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TITLE: BASIC AIRWAY SUPPORT PROCEDURES

REVISED: October 15, 2014

I. BASIC OXYGEN ADMINISTRATION

Supplemental oxygen shall be administered to all patients at risk for hypoxia/hypoxemia. Current AHA guidelines also recommend supplemental oxygen administration for patients with SPO2 ≤ 94% unless otherwise contraindicated.

Adjunct	Flow Rate
Nasal Cannula	1-6 L/min
Simple Mask	8-10 L/min
Non-Rebreather Mask	12-15 + L/min
Bag-Mask w/ Reservoir	12-15 + L/min
FROPVD/ Demand Valve	(good seal)

If hypoventilation is present, utilize bag/mask or demand valve with 100% oxygen to insure adequate ventilation and oxygenation.

Other devices, such as a trach mask, venture mask, or other device may also be used based on clinical judgment and presentation of the patient.

II. BASIC VENTILTORY SUPPORT

If supplemental oxygen support is inappropriate, ineffective, or impractical, and the patent is considered to be at risk for hypoventilation, hypoxia, or respiratory failure/compromise, then more aggressive respiratory support be indicated. Interventions include, but are not limited to,

- *Intermittent Positive Pressure Ventilation* (IPPV) using a bag valve manual resuscitator with a traditional face mask, an intra-oral mask (IOM), ETT, other advanced airway (i.e. supra-glottic airways) , or to a tracheostomy tube.
- *Flow-restricted, oxygen-powered ventilation device* (FROPVD), AKA Demand Valve, or an Elder valve, as available or indicated, using a traditional face mask, an intra-oral mask (IOM) ETT, other advanced airways (i.e. supra-glottic airways) , or to a tracheostomy tube.
- CPAP/PEEP (See Appendix 6)

When possible, providers should maintain strict ventilatory discipline to reduce adverse hemodynamic effects and baro-trauma, particularly during cardiac arrest, low perfusion states, and those with fragile respiratory anatomy (i.e. Asthmatics, COPD).

Providers should adjust mechanical ventilatory support based on the measured SPO2, ETCO2, and patient-ventilator synchrony/compliance. As spontaneous ventilation becomes more efficient and as concurrent medical conditions allow, the level of support may be adjusted.

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III. PULSE OXIMETRY

Pulse Oximetry monitoring shall be utilized on all patients at risk for hypoxemia or receiving medications. Oxygen saturation data shall be documented in the objective findings portion of patient run reports as oxygen saturation in terms of percentage (%) of hemoglobin saturation.

NOTE: Hemoglobin binding gases (CO, etc.), acidosis, and low peripheral perfusion may give false high or low pulse oximetry data.

IV. EXPIRED CO2 MONITORING

Expired/End Tidal CO2 (ETCO2) monitoring shall be utilized and documented on all intubated patients using the most appropriate device available.

ETCO2 is a useful adjunct for determining perfusion and measuring expired C02 in the intubated patient. Correctly interpreted end tidal volume capnometry is an excellent method of confirming correct ET placement. It is a reliable method, but it is only a tool and has several limiting factors in its interpretation.
Some factors that can cause false or misleading readings are:

- Pulmonary shunt – limits the perfusion of available lung parenchyma causing poor gas exchange
- Hypovolemic shock – limits available hemoglobin for gas exchange by limiting pulmonary perfusion and circulating RBC's
- Cardiogenic shock – poor gas exchange from limited perfusion of blood through the lungs
- Neurogenic shock – limits available hemoglobin for gas exchange by limiting pulmonary perfusion
- Lack of C02 production – i.e. cellular death
- Tube dislodgement, kinking, obstruction

The major limitation of any ETCO2 is the user, not the device. Appropriate decision-making must utilize all available information and good judgment. In the intubated patient with good breath sounds, fogging of the tube, equal chest excursion and direct visualization of the cords with observation of the tube passing between them, a low reading with ETCO2 is not an absolute indication for extubation. It is, however, always appropriate to recheck ET tube placement through multiple independent means if any question of patency or placement arises and extubate promptly if ET placement cannot be satisfactory confirmed.