

Persistent Asthma

FAST FACTS

6.5%

of children <18 have asthma

49%

of children with asthma have missed one or more school days due to asthma

WHEN TO REFER

Refer to pulmonary:

- Any red flags
- Complication such as bronchiectasis
- Multiple morbidities
- Unsure about or difficulty confirming asthma diagnosis

Refer to allergy and immunology:

- Suspected aeroallergen allergy/intolerance
- Suspected aeroallergen or food allergy/intolerance

Refer to cardiology:

- Symptoms suggestive of cardiac cause

Asthma is a heterogeneous disease, usually characterized by chronic inflammation. It is defined by a history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough. Symptoms vary over time and intensity, together with variable expiratory airflow limitations.

ASSESSMENT

Provide a history and physical exam (HPE). Assess patient history of characteristic symptom pattern.

Features typical of asthma include the following. If present, these increase asthma probability.

- Respiratory symptoms of wheeze, shortness of breath, cough and/or chest tightness
- Symptoms triggered by viral infection, exercise, allergen exposure, changes in weather, laughter, or irritants such as car exhaust fumes, smoke or strong smells

Symptoms are often worse at night or in early morning and vary in intensity/over time.

The following features decrease the probability that respiratory symptoms are due to asthma:

- Chest pain
- Chronic production of sputum
- Exercise-induced dyspnea with noisy inspiration
- Shortness of breath associated with dizziness, light-headedness or paresthesia

Perform or refer patient for bronchodilator reversibility spirometry test or other lung function test to assess evidence of variable expiratory airflow limitations. Test before treating whenever possible, as it is more difficult to confirm diagnosis afterward.

HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

The following factors increase the risk of asthma-related death.

- Not currently using inhaled corticosteroids
- Currently using or having recently stopped using oral corticosteroids (a marker of event severity)
- Food allergy in a patient with asthma
- History of near-fatal asthma requiring intubation and mechanical ventilation
- History of psychiatric disease or psychosocial problems
- Hospitalization or emergency care visit for asthma in the past year
- Overuse of short-acting beta-agonists (SABAs), especially use of more than one canister of albuterol (or equivalent) monthly
- Poor adherence with inhaled corticosteroids (ICS)-containing medications and/or poor adherence with (lack of) a written asthma action plan
- Comorbidities including pneumonia, diabetes and arrhythmias. These are independently associated with an increased risk of death after hospitalization for an asthma exacerbation.

MANAGEMENT

Refer to the following pages for management guidance.

If you have questions or need more information, contact the Division of Pulmonary Medicine at 513-636-6771.

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

Persistent Asthma

Children 5 years and younger* starting treatment

*adapted from GINA Update 2022; available at www.ginasthma.org

| Assess | | | | | |
|---------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------|
| | <ul style="list-style-type: none"> Confirmation of diagnosis Comorbidities | <ul style="list-style-type: none"> Symptom control and modifiable risk factors | <ul style="list-style-type: none"> Inhaler technique and adherence Child and parent preferences and goals | | |
| Consider This Step For Children With: | Infrequent viral wheezing or few interval symptoms | <p>Symptom pattern not consistent with asthma but wheezing episodes require SABA frequently, e.g., ≥ 3 per year.</p> <p>Give diagnostic trial for 3 months.</p> <p>Consider specialist referral.</p> <hr/> <p>Symptom pattern consistent with asthma, and asthma symptoms not well-controlled or ≥ 3 exacerbation per year.</p> | <p>Asthma diagnosis, and asthma not well-controlled on low dose ICS</p> <hr/> <p>Before stepping up, check for alternative diagnosis, check inhaler skills, review exposures and adherence.</p> | Asthma not well-controlled on double ICS | |
| | Preferred Controller | STEP 1 None | STEP 2 Daily low dose inhaled corticosteroids (ICS) (see www.Ginasthma.org for table of ICS dosing ranges based on age) | STEP 3 Double "low dose" ICS | |
| | Other Controller Options Limited indications, or less evidence for efficacy) | STEP 1 Consider intermittent short course ICS at onset of viral illness* | STEP 2 Daily leukotriene receptor antagonist (LTRA), OR intermittent short course ICS at onset of viral illness | STEP 3 Low dose ICS+LTRA Consider specialist referral | STEP 4 Continue controller AND Refer for expert advice |
| | Reliever | As-needed short-acting beta2-agonist | | | |

ICS: inhaled corticosteroids; LTRA: leukotriene receptor antagonist; SABA: short-acting beta2-agonist.

*Recommend high-dose ICS for age

Persistent Asthma

Children 6–11 years old with a diagnosis of asthma* starting treatment

*adapted from GINA Update 2022; available at www.ginasthma.org

| Assess | | | | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Confirmation of diagnosis Comorbidities | | <ul style="list-style-type: none"> Symptom control and modifiable risk factors | | <ul style="list-style-type: none"> Inhaler technique and adherence Child and parent preferences and goals | |
| Start here if: | Symptoms <2x/mo | Symptoms ≥2x/mo, but less than daily | Symptoms most days OR waking with asthma ≥1x/wk | Symptoms most days OR waking with asthma ≥1x/wk and low lung function | Short course OCS may also be needed for patients presenting with severely uncontrolled asthma |
| | STEP 1 Low dose ICS taken whenever SABA taken | STEP 2 Daily low dose inhaled corticosteroids (ICS) (see table of ICS dosing ranges based on age) | STEP 3 Low dose ICS-LABA, OR medium dose ICS, OR very low dose* ICS-formoterol maintenance and reliever (MART) | STEP 4 Medium dose ICS-LABA, OR low dose** ICS-formoterol maintenance and reliever therapy (MART). Refer for expert advice | STEP 5 Refer for phenotypic assessment ± higher dose ICS-LABA or add-on asthma biologic therapy, e.g. anti-IgE, anti-IL-4R |
| Preferred Controller To prevent exacerbations and control symptoms | | | | | |
| Other Controller Options Limited indications, or less evidence for efficacy) | STEP 1 Consider daily low dose ICS | STEP 2 Daily leukotriene receptor antagonist (LTRA), or low dose ICS taken whenever SABA taken | STEP 3 Low dose ICS+LTRA | STEP 4 Add tiotropium OR add LTRA | STEP 5 Add-on anti-IL5 OR, as last resort, consider add-on asthma biologic therapy, e.g. anti-IL-5 but consider side effects |
| Reliever | As-needed short-acting beta ₂ -agonist (or low dose ICS-formoterol reliever for MART as above) | | | | |

BUD-FORM: budesonide-formoterol; ICS: inhaled corticosteroids; LABA: long-acting beta2-agonist; LTRA: leukotriene receptor antagonist; MART: maintenance and reliever therapy with ICS-formoterol; OCS: oral corticosteroids; SABA: short-acting beta2-agonist.

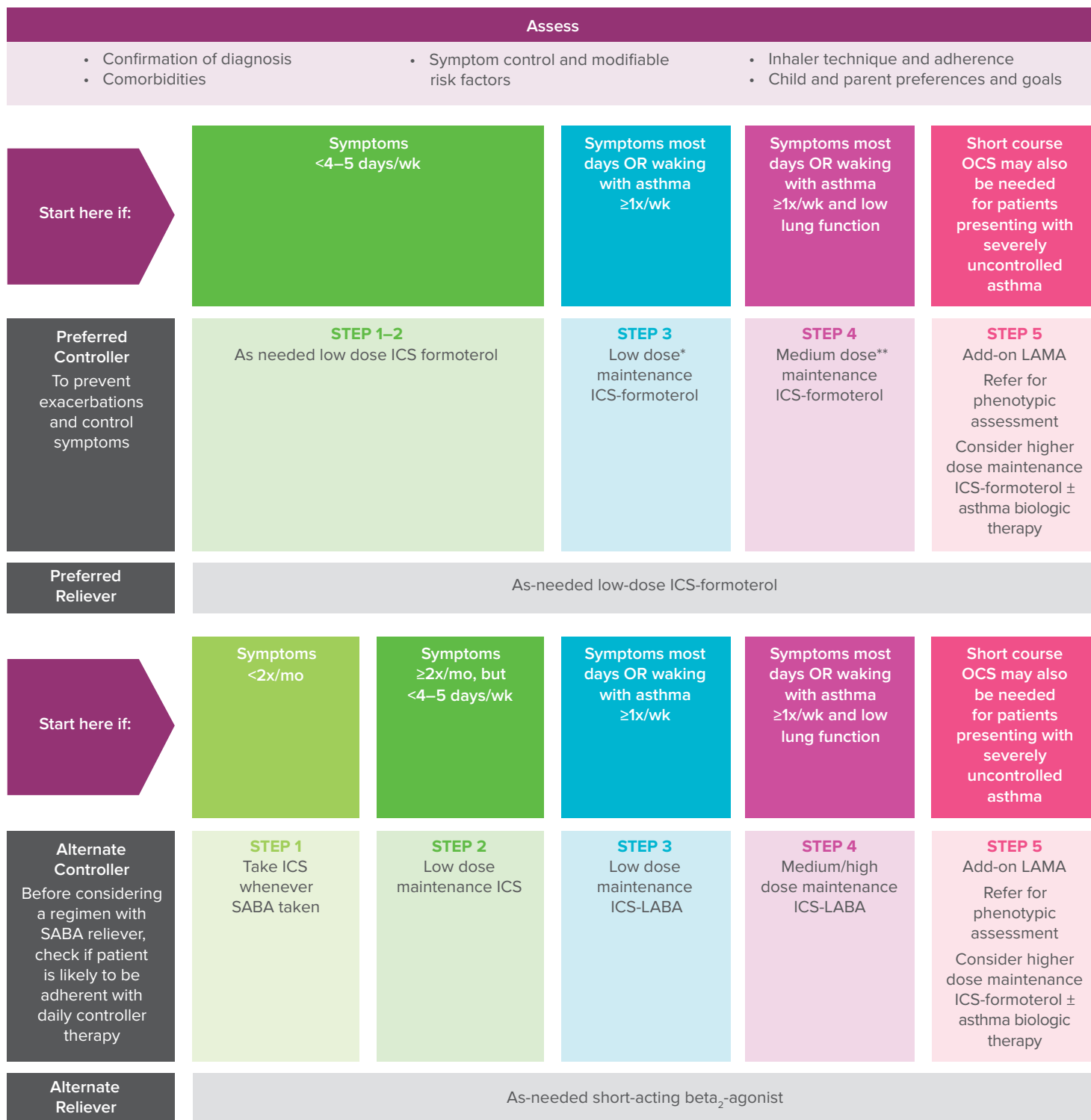
*Very low dose: 1 puff BUD-FORM 80/4.5 mcg

**Low dose: 1 puff BUD-FORM 160/4.5 mcg

Persistent Asthma

Adults and adolescents with a diagnosis of asthma* starting treatment

*adapted from GINA Update 2022; available at www.ginasthma.org



BUD-FORM: budesonide-formoterol; ICS: inhaled corticosteroids; LABA: long-acting beta2-agonist; LAMA: long-acting muscarinic antagonist; LTRA: leukotriene receptor antagonist; MART: maintenance and reliever therapy with ICS-formoterol; OCS: oral corticosteroids; SABA: short-acting beta2-agonist.

*Very low dose: 1 puff BUD-FORM 80/4.5 mcg

**Low dose: 1 puff BUD-FORM 160/4.5 mcg

For urgent issues, or to speak with the specialist on call 24/7, call the Physician Priority Link® at 1-888-987-7997.