

Clinical Practice Guidelines

Asthma

Objective

The purpose is to guide the appropriate diagnosis and management of Asthma.

Guideline

These are only guidelines, and are based on the best available information at the time. These may not be “all inclusive” as new medications and treatments are ever-evolving. These guidelines are updated by MDwise at least biannually as national guidelines are updated.

Asthma management to be provided in accordance with the current recommendations from the NHLBI: National Asthma Education and Prevention Program Guidelines which stress the assessment of asthma severity and control as a means of selecting and titrating treatment.

NHLBI: [Summary of Recommendations](#)

These guidelines have been adopted by the Indiana State Asthma Plan (A Strategic Plan for Addressing Asthma in Indiana). Guidelines are included in the MDwise Provider Manual and posted on the MDwise Web site. They are available individually as requested.

Asthma Definition and Pathophysiology

Asthma is a heterogeneous disease usually characterized by chronic airway inflammation.

It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and intensity, together with variable expiratory limitation.

Medication Options

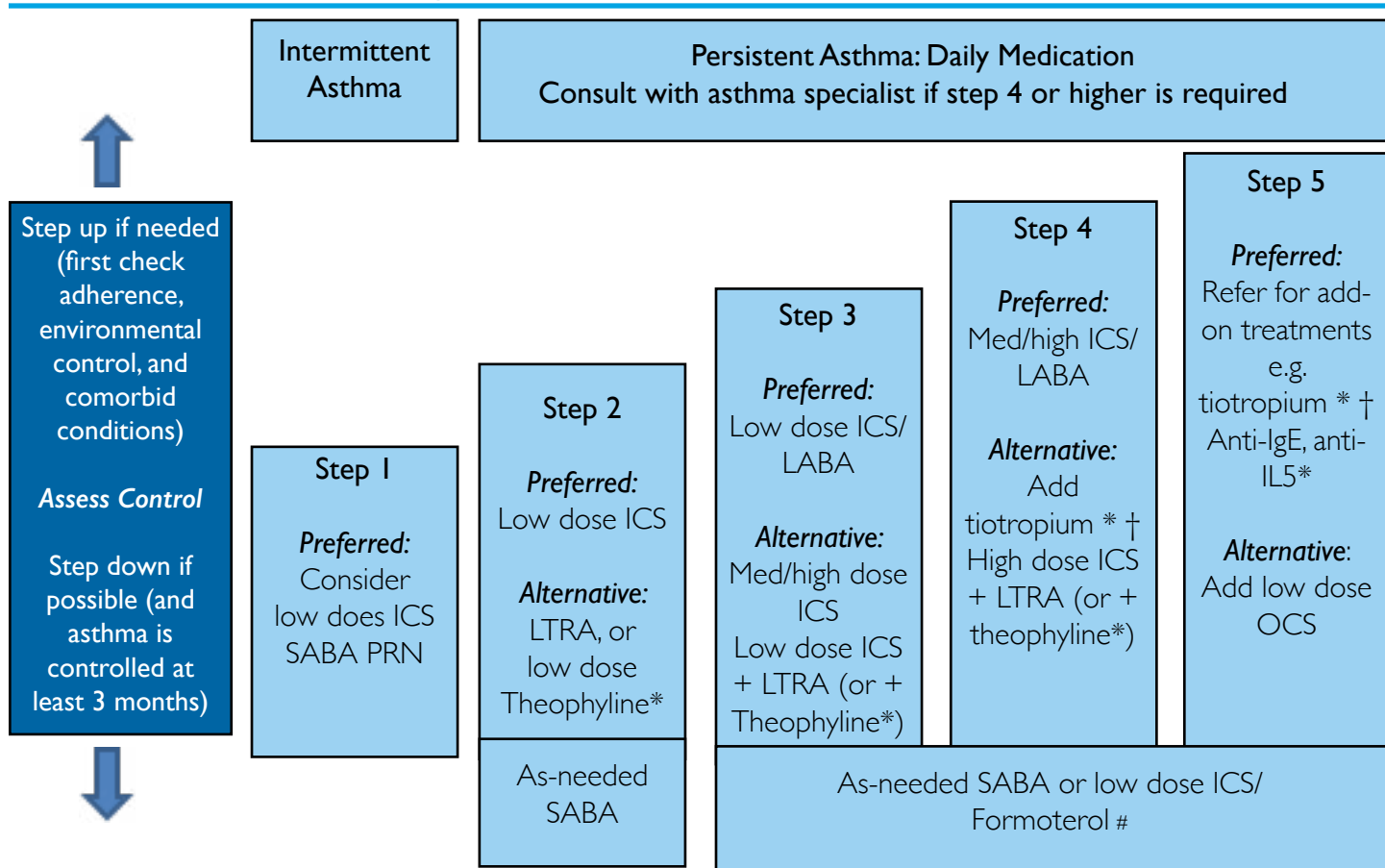
Long-term control medications are taken daily to achieve and maintain control of persistent asthma. The best options control inflammation.

- **Inhaled corticosteroids (ICS):** fluticasone, budesonide, beclomethasone, etc. Most potent and effective anti-inflammatory for long term control.
- **Leukotriene modifiers/leukotriene receptor antagonists (LTRA):** montelukast, zafirlukast, etc. Reduces bronchoconstriction caused by leukotriene pathway. Alternative therapy for long term control of mild asthma.
- **Long-Acting Beta-Agonists (LABA):** salmeterol, formoterol. Bronchodilators that relax smooth muscle. Used for long term control of asthma in combination with ICS; treatment of choice for combination with ICS in adults and children over age 12. Never to be used as monotherapy or rescue therapy.
- **Mast cell stabilizers:** cromolyn, nedocromil. Prevent release of inflammatory materials. Alternative medication for mild asthma. Used for long term control or preventative treatment before exercise or allergen exposure.
- **Omalizumab:** antibody drug that prevents binding of IgE. Adjunct therapy for long term control in patients age 12 or older who have allergy- induced asthma. Caution: risk of anaphylaxis with administration.
- **Theophylline:** a methylxanthine drug used for bronchodilation. Alternative adjunctive therapy with ICS for long term control. Blood monitoring necessary.

Quick-rescue medications are used to provide immediate relief of bronchoconstriction and asthma symptoms, or help relieve exacerbations.

- **Ipratropium:** short acting anti-cholinergic, decreases vagal tone of the airway. Used for short term relief/rescue therapy as alternative to SABA.
- **Short-Acting Beta-Agonists (SABA):** albuterol, levalbuterol, etc. Bronchodilators that relax smooth muscle. Treatment of choice for rescue therapy and prevention of exercise-induced bronchospasm.
- **Systemic corticosteroids:** prednisone, etc. Anti-inflammatory. Onset of action is >4 hours. Used for moderate to severe exacerbations in conjunction with SABAs.

Treatment Algorithm for Adults and Children Over 12 Years Old



- At each step:**
- Provide guided self-management education (self-monitoring + written action plan + regular review)
 - Treat modifiable risk factors and comorbidities, e.g. anxiety, obesity, and smoking
 - Advise about non-pharmacological therapies and strategies, e.g. physical activity, weight loss, avoidance of sensitizers where appropriate
 - Consider stepping up if ...uncontrolled symptoms, exacerbations or risks
 - Consider adding SLIT in adult HDM-sensitive patients with allergic rhinitis who have exacerbations despite ICS
 - Consider stepping down if ...symptoms controlled for 3 months + low risk for exacerbations. Ceasing ICS is not advised.

Quick-Relief Medication for all Patients

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of oral systemic corticosteroids may be needed.
- Use of SABA > 2 days a week for symptom relief generally indicates inadequate control and the need to step up treatment

ICS: inhaled corticosteroids; LABA: long-acting beta2-agonist; med: medium dose;

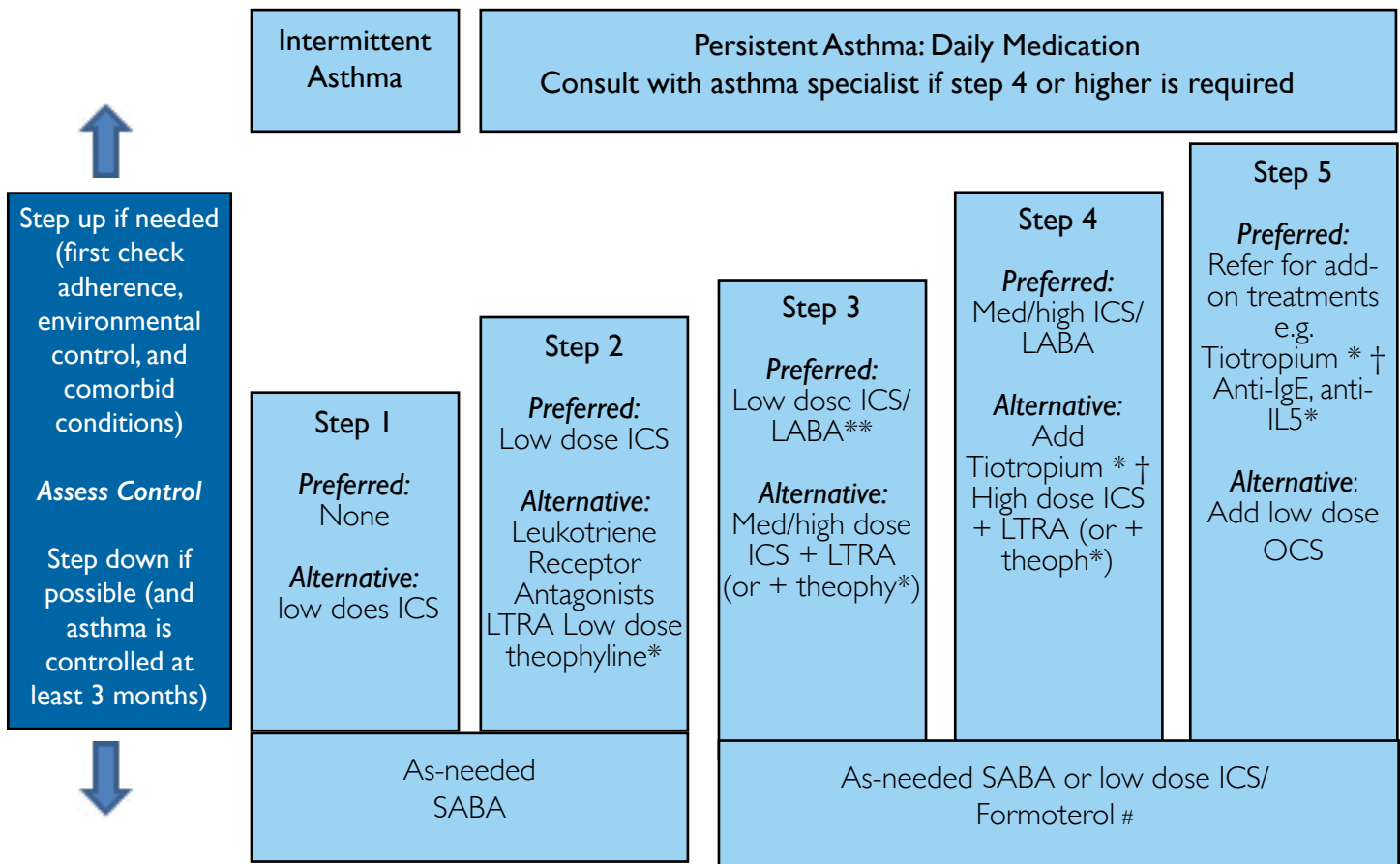
OCS: oral corticosteroids; SLIT: Sublingual immunotherapy.

* Not for children < 12

† Tiotropium by mist inhaler is an add on treatment for patients with a history of exacerbations; it is not indicated in children < 12

Low dose ICS/formoterol is the reliever medication for patients prescribed low dose budesonide/formoterol or low dose Beclometasone/formoterol maintenance and relief therapy.

Treatment Algorithm for Children Ages 6 - 11



At each step:

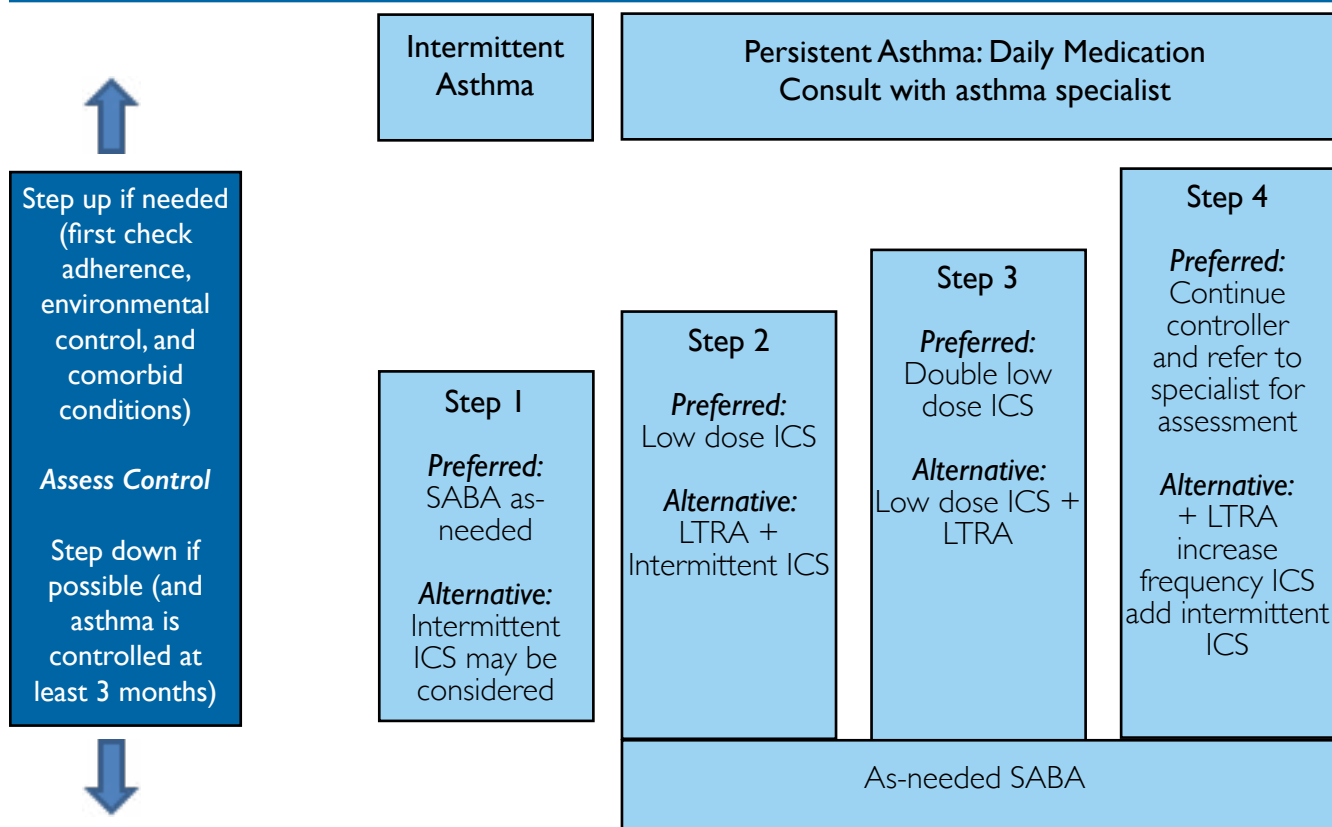
- Provide guided self-management education (self-monitoring + written action plan + regular review)
- Treat modifiable risk factors and comorbidities, e.g. anxiety, obesity, and smoking
- Advise about non-pharmacological therapies and strategies, e.g. physical activity, weight loss, avoidance of sensitizers where appropriate
- Consider stepping up if ...uncontrolled symptoms, exacerbations or risks, but check diagnosis, inhaler technique, and adherence first.
- Consider stepping down if ...symptoms controlled for 3 months + low risk for exacerbations. Ceasing ICS is not advised.

Concerns for all children:

- Assess symptom control, future risk, comorbidities
- Provide guided self-management education: Inhaler skills, written action plan, and adherence
- Advise on environmental control for smoke, allergens, and all air pollens that may trigger an attack.

ICS: inhaled corticosteroids
LTRA: Leukotriene receptor antagonist

Treatment Algorithm for Children Ages 0 - 5



Quick-Relief Medication for All Children < 5

- SABA via spacer with or without mask as needed for symptoms up to 3 treatments at 20-minute intervals if needed up to first hour.
- Medical treatment should initiate urgently if 6 or more puffs of inhaled SABA are needed for symptom relief within the first 2 hours, or the child did not recover within 24 hours.
- For viral respiratory infection with wheezing with no or few interval symptoms not consistent with asthma but wheezing: SABA every 4-6 hours up to 24 hours long with Physician consult. A short course of oral systemic corticosteroids if exacerbation is severe or patient has history of previous exacerbations might be considered.
- Caution: Frequent use of SABA may indicate the need to step up treatment. See text for recommendations on initiating daily long-term control therapy.

References

- [NIH NAEPP: Expert Panel Report 2007](#)
- [NIH NAEPP Expert Panel Summary Report August 5, 2008](#)
- [NIH NAEPP Expert Panel Report 3 Guidelines for Diagnosis and Management of Asthma, Partners Putting Guidelines Into Action December 2008](#)
- [A Strategic Plan for Addressing Asthma in Indiana \(Indiana State Asthma Plan\) 2004](#)
- [Strategies for Addressing Asthma in Homes](#)
- [Indiana Asthma Resource Guide August 2017](#)
- [The Indiana Plan to improve Outcomes April 2012](#)
- [Global Initiative for Asthma \(GINA\) 2017](#)