

UNIVERSITY STUDENT HEALTH SERVICES • Fact Sheet

ASTHMA

WHAT IS ASTHMA?

Asthma is a common chronic disease of the lungs, where the airways are extra sensitive to certain triggers, such as airborne allergens and irritants. Up to 70% of all adults with asthma have allergies that aggravate their asthma. Asthma symptoms can include coughing, wheezing, chest tightness, and shortness of breath.

WHAT HAPPENS DURING AN ATTACK?

An asthma attack consists of 2 primary components, bronchospasm and inflammation:

- Bronchospasm refers to the tightening of smooth muscle within the small airways that leads to narrowing of the airways.
- Inflammation causes the lining of the airways to swell and secrete more mucus, which further obstructs the airways.

HOW DO I CONTROL MY ASTHMA?

- The key to asthma management is avoiding triggers that can cause an asthma attack.
- Monitor your symptoms so that you know when you are getting into trouble.
- Take your medication(s) as prescribed by your healthcare provider. It is important to know the difference between rescue and controller medications and how to use them appropriately.
- Get the flu vaccine on a yearly basis! Patients with asthma are at higher risk for complications from the flu, including pneumonia and even death. Flu season typically runs from November to March. The flu vaccine is available at Student Health by mid-October and is free to all students.

WHAT CAN TRIGGER ASTHMA?

Each person with asthma reacts to a different set of triggers. Identifying your own triggers is a major step toward learning to control your asthma. Common triggers include:

- Allergens, such as pollen, dust, mold, feathers, animal dander (small scales from animal hair or feathers), foods, and food additives, such as sulfite (a preservative found in red wine, beer, dried fruit, processed potatoes, sauerkraut, and dehydrated soups).
- Irritants in the air, such as dirt, air pollution, smoke, gases, perfumes, and other odors.
- Respiratory infections, such as colds, the flu, sore throats, sinusitis, and bronchitis.
- Physical exertion, such as running or carrying heavy loads.
- Weather, such as extreme heat or cold, high humidity, and sudden changes in weather.
- GERD (gastroesophageal reflux disease) or heartburn, where stomach acid backs up into the esophagus.
- Medications, such as aspirin or related drugs (eg. ibuprofen, naproxen), some drugs used to treat glaucoma, and some drugs for high blood pressure (beta blockers).
- Emotional stress, such as excessive fear or excitement.

EXERCISE-INDUCED BRONCHOSPASM (EIB)

A smaller percentage of asthma sufferers are not affected by allergens. Instead, they experience asthma symptoms only during physical exercise.

- Symptoms generally peak 10 to 15 minutes after the start of exercise and resolve 20-30 minutes after stopping the activity.
- Taking a fast-acting bronchodilator, such as an albuterol inhaler, 10-15 minutes before exercise can help prevent symptoms.

HOW DO I AVOID AN ATTACK?

Know your triggers and limit your exposure to them. It's also important to know your body and when you need to step up treatment to keep your asthma under control.

■ Know Your Triggers

Avoid asthma triggers by implementing environmental control measures. If your symptoms are not controlled with these changes and allergy medications are not helping, consult your healthcare provider.

Pollen & Mold

- Close your windows and use the air conditioner when it's hot outside.
- Change the filter on your heating and cooling systems frequently.
- Keep mold under control by cleaning and airing out bathrooms, kitchens, and basements often.
- Keep humidity in your home under 50% with an air conditioner or a dehumidifier.

Dust

- If you are allergic to dust mites, wash bed linen weekly in hot water (over 130°F).
- Use airtight dust-proof covers on mattresses and pillows.
- Remove carpets, rugs, and drapes. If you cannot remove carpet, you can treat it with chemicals to reduce dust mites.
- Vacuum carpets, rugs, and upholstery once a week.
- Clean the blinds regularly.
- Use a damp cloth weekly to wipe surfaces where dust can collect, such as countertops, shelves, and windowsills.
- Minimize stuffed animals, dried flowers, and other objects that catch dust.
- Avoid the use of humidifiers in the home.

Smoke

- Do not smoke, and avoid any exposure to smoke.

Air pollution

- Avoid outside activity when air pollution levels are high.
- If you must be outside, limit activities to the early morning or after sunset.
- Use the EPA's Air Quality Index (AQI) to determine when pollution is high. An AQI over 100 indicates unhealthy air conditions.

Colds

- Reduce your exposure to respiratory illnesses by frequent hand washing and avoiding close contact with people who have colds.

Animals

- If you are allergic to your pet, keep your pet out of your bedroom.
- Allergy shots (desensitization) may be an option if you have health insurance.
- If symptoms are severe, you may have to find a new home for your pet.
- If you are visiting a friend who has a pet that you are allergic to, take your allergy medication ahead of time or meet in a neutral “no pet” location.

■ Monitor Your Condition

Know your own pattern of asthma symptoms so you are able to recognize early signs of worsening asthma.

Monitor Your Peak Expiratory Flow.

- Your peak expiratory flow (PEF) is how fast you can blow air out of your lungs. Monitoring your PEF regularly can help you tell when your asthma is getting worse.
- PEF can easily be measured at home by a hand-held plastic device known as a peak flow meter. Set the pointer to zero, take a deep breath, seal your lips around the mouthpiece, and blow as hard and fast as you can. Reset the pointer to zero and repeat. Record the best of 3 PEF values as your final measurement.
- Determine your “personal best” PEF by measuring your PEF twice a day (in the morning before taking medications and at bedtime) over a 2-week period when your asthma is under good control. Average your readings each day. Your personal best is the highest reading over this two-week period. Ignore any unusually high or low readings.
- A drop in your PEF can serve as an early warning sign, allowing you to start or alter treatment before an attack becomes severe.
 - ✓ A persistent drop in PEF below 80% of your personal best indicates the need for additional medications.
 - ✓ A persistent drop in PEF below 60% signals the need for immediate medical attention!

Plan Ahead!

- If a certain time of year (eg, allergy season) always causes worsening symptoms, start daily preventative medications (such as allergy medications, steroid nasal sprays, and/or steroid inhalers) just prior to the anticipated onset and continue throughout the season.
- Use your PEF to help determine when to start and stop these medications.

Don't Leave Home Without It!

- Always carry an albuterol inhaler on your person, along with any other medications you may need.

Know the “Rules of Two”!

The “Rules of Two” indicate that your asthma may not be well-controlled if you are:

- Having daytime symptoms more than 2 times a week.
- Having nighttime symptoms more than 2 times a month.
- Using 2 albuterol canisters a month. (Ideally, you should be using no more than 2 albuterol canisters a year!)
- If any of these apply to you, it is important to see your healthcare provider to adjust your treatment regimen.

WHAT MEDICATIONS ARE USED FOR ASTHMA?

Asthma medications are generally divided into 2 groups:

- Rescue medications (used to treat attacks) and
- Controller medications (used to prevent attacks).

These medications work by decreasing bronchospasm or inflammation in the airways.

■ **Rescue medications** are used to provide quick relief during an asthma attack. Most rescue meds are known as bronchodilators because they help the muscles around the airways relax, thereby decreasing bronchospasm and increasing airflow.

Beta-agonist inhaled bronchodilators are the most commonly used asthma meds.

- Examples include albuterol (Proventil, Ventolin, ProAir), levalbuterol (Xopenex), & pirbuterol (Maxair).
- Bronchodilators begin to work within minutes and can last up to 2-4 hours.
- These medicines should only be used for asthma attacks. They should not be taken on a regular basis except in those patients who need to take them prior to exercise.

Atrovent is an inhaled anticholinergic agent also used to treat bronchospasm.

- It is most commonly used in the emergency room if a patient is not responding to a beta-agonist bronchodilator.

Steroid pills may be used to treat severe asthma attacks. These pills do not belong to the class of steroids used by some athletes to build muscles.

- Steroids work by decreasing airway inflammation. Unlike bronchodilators, they take several hours to work.
- Steroids are used only when necessary because long-term use can lead to serious side effects, including stomach ulcers, elevated blood pressure, elevated blood sugars, osteoporosis, thinning of the skin, muscle weakness, and decreased resistance to infections.

■ **Controller medications** are used to keep asthma attacks from occurring. They work by treating airway inflammation, which is responsible for swelling of the airways and mucus plugging.

- Controller medications are typically needed if you meet any criteria in the “Rules of Two”.
- Controller medications must be taken every day (whether or not you are having symptoms!) in order to be effective. They will not provide immediate relief during an asthma attack.

Inhaled corticosteroids (ICS) are the most commonly used controller medications. They are strong anti-inflammatory medicines that can prevent long-term “remodeling” of lung tissue, in which the microscopic layers of the airways become disorganized and damaged.

- Commonly used ICS include Flovent, QVar, Asmanex, Azmacort, Aerobid, and Pulmicort.
- ICS are not meant for rescue because they take hours to days to start to work.
- Because steroid inhalers are delivered directly to the airways, they have very few of the side effects associated with steroid pills. However, cataract formation can occur with long-term use.
- Always rinse your mouth thoroughly (ideally with a mouthwash) or brush your teeth after using a steroid inhaler to prevent thrush (a yeast infection) from developing in your mouth.

■ Controller medications (continued)

Advair and Symbicort may be prescribed for control of moderate to severe asthma.

- These inhalers contain both an ICS (Flovent or Pulmicort) and a long-acting bronchodilator (Serevent or Foradil) that relaxes airways for up to 12 hours.
- Even though these medications contain a bronchodilator, they are not used to treat acute asthma attacks. Their role is to prevent attacks.
- These medications are not recommended for the treatment of mild asthma as they may increase the risk of fatal or near-fatal asthma attacks.

Singular is an anti-inflammatory medication that is a treatment option for mild asthma.

- It is a once daily pill that blocks leukotriene receptors in the allergic pathway.
- It is also a treatment option for exercise-induced bronchospasm in patients who require daily albuterol use.

Xolair is a treatment reserved for severe asthma and must be prescribed by a specialist.

- It is an injection that makes the immune system less reactive to allergic triggers.

■ **Over-the-counter medications** are NOT recommended for the treatment of asthma.

- They may relieve symptoms temporarily; however, in the long run, they do not provide adequate control and may mask symptoms requiring medical attention.
- The only effective drug treatments for asthma are those that are prescribed, monitored, and adjusted by a health care provider.

HOW DO I TREAT AN ASTHMA FLARE?

You should have a written asthma action plan with instructions given by your healthcare provider that details how to treat worsening asthma symptoms and when to seek emergency care.

■ During mild flare-ups:

- You may feel breathless when you walk or exercise but feel fine at rest.
- You can usually breathe well enough to talk in complete sentences.
- You may hear wheezing when you breathe out.
- Your peak expiratory flow (PEF) will be between 80-100% of your personal best.
- You usually respond well to your rescue inhaler.

■ During moderate flare-ups:

- You may feel breathless with physical activity but better at rest.
- You may not be able to talk in complete sentences without taking a breath.
- You may hear loud wheezing when breathing out.
- Your peak flow will be between 60-80% of your personal best.
- You may need your rescue inhaler more often as your asthma symptoms worsen in the daytime or you awaken more often at night.

■ During severe flare-ups:

- Breathing will be very difficult. You will feel breathless both with activity and at rest.
- You may only be able to get a few words out before needing to take another breath.
- You may continue to feel worse despite using your rescue medications.
- You may feel anxious or tense.
- Your peak flow readings will be less than 60% of your personal best.
- If you feel very tired and confused, you may be having a life-threatening attack and should call 911 or go to the emergency room immediately.