

SYMPTOMS: Respiratory distress with wheezing or decrease air entry in patients 2 years or older. May include expiratory wheezing (unless unable to move adequate air), signs of respiratory infection (fever, nasal congestion, cough, sore throat, and inhalation of irritant). This includes exacerbation of asthma or chronic obstructive pulmonary disease (COPD) and suspected pulmonary infection including pneumonia and acute bronchitis.

Patients under 2 years of age with wheezing -- *Pediatric Bronchiolitis guideline [P-3]*.

Assessment, Treatment and Interventions:

ALL LEVELS

1. History
 - a. Time of onset of symptoms
 - b. Associated symptoms (fever, cough, rhinorrhea, tongue and/or lip swelling rash, labored breathing, foreign body aspiration)
 - c. History of asthma or other breathing disorders
 - d. Exposures / triggers of symptoms (exercise, smoke, change in weather, upper respiratory infections)
 - e. Treatments given
 - f. Previously intubated.
 - g. Number of emergency department visits in the past year.
 - h. Number of ICU admissions.
 - i. Family history of asthma, eczema, or allergies.
2. Physical examination
 - a. Obtain and monitor vital signs including pulse, respirations and blood pressure.
 - b. Air entry (normal or diminished, prolonged expiratory phase).
 - c. Breath sounds (wheezes, crackles, rales, rhonchi, diminished, clear)
 Note: Wheezing might not be heard with severe bronchoconstriction. Patients with known asthma who complain of chest pain or shortness of breath should be treated, even if wheezing is absent.
 - d. Monitor for physical and mental signs of distress including grunting, nasal flaring, stridor, apprehension, anxiety, combativeness, hypoxia (less than 90% oxygen saturation), intercostal, subcostal or supraclavicular retractions, cyanosis.
 - e. Inability to speak full sentences (sign of shortness of breath).
 - f. Color (pallor, cyanosis, normal).
 - g. Mental status (alert, tired, lethargic, unresponsive).

EMR-O; EMT-R

3. Obtain SpO₂.
4. Administer oxygen as appropriate for dyspnea or distress with a target of achieving greater than 93% saturation for most acutely ill patients.
5. Manage the airway in the least invasive way possible, including bag-valve-mask (BVM).
6. Use non-visualized airways only if bag-valve-mask (BVM) ventilation fails.
7. Suction the nose and/or mouth (via bulb, Yankauer, suction catheter) if excessive secretions are present.
8. Administer albuterol [2.5-5mg nebulized or 6 puffs MDI] to all patients in respiratory distress with signs of bronchospasm. Repeat this dose with unlimited frequency for ongoing distress.

EMT-O

9. Administer Duo-neb (Albuterol with Ipratropium up to 3 doses).
10. Apply non-invasive positive pressure ventilation via CPAP or BiPAP.
11. Administer epinephrine [Adult: 0.3mg 1:1000 IM; repeat every 5-15 mins PRN. Pediatric: 0.15 mg 1:1000 IM; repeat every 5-15 mins PRN] **only** for impending respiratory failure when there are no signs of improvement.
12. Monitor ET_{CO}₂ and ECG as available.

AEMT-R

13. Place IV when there is clinical concern of dehydration to administer fluids or IV medication.

INT-O

14. Utilize intubation only if BVM ventilation has failed.

PARA-R

15. Administer magnesium sulfate [40mg/kg IV (maximum dose 2kg) over 10 minutes) for severe bronchoconstriction and concern for impending respiratory failure.

PARA-O

16. Steroids methylprednisolone [2mg/kg IV/IO (maximum dose 125mg)] or dexamethasone [0.5mg/kg IV/IO (maximum dose 16 mg)].

Key Considerations:

- COPD patients **not** in respiratory distress should be given oxygen to maintain adequate oxygen saturation above 90%.
- In the asthmatic patient, pharmacologic intervention should take priority over CPAP/BiPAP and be given in line with CPAP/BiPAP.
- Nebulizer droplets can carry viral particles, so additional PPE should be considered, including placement of a surgical mask over the nebulizer to limit droplet spread.
- Inhaled magnesium sulfate should not be administered.
- Heliox should not be administered.

Patient safety consideration:

Giving positive pressure 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.