



## Asthma

### Definition and Physiology of Asthma

Asthma is defined as a chronic inflammatory disorder of the airways characterized by variable airway obstruction and bronchial hyperresponsiveness.<sup>2</sup> A person with asthma usually has some underlying swelling and an overproduction of sticky mucus in the airways. These two conditions, along with the contraction of muscles around the airways (called a bronchospasm), makes the size of the airway opening smaller and there is less space for oxygen to get through.<sup>1</sup>

### Signs, Symptoms, and Associated Conditions<sup>2</sup>

- Chest tightness (or chest pain in children)
- Coughing (especially at night)
- Prolonged shortness of breath (dyspnea)
- Difficulty sleeping
- Wheezing (especially after exercise)
- Inability to catch one's breath
- Physical activities affected by breathing difficulties
- Use of accessory muscles to breathe
- Breathing difficulty upon awakening in the morning
- Breathing difficulty when exposed to certain allergens or irritants
- Exercise-induced symptoms, such as coughing or wheezing
- Family history of asthma
- Personal history of atopy, including atopic dermatitis/eczema or hay fever (allergic rhinitis)

### Triggers: What Can Cause an Asthma Attack?<sup>2</sup>

A person with asthma may have certain allergens, irritants, or activities that can “trigger” an asthma attack. Often times a person may know what triggers their asthma and efforts can be made to avoid exposure to those triggers when possible.

#### **Common asthma triggers include:**

- Animal dander from warm-blooded, feathery, and/or furry pets (example: cats and dogs)
- Dust mites
- Environmental/secondhand tobacco smoke
- Air pollution (poor air quality)
- Chemicals or strong smells (example: perfume or cologne, cleaning solutions)
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- Aerobic exercise or any activity that causes a person to breathe rapidly
- Strong emotions (example: laughing, crying, or emotional stress)
- Breathing in cold air

### Medications<sup>1</sup>

Generally asthma can be controlled by avoiding triggers and using proper medications. There are two general types of asthma medications:

#### Long-Term or Controller Medications<sup>1</sup>

These medications treat airway swelling or inflammation. They are taken at least once daily and help prevent asthma attacks from happening. These medications reduce the swelling, prevent excess mucus from developing, and help prevent the muscles from contracting around the airways.

#### Rescue Medications<sup>1</sup>

These medications relax the muscles around the airways, making it easier to breathe right away. These medications give temporary relief and their effects can last up to 4 hours. These medications do not treat the swelling or mucus in the airways. When they wear off, the muscle tightening can return. These medications work quickly, usually within 5 minutes.

## Exercise Induced Asthma (EIA) <sup>1</sup>

Athletes breathe faster and deeper through their mouths when exercising. This air simultaneously cools and dries the airways. Because this air bypasses the warming, humidifying, and filtering effects of the nose, airborne pollutants, pollens, and other allergens are able to penetrate deeper into the lungs. This is thought to irritate and tighten the airways of athletes who have exercise induced asthma (EIA). EIA symptoms often occur after starting activity and worsen once exercise stops.

## What Can You Do When an Asthma Attack Occurs During Sports? <sup>1</sup>

1. Have the athlete **STOP** whatever activity he/she is doing.
2. Follow the athlete's Asthma Action Plan or emergency plan if there is one.
3. If the athlete has a prescribed **RESCUE INHALER**, have the athlete use it **IMMEDIATELY**.  
Generally, an athlete should:
  - Take 1 puff, hold breath for 10 seconds and exhale.
  - Wait 1-2 minutes between puffs.
  - Take another puff, hold breath for 10 seconds and exhale.
  - Have the athlete sit up and slowly breathe in through the nose and out through pursed lips
  - Give sips of room temperature water.
4. **REPEAT** above steps if **SYMPTOMS CONTINUE**
5. **ONLY IF** and **WHEN** symptoms are **COMPLETELY** gone can the athlete go back to playing
6. **IF SYMPTOMS REOCCUR** after the athlete resumes playing, repeat these steps and **DO NOT** allow the athlete to resume playing for the remainder of the game.

## Call 911 During an Asthma Attack If: <sup>1</sup>

- You are not sure what to do
- Rescue medications are not working (symptoms are getting worse, not better) or medications are unavailable
- The athlete's lips or fingernails are blue
- The athlete is having difficulty talking, walking, or drinking liquids
- The athlete's nostrils are flaring out
- You see neck, throat, or chest retractions
- The athlete is in obvious distress, there is a change in the level of consciousness, or the athlete is showing signs of confusion
- The athlete's condition is deteriorating

## General Information To Remember <sup>1 & 2</sup>

- Everyone can benefit from physical activity. People with EIA should be able to participate in any sport if their asthma is well controlled.
- Incorporating good warm-up and cool-down periods into activity can help reduce incidents of asthma attacks.
- Athletes are advised to make their coaches aware that they have asthma and should have their quick acting inhaler (if prescribed) easily accessible during practices/games.
- It is recommended that athletes with asthma that compete in cold weather wear a mask or scarf to warm the cold air they breathe.

## Additional Asthma Information and References

- ❖ The Coach's Asthma Clipboard Program (Winning With Asthma)<sup>1</sup> – [www.winningwithasthma.org](http://www.winningwithasthma.org)
- ❖ Minnesota Department of Health (Minnesota Asthma Program) – [www.health.state.mn.us/asthma](http://www.health.state.mn.us/asthma)
- ❖ Minnesota Asthma Coalition – [www.MNAsthma.org](http://www.MNAsthma.org)
- ❖ National Athletic Trainers' Association (Position Statement: Management of Asthma in Athletes)<sup>2</sup> - [www.nata.org/statements/position/asthma.pdf](http://www.nata.org/statements/position/asthma.pdf)