

# **Advanced Airway Monitoring for ALS Patient**

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## **PURPOSE**

1. To introduce guidelines to standardize continuous capnometry /capnography and oxygen saturation measurement in addition to vital sign monitoring.
2. Provide initial and ongoing confirmation of proper endotracheal tube placement in the intubated patient, and continuous assessment of oxygenation and ventilatory support throughout the course of treatment and transport to the receiving hospital.
3. To further assess the continuous ventilatory support provided to patients receiving MAI, CPAP or bag valve mask ventilation.
4. Additionally, a sudden rise in ETCO<sub>2</sub> can indicate a return of spontaneous circulation (ROSC), often before a pulse or blood pressure can be obtained.
5. Assess the ventilatory status of the patient with bronchospastic disease (asthma, COPD), where ETCO<sub>2</sub> waveform may be helpful in determining therapy plans.

## **HISTORY**

Endotracheal intubation (ETI) is an indispensable skill in the hands of a well-trained ALS clinician and requires constant monitoring to insure proper tube position and ventilatory technique.

Once ETI is established, constant SPO<sub>2</sub>/ETCO<sub>2</sub> monitoring must be obtained through the monitor/defibrillator. SPO<sub>2</sub> / ETCO<sub>2</sub> monitoring provides a quantitative measurement of the event and is recorded along with heart and respiratory rate by the monitor/defibrillator.

## **RATIONALE**

Boston EMS paramedics have received extensive training in advanced airway techniques, and in a large urban EMS system like Boston, are provided with opportunities to maintain these skills on a regular basis. EMS systems, including Boston EMS, need to perform continuous quality improvement/assurance to monitor performance and to identify and address issues related to endotracheal intubation.

Oxygen desaturation during attempts to intubate as well as over-aggressive manual ventilation inducing hypocapnea (contributing to cerebral hypo perfusion in patients with head injuries), can contribute to poor patient outcome.

Proper endotracheal tube placement is only one aspect of the endotracheal intubation that needs confirmation. Equally important is ensuring the tube is not displaced during treatment, extrication and transport as well as monitoring the quality of ventilatory support given following the procedure. Continuous monitoring of SPO<sub>2</sub> and ETCO<sub>2</sub> will be maintained by Boston EMS paramedics in all cases. Should there be an instance where this is not possible, it must be appropriately documented in the ePCR . Equipment failures must be documented in an incident report and the defective equipment exchanged in accordance with department policy. ETCO<sub>2</sub> monitoring equipment fits the BVM mask as well as the endotracheal tube and should provide the clinician with a good assessment of a patient's spontaneous respiratory or assisted ventilatory status.

## **PROCEDURE**

1. In addition to clinical assessment, vital sign monitoring, and confirmation of proper tube placement, ALS personnel caring for an intubated patient shall carefully monitor the effectiveness

of ventilations by continuously monitoring the presence of an ETCO2 value and maintaining an SPO2 value. It is the expectation that all patients have ETCO2 monitoring who have an advanced airway. In situations with multiple patients colorimetric CO2 can be utilized for the second patient, until capnography can be obtained.

2. Like EKG data, the ePCR system (Safety Pad) will interface with the monitor/defibrillator and will merge and transmit all event trending data (ETCO2, SPO2, HR, and RR) with the PCR prior to transmission to the ePCR system. Failure to merge should be documented in an incident report and the suspected faulty equipment exchanged at Materials Management, and notification email should be sent to [Safetypadhelp@bostonems.org](mailto:Safetypadhelp@bostonems.org)