

# Asthma

## Clinical Practice Guideline



### Overview of the Condition/Disease

**Definition:** Asthma is a chronic condition that causes inflammation and narrowing of the airway tubes in the lungs. Asthma affects 26 million people in the United States and is the most common chronic disease seen in children.

**Pathophysiology:** The disease process involves overly responsive tissues lining the large and small airways in the lungs that, when triggered, cause inflammation, narrowing of these airways, and thus interfere with the free flow of air into the lungs.



### Best Practice Standards for Prevention and Management

**Education:** It is best for people with asthma to learn and avoid their triggers. Common triggers include cold air, tobacco and other kinds of smoke, dust mites, pests (cockroaches, mice), mold and pet fur. An asthma attack may also be triggered by bacterial infections (e.g., pneumonia), viral infections (e.g., influenza, respiratory syncytial virus [RSV]), gastroesophageal acid reflux (GERD), strenuous physical exercise, or hyperventilation in response to an emotional stressor.

**Interventions:** Asthma control typically requires a long-acting medication, used in conjunction with a rescue inhaler.

**Lifestyle changes:**

- Improving dietary habits (increase fruits, vegetables, foods rich in dietary fiber, omega-3 fatty acids, antioxidants, and vitamin C, while decreasing salt intake)
- Increasing activity levels (sedentary lifestyle is a modifiable risk factor)
- Meditation, yoga and breathing exercises



### Anticipating, Recognizing, and Responding to Symptoms



Seek timely medical attention when current interventions and/or medications are not managing symptoms.

**Potential symptoms:** Chest tightness, coughing, shortness of breath and wheezing. In a severe attack, blue lips due to decreased oxygen in the blood.

**Manifestation of symptoms:** Asthma symptoms usually come and go and are usually worse at night or in the morning. The symptoms will often arise after exposure to a trigger. Asthma can also change over time, so it is important to work closely with your primary care provider to track your symptoms and adjust asthma medications as needed.

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### Interventions to manage symptoms:

Asthma treatment is usually a combination therapy between a long-term treatment controller, as well as a fast-acting rescue inhaler for short term relief.

### Short-term relief medicines

Category	Purpose	Examples	Potential Side Effects
Inhaled short-acting beta agonists	Open the lungs by relaxing airway muscles. Designed to ease worsening symptoms or stop an asthma attack progress. Begin working in minutes and are effective for up to 4-6 hours. Not intended for daily use.	<ul style="list-style-type: none"> <li>Albuterol:(ProAir HFA, Ventolin HFA)</li> <li>Levalbuterol:(Xopenex HFA)</li> </ul>	<ul style="list-style-type: none"> <li>Jitteriness</li> <li>Heart palpitations</li> <li>If using your inhaler more often than prescribed, you may increase your risk for a serious asthma attack.</li> </ul>
Oral corticosteroids	Taken to treat acute severe asthma attacks. Usually prescribed initially at a higher dose, followed by gradual tapering of the amount of medication.	<ul style="list-style-type: none"> <li>Prednisone</li> <li>Methylprednisolone</li> </ul>	<p>Long-term use side effects:</p> <ul style="list-style-type: none"> <li>Cataracts</li> <li>Thinning bones (osteoporosis)</li> <li>Muscle weakness</li> <li>Decreased resistance to infection</li> <li>High blood pressure</li> <li>Reduced growth in children</li> </ul> <p>Short-term use side effects:</p> <ul style="list-style-type: none"> <li>Elevation of blood sugar</li> <li>Changes in mood or behavior</li> <li>Blurred vision</li> </ul>
Inhaled short acting anti-cholinergics	Usually used to treat emphysema or chronic bronchitis but is sometimes used to treat asthma attacks.	<ul style="list-style-type: none"> <li>Ipratropium (Atrovent HFA)</li> </ul>	<ul style="list-style-type: none"> <li>Jitteriness</li> <li>Heart palpitations</li> <li>If using your inhaler more often than prescribed, you may</li> </ul>

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			increase your risk for a serious asthma attack.
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### Long-term control medicines

Category	Purpose	Examples	Potential Side Effects
Inhaled corticosteroids	Reduce swelling and tightening in the airways. Most effective and most used.	<ul style="list-style-type: none"> <li>• Fluticasone (Flovent HFA)</li> <li>• Budesonide (Pulmicort Flexhaler)</li> <li>• Mometasone (Asmanex Twisthaler)</li> <li>• Beclomethasone (Qvar RediHaler)</li> <li>• Ciclesonide (Alvesco)</li> </ul>	<ul style="list-style-type: none"> <li>• Mouth and throat irritation</li> <li>• Oral yeast infections, also known as thrush (Use a spacer and rinse your mouth after each use)</li> </ul>
Leukotriene Modifiers	Block the effects of leukotrienes. Leukotrienes are immune system chemicals that cause inflammation and can trigger asthma attacks.	<ul style="list-style-type: none"> <li>• Montelukast (Singulair)</li> <li>• Zafirlukast (Accolate)</li> <li>• Zileuton (Zyflo)</li> </ul>	<ul style="list-style-type: none"> <li>• Extensive use may be associated with psychological reactions like agitation, aggression, hallucination, depression, and suicidal thinking. See your provider right away for any of those symptoms.</li> </ul>
Long-acting beta agonists (LABAs)	Bronchodilator medications that open airways and reduce swelling for at least 12 hours. They are used on a regular scheduled to control moderate to severe asthma and prevent nighttime symptoms.	<ul style="list-style-type: none"> <li>• Salmeterol (Serevent)</li> </ul>	<ul style="list-style-type: none"> <li>• Extensive use may be associated with severe asthma attacks. They are only taken in combination with an inhaled corticosteroid.</li> </ul>
Theophylline	Bronchodilator pill that relaxes the airways and decrease the lungs' response to irritants. May need regular	<ul style="list-style-type: none"> <li>• Theophylline (Theo-24)</li> </ul>	<ul style="list-style-type: none"> <li>• Insomnia</li> <li>• Gastroesophageal reflux</li> <li>• Nausea/vomiting</li> <li>• Stomach pain</li> </ul>

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	blood tests to ensure the person is getting the proper dose.		<ul style="list-style-type: none"> <li>Nervousness</li> </ul>
Combination Inhalers	Combination of a corticosteroid and a bronchodilator for moderate to severe asthma control.	<ul style="list-style-type: none"> <li>Fluticasone and salmeterol (Advair Diskus)</li> <li>Budesonide and formoterol (Symbicort)</li> <li>Mometasone and formoterol (Dulera)</li> <li>Fluticasone and vilanterol (Breo)</li> </ul>	<ul style="list-style-type: none"> <li>Mouth and throat irritation</li> <li>Oral yeast infection/thrush</li> <li>Extensive use may be associated with severe asthma attacks.</li> </ul>

### Immunotherapy (Allergy Shots)

- These may be an option if the person has allergic asthma that can't be controlled by avoiding triggers. Allergy skin tests are completed to determine which allergens trigger the asthma attack and then a series of injections containing small doses of those allergens to build up tolerance to them.

### Biologics

- These types of treatment are reserved for those who have severe asthma with symptoms that are not easily managed by control medications.
  - Omalizumab (Xolair)- Blocks the action of allergy-causing antibodies. Not recommended for children under the age of 12. In rare cases, this medication has triggered a life-threatening allergic reaction (anaphylaxis). Other possible side effects include an increased risk of heart and brain blood vessel problems.
- Newer class of biologic medications that target eosinophils and cytokines (which are involved in the development of inflammation in the linings of airways), to reduce their numbers in the body and thus lower inflammation.
  - Mepolizumab (Nucala)
  - Benralizumab (Fasenra)
  - Reslizumab (Cinqair)



### Guidelines and Process for Interdisciplinary Team

The care management team is responsible for educating members about asthma triggers/ self-management and emergency warning signs (e.g., worsening intensity and/or frequency of symptoms, loss of effectiveness of rescue inhalers).

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The care management team will educate the member on the importance of using their asthma controller medications consistently and only using rescue medications as needed.

The care management team will ensure members know how to use rescue treatments appropriately and effectively (inhaler, nebulizer).

The care management team will be in contact with member's Primary Care Provider and Pulmonologist as needed to ensure member's asthma condition is well maintained



### Cultural Considerations

According to the Asthma and Allergy Foundation of America - Black American, Hispanic and American Indian/ Alaska Native populations are disproportionately affected by asthma having the highest rates of death and hospitalization as it relates to the disease.

#### What causes these Differences?

- Structural determinants (systemic racism, segregation, discriminatory politics)
- Social determinants (diminished socioeconomic status, physical environment [e.g., substandard housing], social support and access to healthcare)
- Biological determinants (genes, ancestry)
- Behavioral determinants (tobacco use and adherence to medicines)

#### Strategies to Improve Asthma Health and Close the Gap

- Improve asthma self-management through education and coaching
- Speak out against socioeconomic and environmental injustice



### Quality Assurance Monitoring

Internal file reviews are completed by the Quality Team and internal staffing to ensure members with an asthma diagnosis have appropriate interventions for management of disease in their member centered plan. Specific to our SSI population of members, our Quality Team reviews their medication fills to ensure members are routinely using their asthma controller medications and only refilling their asthma rescue medications on an as needed basis. The Quality and Care Management teams will work together to identify members who may benefit from additional education and intervention from their primary care provider.

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## Additional Resources

Centers for Disease Control and Prevention  
Asthma and Allergy Foundation of America



## References

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