   a. Pulse oximetry and $EtCO_2$ should be routinely used as an adjunct to other forms of respiratory monitoring
2. Airway
   a. Give supplemental oxygen. Escalate from a nasal cannula to a simple face mask to a non-breather mask to SPO_2 94-98%
   b. Suction the nose and/or mouth (via bulb or suction catheter) if excessive secretions are present
3. Inhaled medications should be administered to all children with croup in respiratory distress with signs of stridor at rest—these medications should be repeated at this dose with unlimited frequency for ongoing respiratory distress
   a. Epinephrine 5 mg (5 mL of 1 mg/mL solution) nebulized (may repeat in 20 minutes as needed), or
   b. Racemic epinephrine 0.5 mL of 2.25% solution mixed in 2.5 mL NS (may repeat in 20 minutes as needed)
   c. Humidified oxygen or mist therapy is **not** indicated
4. Dexamethasone 0.6 mg/kg oral, IV, or IM to maximum dose of 16 mg should be administered to patients with suspected croup
5. Utility of IV placement and fluids. IVs should only be placed in children with respiratory distress for clinical concerns of dehydration or when administering IV medications
6. Improvement of oxygenation and/or respiratory distress with non-invasive airway adjuncts
   a. Heliox for the treatment of croup can be considered for severe distress not responsive to more than 2 doses of epinephrine
   b. Continuous positive airway pressure (CPAP) should be administered for severe respiratory distress
   c. BVM ventilation should be utilized in children with respiratory failure
7. Supraglottic devices and intubation — should be utilized only if BVM ventilation fails. The airway should be managed in the least invasive way possible

Patient Safety Considerations

1. Routine use of lights and sirens is not recommended during transport
2. Patients who receive inhaled epinephrine should be transported to definitive care

Notes/Educational Pearls

Key Considerations

1. Upper airway obstruction can have inspiratory, expiratory, or biphasic stridor
2. Foreign bodies can mimic croup, it is important to ask about a possible choking event
3. Impending respiratory failure is indicated by:
   a. Change in mental status such as fatigue and listlessness
   b. Pallor
   c. Dusky appearance
   d. Decreased retractions
   e. Decreased breath sounds with decreasing stridor
4. Without stridor at rest or other evidence of respiratory distress, inhaled medications may not be necessary

Pertinent Assessment Findings

1. Respiratory distress (retractions, wheezing, stridor, accessory muscle use)