart Association Committee on Emergency Cardiovascular Care in collaboration with the International Liaison Committee on Resuscitation: Guidelines 2000 for cardiopulmonary resuscitation and emergency cardiovascular care, 6(3): advanced cardiovascular life support (adjuncts for oxygenation, ventilation, and airway control), and 10: pediatric advanced life support. *Circulation*. 2000;102 (Suppl 1):I-95-I-104 and I-291-I-342.

3. Cardozo MM, Banner MJ, Melker RJ, et al. Portable devices used to detect endotracheal intubation in emergency situations: a review. *Crit Care Med.* 1998;26:957-964.
4. Ward KR, Kealy DM. End-tidal carbon dioxide monitoring in emergency medicine, 2: clinical applications. *Acad Emerg Med.* 1998;5:637-646.
5. O'Connor R, Swor RA. National Association of EMS Physicians position paper: verification of endotracheal tube placement following intubation. *Prehosp Emerg Care.* 1999;3:248-250.
6. Silvestri S, Ralls GA, Krauss B, Thundiyil J, Rothrock SG, Senn A, Carter E, Falk J. The effectiveness of out-of-hospital use of continuous end-tidal carbon dioxide monitoring on the rate of unrecognized misplaced intubation within a regional emergency medical services system. *Ann Emerg Med.* 2005 May;45(5):497-503.

Authorized:

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State Emergency Medical Advisory Committee

To: State Emergency Medical Advisory Committee  
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From: Edward G. Wronski, Director  
Bureau of Emergency Medical Services

Subject: SEMAC Advisory 08-01 Capnography

Date: December 23, 2008

This is to advise you that the Commissioner of Health has consented to the release of the Waveform Capnography Advisory. Please note that the implementation date has been moved to June 1, 2009 to provide time for advanced life support services to comply with its recommendations. Also, as previously discussed at the December council meetings the implementation of waveform capnography is not a mandate. It is however recognized by the advisory as a "standard of treatment" and as such should be generally followed.

We have also attached a copy of the final advisory for your use and to disseminate as appropriate to medical directors and agencies. BEMS will place the advisory on the Department WEB site and send the advisory to services in January. It is expected, with your assistance that all advanced life support services will adopt the use of waveform capnography over the next few months as many services and some regions have already done. If you have any questions please contact either myself, Andrew Johnson or Lee Burns.

Thank you.

Cc: EMS Program Agencies  
County EMS Coordinators