CHOC Children's Primary Care Network
Acute Asthma Exacerbation Evidence-Based Guidelines for General Pediatrics

Definition: Acute asthma exacerbations or "asthma attacks" are episodes of progressive increases in cough, shortness of breath, wheezing, or chest tightness. Exacerbations are characterized by decreases in expiratory airflow that can be quantified by measurement of lung function (PEF or FEV1).

Inclusion Criteria: Patient > 2 years old, presents with signs and clinical symptoms consistent with an acute asthma exacerbation (see definition).
Exclusion Criteria: Age < 2 years old, no prior diagnosis of asthma or recurrent wheezing, concern for foreign body or vocal cord dysfunction, or any of the following acute or chronic medical conditions: chronic lung disease, bronchiolitis, bacterial pneumonia, neurological diseases, immunodeficiency diseases, and cardiac patients.

Complicated Asthma History Definition: *A patient with any of the following within the last year:*
- 1 or more hospital admission for asthma
- 2 or more ED visits for asthma symptoms
- 1 or more courses of oral steroids for asthma symptoms

Mild Symptoms
- Normal respiratory rate
- No clinical respiratory distress
- Good air movement
- Abnormal auscultatory findings limited to scattered expiratory wheezing, loose crackles
- Normal mental status
- Normal skin color

Treatment Modalities
- Consider bronchodilator (albuterol)
- MDI with valve holding chamber (up to 2-4 puffs) or nebulizer if appropriate x 1 dose

Good Response to Treatment
No wheezing or dyspnea following treatment.

Discharge home with following instructions and treatment plan:
- Continue inhaled albuterol/levalbuterol up to every 4 hours during first 24-48 hours, then every 6-8 hours, as needed
- For patients with complicated asthma history, consider having patient use scheduled albuterol/levalbuterol treatments every 4 hours for 48 hours, then every 6-8 hours until symptoms improve.
- Patients with complicated asthma history or with history of poor compliance should have a PCP follow-up scheduled within 1-2 days; Consider PCP f/u for patients otherwise
- Review AAP with patients and families

Incomplete Response to Treatment
Persistent wheezing and/or dyspnea
- Escalate to Moderate Symptoms Algorithm

Moderate Symptoms
- Mild/Moderate tachypnea
- Moderate respiratory distress limited to mild retractions, no nasal flaring
- Moderate air movement
- Abnormal auscultatory findings consistent of prolonged expiratory phase, inspiratory and expiratory wheezes and/or crackles
- Irritable, agitated mental status
- Skin color: pale to normal
- SpO2 >92%

Treatment Modalities
- Albuterol via nebulizer (every 20 minutes PRN up to 3 doses) or MDI (4-8 puffs every 20 minutes PRN up to 3 doses)
- Administer systemic corticosteroid
  Dexamethasone [0.6mg/kg up to max dose 16mg (IM or PO)] ***or*
  **Prednisone or Prednisolone [2mg/kg/day in 1-2 divided doses, up to max dose of 60mg]
- Consider ipratropium (up to 3 doses) [Patient Weight < 20kg: 250µg; ≥ 20 kg: 500µg]
- Place patient on pulse oximetry monitor
- Reassess after each treatment

Good Response to Treatment
No wheezing or dyspnea following treatment
- Discharge home with following instructions and treatment plan:
- Continue inhaled albuterol/levabuterol every 4 hours for 46 hours
- Administer a second dose of Dexamethasone 24 hours after the first dose or 3-10 additional days of Prednisolone
- Arrange follow-up appointment with PCP in 24-48 hours

Incomplete Response to Treatment
Persistent wheezing and/or dyspnea, failure of improvement after 3 treatments
- Consider escalating to the Severe Symptoms algorithm if indicated
- Consider and ED response or EMS to escalate care

Severe Symptoms
- Severe tachypnea
- Severe intercostal and substernal retractions, nasal flaring
- Poor air movement
- Abnormal auscultatory findings including diminished or absent breath sounds, severe wheezing, severe crackles, or marked prolonged expiration
- Lethargic Mental Status
- Cyanotic, dusky color
- SpO2 < 92%

Treatment Modalities
- Albuterol via nebulizer (every 20 minutes until transport arrives)
- Add ipratropium bromide [Patient Weight < 20kg: 250 µg; ≥ 20kg: 500µg]
- Administer systemic Dexamethasone [0.6mg/kg up to max dose 16mg] ***or*** Prednisone/ Prednisolone [2mg/kg/day in 1-2 divided doses, up to max dose of 60mg]
- Obtain pulse oximetry
- Administer supplemental O2
- **Call and ED response or EMS if off-campus**

Recommendations/Consdierations
- MDI is the preferred delivery method of albuterol and has been shown to be equally effective when compared to nebulizer when administered with spacer and a mask in the appropriate fashion.
- CXR is NOT indicated according to NHLBI guidelines. Consider ONLY if fever > 39, chest pain, severe distress or severe hypoxia (assuming appropriate protocols followed first as above).
- Avoid initiation of long acting beta2 agonists or leukotriene inhibitors as monotherapy.
- Levalbuterol (Xopenex): OK to use as alternative to albuterol in patients with adverse reaction to albuterol or strong parent preference.
- Be sure to update the Asthma Action Plan if it hasn't been updated in the last year.

Patient/Family Education
- Asthma action plan
- Asthma education should include but not be limited to: asthma disease process, medications, MDI and spacers, nebulizer (if applicable), peak flow (5 y/o & older), asthma triggers, asthma video/education booklet.
- Patients at high risk for non-compliance: refer to "Understanding Childhood Asthma Class"

Approved Evidence Based Medicine Committee 5-29-19

Reassess the appropriateness of Care Guidelines as condition changes and 24 hrs after admission. This guideline is a tool to aid clinical decision making. It is not a standard of care. The physician should deviate from the guideline when clinical judgment so indicates.

Asthma Care Guideline

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