A Stepwise Approach for the Diagnosis and Treatment of Pediatric Asthma

Diagnosing and Managing
Infants and Young Children
(5 years of age or younger) with Asthma

- Defining Asthma Risk
- *Rule of Twos* in Defining Persistent Asthma
- Diagnosis of Poor Control
- Stepwise Treatment of Asthma
- Patient Training Tips

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Defining Asthma **Risk**

Asthma Predictive Index for Children Under 5 Years

Early Wheezer Plus at Least One of Two Major Criteria or Two of Three Minor Criteria

Major Criteria	Minor Criteria
■ Parental asthma	■ Allergic rhinitis
■ Itchy skin rash (eczema)	■ Eosinophilia > 4%
	■ Wheezing apart from colds or viruses

(Castro-Rodriguez, et al. Am J Respir Crit Care Med 2000;162:1403–1406)

Diagnosis of Asthma: "Chest symptoms which occur or worsen with URIs, exercise, or at night are asthma until proven otherwise."

Rule of Twos in **Defining** Persistent Asthma

Patients Are Candidates for Maintenance Therapy if They Have…

- used their relief inhaler or nebulizer more than two times per week (not related to increased activity/exercise)
- had symptoms of wheezing, shortness of breath, rapid breathing, coughing, or chest tightness more than two times per week
- awakened at night or in the early morning with asthma symptoms more than twice a month
- more than two times/year:
  -refilled a quick-relief inhaler
  -received a "burst" of oral steroid
  -received unscheduled acute asthma care

*(*Rule of Twos is a trademark of the Baylor Health Care System)*

Diagnosis of Poor Control

Common Indications of Poor Control

Parameter	Frequency/Value
Daytime symptoms	>2 days/week
Nighttime symptoms	>1 night/week (especially if on 2 consecutive nights)
Physical activity	Lower than normal
Exacerbations	Frequent, moderate/ severe in severity
Absence from school	Frequent
Need for short-acting beta-agonist	>2 doses/week
FEV1 or peak flow*	<85% personal best
Peak flow diurnal variation*	>15%
Pharmacy refill rate	<50% of anticipated for controller medication
	Increased short-acting beta-agonist refills (>3 in 6 month period)
	Increased antibiotic use

*May be difficult to perform in children <5 years of age.

Stepwise **Treatment** of Asthma

Asthma Severity	Medications
INTERMITTENT *(symptoms < two times per week and two nights per month)*	**Short-acting beta-agonist (SABA) as needed**
MILD PERSISTENT *(symptoms > two times per week but < once a day and > two nights per month)*	**Low-dose inhaled corticosteroid + PRN SABA:** **Budesonide (Pulmicort® Respules)** 0.25 mg by jet nebulizer 1–2 times daily (FDA approved for >/= 1 year of age) **Budesonide (Pulmicort® Turbuhaler)** 1 puff twice daily (FDA approved for >/= 6 years of age) **Fluticasone (Flovent® MDI)** 44 mcg/puff 1–2 puffs twice daily (FDA approved >/= 12 years of age) used with Aerochamber® with or without face mask OR **Leukotriene receptor antagonist (LRA) + PRN SABA:** Montelukast (Singular®) 4 or 5 mg once daily (FDA approved >/= 2 years of age) Zafirlukast (Accolate®) 10 mg twice daily (FDA approved >/= 5 years of age)
MODERATE PERSISTENT *(daily symptoms and > one night per week)*	**Low-dose inhaled corticosteroid + LRA + PRN SABA** OR **Low-dose inhaled corticosteroid + long-acting beta-agonist (LABA) + PRN SABA:** **Salmeterol (Serevent® MDI)** 2 puffs twice daily (FDA approved >/=12 years of age) used with Aerochamber® with or without face mask **Salmeterol (Serevent® DPI)** 1 puff twice daily (FDA approved >/=4 years of age)
SEVERE PERSISTENT *(continual symptoms and frequent night time symptoms)*	**Higher-dose inhaled corticosteroid + LRA + LABA + PRN SABA:** **Budesonide (Pulmicort® Respules)** 0.25–0.5 mg by jet nebulizer twice daily **Budesonide (Pulmicort® Turbuhaler)** 1–2 puffs twice daily **Fluticasone (Flovent® MDI)** 44–110 mcg/puff 1–2 puffs twice daily used with Aerochamber® with or without face mask AND IF NEEDED **Oral Corticosteroids**

Why we need a
Stepwise Approach

- Children have the highest prevalence of asthma.
- Asthma is the most common chronic disease effecting over 5 million children.
- The majority of children develop asthma by the age of three years.
- Hospitalization rates, especially in children 5 years and younger, have continued to rise despite decreasing hospitalization rates for other childhood diseases.
- The use of inhaled corticosteroids in children under five years of age has significantly reduced the risk of hospitalization and death from asthma.

Prepared by the Dean Health System
Departments of Pediatric Allergy
and Pediatric Pulmonary

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Patient Training Tips

- Significant time and frequent office visits are required to educate and train a patient about asthma medications and inhalers. **Poor compliance is the most common cause of treatment failure!**
- Reinforce the use of daily control/prevent medication versus "relief" bronchodilators used to relieve symptoms.
- Each patient should demonstrate their inhaler/device technique at every office visit. Utilize placebo inhalers if patient unable to bring in their own.
- Remind patient to rinse their mouth with water and spit it out (do not swallow) after each use of an inhaled corticosteroid. Have the parent wash off the child's face and mouth after giving nebulized budesonide.
- For questions, contact the Dean Departments of Pediatric Allergy and Pediatric Pulmonary at :
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