Confirming ET Tube Placement
When trying to secure and maintain a patent airway, time can be a pre-hospital caregiver’s greatest enemy. If the medic does not discover in time, that an endotracheal tube has been placed in the esophagus and not the trachea, it can be fatal. There are several different methods available to assist a medic in quickly determining proper ET tube placement. In addition to auscultation, there are end tidal carbon dioxide detectors and EID devices.

**Auscultation** of breath sounds should always be the first step of confirming proper ET tube placement. However, under adverse conditions, auscultation alone may not be a reliable indicator. Inadequate light, loud noises and some injuries can make successful intubation of a patient difficult in the field. Even under the best of conditions, it may be a challenge to differentiate between the patient’s trachea and esophagus. Therefore, after auscultating breath sounds, a medic can take the guesswork out of ET tube placement by choosing to use an adjunct to help confirm proper tube placement.

A pre-hospital caregiver may choose to use **capnography**. Capnography is the measurement of exhaled carbon dioxide concentrations. The devices used to make these measurements are called end-tidal carbon dioxide (ETCO2) detectors. A lack of carbon dioxide in the exhaled air indicates the ET tube has
been placed in the esophagus, while the presence of carbon dioxide indicates proper tracheal placement. End tidal carbon dioxide detectors are available as a disposable colorimetric device or as an electronic monitor. The device is attached in-line between the ET tube and the ventilation device. Proper tube placement is confirmed by a color change in the colorimetric device or by a light on the electric monitor.

The colorimetric device comes in two (2) sizes, adult and pediatric. As the patient is ventilated, a nontoxic chemical indicator quickly responds to the exhaled carbon dioxide with a simple color change from purple to yellow and back to yellow (or tan) on inspiration. This single device will continue to detect exhaled carbon dioxide for approximately two (2) hours.

When working with cardiac arrest patients, medics must be more diligent in confirming their ET tube placement. Due to decreased perfusion and reduced carbon dioxide elimination, a colorimetric device may not be an accurate indication of proper ET tube placement.

Another category of devices available for confirmation of tracheal intubation are **EID (Esophageal Intubation Detector) devices**. EID devices take advantage of the differences between the trachea and the esophagus. These devices come in several different styles. No matter which type is
chosen, bulb or syringe, they are simple to use and are all intended to be single use only. After ET tube insertion and prior to securing the tube, the device is attached to the connector of the ET tube.

    If working with the syringe style, the plunger should be all the way down prior to attaching to the ET tube. Slowly withdraw the plunger. If the plunger moves easily, the ET tube has been inserted in the trachea. If resistance is encountered when withdrawing the plunger, the tube is most likely in the esophagus and should be removed. If the ET tube has been mistakenly inserted into the esophagus, with the syringe style EID device the medic must take great care not to draw gastric fluids up into the ET tube.

    The bulb style EID is a disposable device used to verify endotracheal tube placement prior to any ventilation attempts. First, compress the bulb and while holding it in a compressed state, attach the unit to the endotracheal tube connector. A vacuum is created once the compressed bulb is released. If the ET tube is properly placed in the trachea, the bulb will inflate. However, if the ET tube has been inserted into the esophagus, the bulb will not reinflate and the ET tube should be removed. Use of the bulb style EID device decreases the risk of accidentally ventilating the stomach.
A **BAAM** (Beck Airway Airflow Monitor) can greatly facilitate blind nasotracheal intubation by whistling when the patient exhales. It is attached to a standard ET tube connector after the ET tube has been inserted into the nare.

By using these adjuncts in the pre-hospital setting, a medic can quickly and accurately determine proper ET tube placement and greatly decrease the possibility of making a potentially fatal error.