



12. Pediatric airway management requires appropriately sized tools and adjuncts based on patient size/age. A method for determining appropriate sizing should be available to all EMS clinicians.
 - a. Skill in BVM ventilation and NIV application should be emphasized in pediatrics.
 - b. SGA are reasonable primary and secondary adjuncts if needed.
 - c. Pediatric endotracheal intubation has unclear benefit in the prehospital setting.
 - d. Pediatric endotracheal tube placement and maintenance requires significant training to achieve and maintain competency.

Notes/Educational Pearls

Key Considerations

1. Oxygen is a drug with an appropriate dose range and undesirable effects from both too much and too little supplementation. Effective oxygenation meets the oxygen saturation (SpO_2) target set for that specific patient in the context of their acute and chronic medical condition(s). Permissive hypoxia ($SPO_2 \geq 90\%$) may be appropriate in patients with COPD or other complex respiratory pathology
2. Adequate ventilation provides sufficient minute ventilation to meet the patient's acute respiratory and metabolic needs and is generally titrated to an $EtCO_2$ goal
3. Paramedics are less likely to attempt endotracheal intubation in children than adults with cardiac arrest and are more likely to be unsuccessful when intubating children. Complications such as malposition of the ET tube or aspiration can be nearly three times as common in children as compared to adults
4. Continuous waveform capnography is an important adjunct in the monitoring of patients with respiratory distress, respiratory failure, and those treated with positive pressure ventilation. It should be used as the standard to confirm placement of all advanced airways. It can also be helpful in the respiratory distress patient without an invasive airway to assess for causes of respiratory distress, adequacy of ventilation, progression toward respiratory failure, monitoring of BVM ventilation, as well as numerous other applications that provide insight into acute metabolic and infectious disease processes. Continuous waveform capnography:
 - a. Should be used for patients with invasive airways for
 - i. initial verification of correct airway placement
 - ii. continuous evidence of correct tube placement
 - iii. to adjust ventilatory rate
 1. to maintain $EtCO_2$ 35–45 in most patients
 2. to appropriately but not excessively hyperventilate patients with signs of herniation only to maintain $EtCO_2$ 30–35 (no lower than 30)
 3. to gradually decrease $EtCO_2$ in chronically and acutely severely hypercarbic patients including post-arrest
 - b. Is strongly encouraged in patients in cardiac arrest
 - i. to monitor quality of CPR
 - ii. as an early indicator of ROSC (rapid increase of 10–15 in $EtCO_2$)
 - iii. to assist in evaluating prognosis for survival
 - c. Should be used in spontaneously breathing patients who are:
 - i. on NIV
 - ii. in severe respiratory distress (e.g., receiving epinephrine, magnesium therapy)
 - d. In spontaneously breathing patients, waveform capnography can help with assessment of critically ill patients, for example: