This presentation is designed to help coaches better understand asthma and how to help their asthmatic athletes succeed in sports.

The information here is not intended to take the place of directions from an athlete’s health care provider. Always follow the advice of the athlete’s health care provider.
Did you know that on a team of 15 players, you can anticipate at least one athlete having asthma?
First, a few facts...

- Asthma is one of the most common chronic childhood diseases, affecting approximately 7 million children and teens in the United States.
- Asthma is the leading cause of missed school days due to chronic illness.
- Asthma has no cure, but can be controlled with proper management.
- Most coaches feel like they could use more knowledge about how to help athletes with asthma!
So, why it is important for coaches to know about asthma?

Asthma of any severity can progress to a serious, life threatening asthma attack... meaning that even an athlete with mild asthma can have severe unexpected symptoms.

Exercise is a common trigger for asthma flares and some athletes have only exercise induced symptoms.

Symptoms can be prevented if asthma is well managed by an athlete and his/her healthcare provider.

An athlete can perform better and participate in almost any sport if his or her asthma is well controlled and breathing problems are recognized early.
What is asthma?

Why asthma makes it hard to breathe

Air enters the respiratory system from the nose and mouth and travels through the bronchial tubes.

In an asthmatic person, the muscles of the bronchial tubes tighten and thicken, and the air passages become inflamed and mucus-filled, making it difficult for air to move.

In a non-asthmatic person, the muscles around the bronchial tubes are relaxed and the tissue thin, allowing for easy airflow.

Inflamed bronchial tube of an asthmatic

Normal bronchial tube

Source: American Academy of Allergy, Asthma and Immunology
Key Things to Remember

- **Asthma has two main disease processes:**
  - **Bronchoconstriction:** Muscles around the airways constrict and tighten making the airways narrower.
  - **Inflammation:** Swelling in the airways narrows the diameter of the airway. Mucous is produced clogging the airways.

- Athletes have varying degrees of bronchoconstriction and inflammation.

- Albuterol, the quick-relief inhaler athletes carry during sports, works to relax the muscles around the airways, not to decrease the swelling.

- Daily long term inhaled corticosteroids (maintenance inhaler) are added by a healthcare provider if needed to help with swelling in the airways.
Common Symptoms

- Coughing, especially at night
- Wheezing or breaths that sound high pitched when exhaling
- Chest pain or tightness, frequent “side-aches”
- Shortness of, or gasping for breath
- Excessive fatigue not consistent with conditioning

*Note: Asthma effects people in different ways! Not every athlete will have the same symptoms.*
What triggers asthma symptoms?

- Allergens/Irritants
  - Animal dander, dust mites, tobacco smoke, air pollution, chemicals or strong smells, grasses, pollens
- Activities that cause rapid breathing (aerobic exercise)
- Strong emotions (like laughing, crying or stress)
- Breathing in cold air

Each individual has specific triggers unique to them!
What about athletes without a prior history of asthma?

- **Exercise induced bronchoconstriction or asthma** effects some people without a history of asthma.

- **How?** At rest, most people breathe through their nose. When athletes breathe faster and deeper during exercise, the air cools and dries the airways. This is thought to irritate and tighten the airways of some athletes.

- **Exercise induced asthma symptoms** usually occur within 3 to 8 minutes of starting exercise or worsens after exercise stops. Symptoms often may last for up to 60 minutes after exercise if no inhaler medication is given.
Preventing Exercise-induced Symptoms

- Use rescue or quick-relief medications
- Gradual warm up and cool down periods
- Protect airways from cold air
- Stay well hydrated
- Manage day to day asthma symptoms
- Make regular visits with a healthcare provider to review asthma management
Quick-relief Medications

- Most common are **Albuterol** (Ventolin, Proventil, Proair) or **Levalbuterol** (Xopenex).

- Athletes should take as directed by their health care provider (usually **2-4 puffs**) about 15-30 minutes before activity.

- Can be used again if the athlete starts experiencing asthma symptoms during an athletic activity.

- Works by **relaxing the muscles around the airways**. Takes 5-10 minutes to start working and the effect lasts for about 3-4 hours.
What if albuterol doesn’t help?

- **First**, make sure the athlete is using the albuterol correctly and with a spacer.

- **If used correctly** and the difficulty breathing is not improved by one to two doses of albuterol...
  - The athlete may have swelling in their airways making the diameter smaller in addition to the muscles tightening around the airways.
  - Remember, albuterol does not act on the swelling, only on the muscles tightening around the airways.

- If multiple doses of albuterol are needed for an athlete to improve, they should see a healthcare provider!

- If doses of albuterol are not improving symptoms and the athlete is still struggling to breathe, call 911!
Warming Up and Cooling Down

- Warm up for 15-20 minutes doing light, intermittent exercises (like walking, jogging or short sprints).
- Warm up should gradually work up to the intensity of activity to be performed.
- Cool down a minimum of 10 minutes.
Cold Weather or Winter Sports

- Have athletes warm up longer, for 30 to 60 minutes.
- Wear a mask or scarf to warm cold air before breathing it into the lungs.
- Take quick-relief medication 15 to 30 minutes before skiing, snowboarding, ice skating, etc.
Staying Hydrated

- Because exercise-induced asthma is related to cooling and drying of the airways, dehydration can make symptoms worse.
- Staying well hydrated can help an athlete manage asthma symptoms.
- Athletes should be encouraged to drink fluids prior to exercise and often throughout activity.
Air quality

- Be aware of outdoor air quality and pollution.
- People with asthma are more sensitive to air quality and it can be a trigger for an asthma attack.
- When the Air Quality Index (AQI) exceeds 100, athletes with asthma may experience problems with asthma.
- To check your local AQI, go to: http://www.airnow.gov/index.cfm?action=airnow.local_state&stateid=49&tab=0
It is 15 minutes into the 1\textsuperscript{st} half of the game and one of your starters is not playing like he usually does.

You notice this athlete having a hard time breathing on the field. He is bent over, breathing fast with a high pitched noise (a wheeze) as he exhales. You pull him out of the game and, when he is on the sideline, he says that it is hard to get air in and his chest hurts. He is coughing occasionally.

You know he has had occasional problems with asthma in the past and today his parents are not at the game to help him.

**What do you do as a coach?**
Asthma First Aid - Step 1

- Have the athlete stop whatever activity he or she is doing.
- Do not leave the athlete alone.
- Get his or her Asthma Action Plan, if available, and begin following it immediately.
Asthma First Aid - Step 2

- Have the athlete administer quick relief inhaler (albuterol) with a spacer, if available.

- Shake inhaler, exhale, release one puff, inhale, hold breath for 10 seconds, exhale and wait 1 minute before next puff. Repeat puffs until at directed dose.
  - Inhale slowly and deeply when using a spacer.
  - Without a spacer, hold inhaler just outside mouth and breath in quickly.

- Have the athlete sit up and breathe in slowly through nose and out through pursed lips. It can reassure the athlete if the coach does this with him.

- Provide sips of room temperature water to moisten the throat.
How to Use an Inhaler

St. Louis Children’s Living with Asthma DVD
http://www.stlouischildrens.org/content/medservices/demonstrationmetereddoseinhaler.htm
Spacers

• A small chamber used with an inhaler to slow down the medication and suspend it in the air so the athlete can breathe it deeply into the lungs.

• Using a spacer can increase the amount of medication that gets into the lungs and improve coordination with the inhaler.

• Encourage athletes to use spacers, if available.
Asthma First Aid - Step 3

- If the symptoms are **completely gone** after the albuterol, the athlete can return to playing.

- Yet, if symptoms continue or return again that day while playing, repeat step 2.
  - If requiring greater than 2 rounds of albuterol during a session, the athlete may not return to play that day.
Return to Play with Asthma - The 1-2-3 approach

1. Encourage the athlete to use an inhaler **before playing and games**, as it is important for prevention.

2. Using an inhaler **once** during the same session for symptoms is okay. Symptoms must be fully resolved before playing again.

3. But, if an inhaler is needed **another time** during the session due to symptoms, the athlete should be off the field for the rest of the day. It may be a sign that the athlete’s asthma may not be well controlled.
If no inhaler is available...

- Have an adult stay with the athlete at all times.
- Keep the athlete calm.
- Have the athlete sit up and breathe in slowly through the nose and out slowly through pursed lips. It can reassure the athlete if the coach does this with him.
- Provide sips of room temperature water to moisten the throat.
- Call 911, as the athlete may need more help!
When to call 911

- Lips or nail beds are blue
- Difficulty walking, talking or drinking liquids
- Quick-relief medications are not working, are unavailable, or have been taken too recently to give again
- Nostrils flaring
- Neck, throat or chest retractions (sucking in of skin between ribs or at the base of the neck as the muscles try to help pull air in)
- Athlete in obvious distress
- Change in athlete’s level of consciousness or signs of confusion
- Condition rapidly getting worse

Or if you are not sure what to do!!!
What if I can’t tell how sick the athlete is?

- Can use a peak flow meter on the field (if available) to get an objective measure of lung function.

- A peak flow meter measures how much air the athlete can blow out at once, which indicates how open (or narrowed) the airways are.

- Looking at where the value falls based on a percentage of personal best (or an average value for height) tells you how serious the asthma attack may be.
Asthma Zones

- Peak flow values can be used to place the athlete in a zone of control.

- Personal best peak flow should be determined preseason with help of a healthcare provider when the athlete is well.

- Then, percentages of that personal best (or estimated value per height - info included with the peak flow meter packaging) can be determined.

- These values are then used on the asthma action plan!
Using a Peak Flow Meter

St. Louis Children’s Living with Asthma DVD
http://www.stlouischildrens.org/content/medservices/demonstrationpeakflowmeter.htm
Example Asthma Action Plan

### GREEN ZONE

**GO! All clear!**

When you are in the **GREEN ZONE**, take the following controller medicine(s) every day.

<table>
<thead>
<tr>
<th>Controller medicines</th>
<th>How much to take</th>
<th>When to take it</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Symptoms to watch for:**
- Breathing is easy
- Can play, work and sleep without asthma symptoms

**Medicines to have available:**
- Albuterol

**Dosage:**
- 2-4 puffs every 4 hours as needed

**Spacer used:**
- Optichamber® with mask
- Optichamber® without mask

- Take this medicine as needed 10-20 minutes before sports or any other strenuous activity.

- Student may carry and use this medicine at school after approval by the School Nurse

### YELLOW ZONE

**Caution...**

When you are in the **YELLOW ZONE**, keep taking your **GREEN ZONE** controller medicine(s) every day and add the following reliever medicine(s) to help keep the asthma episodes from getting worse.

<table>
<thead>
<tr>
<th>Reliever medicine</th>
<th>How much to take</th>
<th>When to take it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol</td>
<td>2-4 puffs</td>
<td>every 4 hours as needed</td>
</tr>
</tbody>
</table>

**Symptoms to watch for:**
- Wake up at night
- Chest feels tight
- Chest sounds thick

**Medicines to have available:**
- Albuterol

**Dosage:**
- 2-4 puffs every 4 hours as needed

**Notes:**
- If you are in the **YELLOW ZONE** for more than 12-24 hours, call your doctor.
- If your breathing symptoms get worse, call your doctor.

**Student may carry and use this medicine at school after approval by the School Nurse**

### RED ZONE

**STOP! Medical Alert!**

When you are in the **RED ZONE**, start taking your **RED ZONE** medicine(s) and **Call Your Doctor NOW!**

**Symptoms to watch for:**
- Medicine is not helping
- Breathing is hard and fast
- Can't walk
- Breathing is wheezy
- Breathing is fast
- Breathing is noisy
- Breathing is hard to breathe

**Medicines to have available:**
- Albuterol

**Dosage:**
- 2-4 puffs every 4 hours as needed

**Notes:**
- Take these medicines until you talk with your doctor.
- If your symptoms do not get better and you can't reach your doctor, go to the emergency room or call 911 immediately.

This asthma action plan is good for one year beginning: [Date]

MD/NP/PA signature [Signature]

I give my permission for this asthma action plan to be used by the following, and for them to share information with each other about my child's asthma for one year beginning today, so that they can work together to help my child manage her/his asthma. This plan, when signed and dated, may replace the school's consent to administer medication form, and allows my child's medicine to be given at school.

- My child's school / School health office
- My child's clinic / Hospital
- My child's day care provider
- My child's home care agency
- My child's insurance
- My child's education program

If verbal / telephone consent, signatures of persons taking consent / witnessing: Parent / guardian signature

1) [Signature] 2) [Signature] Date [Date]
Teens and Asthma

- Teens are at higher risk for poor asthma health outcomes.
- May be due to the many changes and pressures during adolescence.
- Many adolescents feel that proper asthma management infringes on their desire for independence - one of the key developmental tasks of the teenage years.
In a focus group with teens with asthma, four themes emerged related to teens’ management of their asthma:

- **Wanting to be normal:** Teens want to be the same as their peers. Teens deal with this in different ways - some push beyond their limits and some feeling like quitting because they can’t “measure up”.

- **Unpredictability of the disease:** Unexpected asthma exacerbations require additional explanations to coaches and teachers.

- **Credibility of the teen with asthma:** Periodic problems with asthma seem to be tolerated by teachers/coaches but when problems are more consistent, there can be a lack of support.

- **Self-management issues:** Teens are transitioning to being more independent with asthma management. Feelings of invincibility can interfere with teens’ ability to make wise health care decisions.

Benefits of Exercise

- Aerobic training has been shown to improve cardiopulmonary fitness in kids with asthma.

- A structured aerobic and resistance training program can help improve breathlessness, endurance and aerobic capacity.

- “Exercise training” for asthma has been endorsed for all asthma subjects by the American College of Sports Medicine and the American Thoracic Society.

- The only sport that should not be done with asthma is scuba diving!
Exercise Training

- Benefits of exercise training include:
  - Increased participation in activities, improved emotional status, and decreased wheezing attacks! (Subjective)
  - Improved running performance and aerobic fitness! (Objective)

- Recommended mode of training is walking or any mode of aerobic exercise involving the large muscles (running, swimming, yoga, gymnastics, cycling).

- The American Thoracic Society recommends training at 65-75% of maximal work rate (predicted maximal heart rate), ideally for 20 to 30 minutes 2-5 days a week. Can do 2-3 minutes of high intensity intervals if continuous activity isn’t tolerated.

- Key is to gradually increase the intensity of physical activity while minimizing asthma symptoms (and still using albuterol before activity!)

- Routine exercise appears to be more protective than brief, high intensity exercise! Encourage your athletes to exercise routinely!

Coach’s Checklist for Working with Athletes with Asthma

✓ Start open communication with parents and athletes about asthma needs early in the season or pre-season.

✓ Have an Asthma Action Plan or asthma info for each person with asthma.

✓ Make sure athletes have the right inhaler and that the canister is full. Help athletes get the most out of their medication - encourage athletes to use a spacer with their inhalers!

✓ Medications should not be shared! If athletes are having problems or are out of medication, they should be seen by a healthcare provider.

✓ Be supportive.
  ✓ Do not leave an athlete having an asthma attack alone.
  ✓ Never encourage an athlete to “tough it out” and don’t allow others to tease the athlete.
  ✓ Never encourage a child who is wheezing to continue the activity.
  ✓ Help athletes train to meet their highest potential!
Resources

- Allergy and Asthma Network - Mothers of Asthmatics:


Additional Learning

The Coach’s Clipboard Program - Winning with Asthma:
An 30 minute online program for coaches about asthma.
http://www.winningwithasthma.org/

- Coach’s Asthma Booklet: http://www.health.state.mn.us/asthma/documents/coachbooklet.pdf
Opinions about this presentation?

• Help us continue to improve this presentation to better serve your needs.

• To give your opinions, go to http://www.surveymonkey.com/s/LWNKPWM and complete a brief, online survey.

Thanks!