



3. Invasive airways do not improve bronchospasm. The airway should be managed in the least invasive way possible. Supraglottic devices and endotracheal intubation should be considered only if BVM ventilation fails
4. Positive pressure ventilation in the setting of bronchoconstriction, either via a supraglottic airway or intubation, increases the risk of air trapping which can lead to pneumothorax and cardiovascular collapse. These interventions should be reserved for situations of respiratory failure
5. The following medications should not be administered to manage bronchospasm as there is no evidence of patient benefit:
  - i. Inhaled magnesium sulfate
  - ii. Heliox

#### **Notes/Educational Pearls**

1. The combination of ipratropium with albuterol may decrease the need for hospital admission in certain patients
2. Magnesium sulfate may cause hypotension that will usually respond to a fluid bolus
3. Patient with acute heart failure and hypotension have high mortality
4. When assessing for cause of respiratory distress, CHF tends to be associated with lower levels of EtCO<sub>2</sub> compared to COPD. EtCO<sub>2</sub> values that are extremely low and high are markers of poor outcomes and need for intubation or ICU admission

#### **Key Considerations**

1. Nebulizer droplets can carry viral particles and other airborne pathogens, so additional PPE should be considered, including placement of a surgical mask over the nebulizer (if feasible) to limit droplet spread
2. Factors that have been shown to be associated with increased mortality from asthma include:
  - a. Severe asthma as evidenced by at least one of the following:
    - i. Prior near-fatal asthma (e.g., ICU admission or intubation/mechanical ventilation)
    - ii. Prior admissions for asthma or repeated ED visits, particularly if in the last year
    - iii. Heavy use of beta-agonist medications, or requiring three or more classes of asthma medication
  - b. Together with one or more behavioral or psychosocial contributors:
    - i. Medication noncompliance
    - ii. Alcohol or drug abuse
    - iii. Obesity
    - iv. Psychosis, depression, other psychiatric illness, or major tranquilizer use
    - v. Employment or income difficulties
    - vi. Severe domestic, marital, or legal stressors
3. Single dose dexamethasone has been found equally effective as several days dosing of other steroids, so dexamethasone is preferred over other po steroids
4. Acute heart failure is a common cause of pulmonary edema – other causes include:
  - a. Opioid overdose
  - b. High altitude exposure
  - c. Kidney failure or dialysis noncompliance
  - d. Lung damage caused by gases or severe infection