Are Athletic Trainers Effectively Managing Athletes with Asthma? Tips and Tricks for the Field

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• I have no disclosures financial or otherwise to report.
Objectives for Athletic Trainers...

- Increase knowledge about asthma and learn treatment tips on how to prevent, manage, and reduce asthma exacerbations in the athletic population
- Increase knowledge about assessment of breath sounds when evaluating an asthmatic athlete
- Discuss most commonly used medications for asthmatic athletes
- Recognize the burden of asthma on the health care population
- Recognize barriers ATCs may face when implementing the strategies in actual sport settings and tips to overcome these obstacles
Athletics

• Breathing is often an overlooked part of athletics
• Breathe well=Perform well
Studies show need for more education...

- Athletic trainers may have frequent opportunities to identify asthma symptoms and assist athletes with management. However, few athletic trainers are very comfortable managing asthma, and most are unsatisfied with their asthma education.

Research...

• Electronic surveys were sent to 3,200 ATCs in NCAA sports medicine programs.
• 17% reported screening for EIB.
• 39% indicated a rescue inhaler doesn’t have to be available at all practices.
• 41% say an inhaler does not have to be present at all games.
• Researchers concluded that the majority of NCAA sports medicine are not adhering to guidelines established by the National Institutes of Health

• Med Sci Sports Exerc 2009 Apr; 41(4):737-41
Research Continued...

- Comparison of US Olympic Athletes during the 1984 Summer games vs. the 1996 Summer games.
- **ALL** Athletes responded to questions on the USOC Medical History Questionnaire regarding allergic and respiratory diseases.
- Approximately 11% of the athletes from 1984 had exercise induced asthma. More than 20% of the athletes in 1996 reported exercised induced asthma.
- Cycling and mountain bikers had the most reported cases; divers and weight lifters had the least reported cases.

Another study by the same research group...

- Evaluated 1998 Winter Olympic athletes who answered that they had asthma on the USOC Medical History Questionnaire.
- 21.9% of winter athletes reported asthma.
- Nordic skiing and short track skating had the highest incident; bobsled/luge, biathlon, and ski jumping had the least incidents.
- Asthma is more common with Winter Olympic athletes than Summer Olympic athletes.

Research...

• 100 competitive pediatric figure skaters from 5 Mid-Atlantic rinks competed pulmonary function tests. The results showed a 30% incidence of EIB in these athletes.

• Advised need for screening and education of youth participating in physically demanding, cold-weather sports.

Asthma Deaths in Athletics

- 7 year study examining autopsy reports
- 263 possible cases were identified
- Fatal asthma exacerbations were usually white male subjects between 10-20 years old
- Mild intermittent or persistent asthma by history was commonly identified
- Sudden fatal asthma exacerbations occur in both competitive and recreational athletes and can be precipitated by sporting activity.

Questions to ask...

- Does asthma education for athletic trainers help them feel more confident in providing asthma medical management for asthmatic athletes?
- Does asthma education for athletic trainers help decrease asthma exacerbations in athletes?
NATA Position Statement 2005

• Recommended guideline for management of asthma that leads to improvement in the quality of care athletic trainers and other health care professionals provide to asthmatic athletes, especially exercise induced asthma.

• 25 Recommendations including asthma identification and diagnosis, pulmonary function testing, asthma management, nonpharmacologic treatment, and asthma education

NATA Position Statement 2012

• Recommendations for prevention and screening, recognition and treatment of 10 of the most common conditions resulting in sudden death in organized sports.

• Asthma is included and a lot of the prevention and screening, recognition, and treatment recommendations suggested are very hard for the high school outreach athletic trainer to accomplish.

• Review of evidence-based literature for return to play criteria following acute exercise-induced bronchoconstriction showed NO agreed-upon protocol for safe return to sports.

• Recommendation that a specific detailed protocol for RTP would assist physicians and other health professionals make more confident health care decisions.

Frustrated Athletic Trainers...

• If none of the experts can agree on how to treat this condition what am I supposed to do with my athletes??
Asthma facts in Wisconsin...

• Lifetime asthma prevalence for WI adults has increased from 10% in 2000 to 13% in 2009.
• 10% of WI children had been diagnosed with asthma and close to 7% were living with the chronic disease.
• There were approximately 21,000 ER asthma-related visits in 2009 which cost more than 23 million dollars.
• Asthma costs millions of health care dollars and many of these costs are PREVENTABLE.

• (WI Department of Health Services Asthma Program) www.cdc.gov/asthma
New efforts in Wisconsin...

• WI Asthma Coalition partners with pharmacists around the state. The Asthma Care Fax program empowers pharmacists to alert primary care physicians if their patients are overusing asthma rescue medication.

• WI Asthma Coalition and Pharmacy Society of WI petitioned Medicaid to reimburse for spacers.

• Data showed despite asthma prevalence going up in WI, ER and hospital visits have gone down since these initiatives went in place.
WI Asthma Plan 2015-2020

• School flag program to alert the community of outdoor air quality
• Limit outdoor recess when air quality is poor
• Promote policies that limit exposure to diesel exhaust from school buses idling
• Walk through program with maintenance and janitorial staff yearly
• NOTHING addresses athletics in this plan
Wisconsin the Dairy State...

• The Survey of Health of Wisconsin found a significant increase in self-reported wheezing and a decrease in lung function among those living within 3 miles of industrial dairy operations, and the association increased among those living with 1.5 miles of the operations.

• University of WI School of Medicine and Public Health 2016
What is Asthma?

• A chronic airway obstruction secondary to inflammation and hyperresponsiveness to a variety of triggers and stimuli

• Exercise induced asthma is an asthma attack TRIGGERED by exercise

• Essentials of Primary Care Sports Medicine by Landry & Bernhardt 2003 Human Kinetics
Exercise Induced Asthma

• Symptoms occur 5-15 minutes AFTER strenuous exercise that spontaneously resolves in 1 hour
• Dehydration can cause EIA
Causes of Asthma

• Exact underlying cause remains unknown
• Allergic response
• Heredity
• Environmental factor
• Infection
• Psychosocial factors
• Socioeconomic factors
Classifications of Asthma

• 1. Mild Intermittent
• 2. Mild Persistent
• 3. Moderate Persistent
• 4. Severe Persistent
Asthma vs. Vocal Cord Dysfunction

- Asthma: breathing sounds like wheezing, struggle with EXHALATION, tightness in chest, gradual onset, gradual recovery.
- VCD: breathing sounds are high pitched and grating; struggle with INHALATION, tightness in throat, rapid onset, rapid recovery.

• American College of Sports Medicine; NATA.org; NATA news October 2015.
My child will outgrow asthma

• Asthma is a chronic lung disease
• There is **NO** cure
• Symptoms may lessen as a child grows HOWEVER the underlying aggravating factor of lung inflammation may not disappear.
• 50% children will suffer with asthma into adulthood.

Just like ARTHRITIS you **DO NOT** get rid of Asthma

You **MANAGE** it.

Symptoms are variable and change over time
Medications

• B2-Agonist: Proventil, Albuterol, Ventolin

• Anticholinergic/B2 Agonist Combination: Combivent, Ipratropium Bromide & Albuterol

• B2-Agonist and Corticosteroid Combination: Advair, Symbicort
Medication Management

• Long term control medications are taken DAILY (i.e. inhaled corticosteroids); will NOT provide quick relief

• Short term/Quick relief medications help relax the airway muscles to help relieve symptoms (short acting beta agonists aka SABA)

• If using short term medications greater than 2 times a week may need to consider increased long term control medications

• www.nhlbi.nih.gov
Parts of the Lung

- RUL, RML, RLL
- LUL, LLL
Breath sounds...

• Wheezes
• Diminished breathing
• Stridor
• Coarse Crackles
Anterior=upper lobes
Posterior=lower lobes
Using Inhalers Properly

• Long-term inhalers keep symptoms under control
• Rescue inhalers are used to provide quick, temporary relief for severe symptoms
• Most common inhaler mistake: failing to breathe out before placing the inhaler in mouth.
Spacers and Holding Chambers

• They improve the efficiency of an MDI
• If a patient exhales immediately following the activation of the inhaler they will clear the medication from the device and waste the dose
Monitoring Asthma During Athletic Events

• All athletes should assess the severity of their asthma with peak flow meters
How Athletic Trainers can help...

• Encourage spirometry or peak flow measurements
• Encourage pre-exercise treatment with an inhaled quick-acting beta agonist.
• Some athletes may need additional therapies (inhaled cromolyn, daily inhaled steroids, salmeterol, etc)
• Encourage a screening tool for your school to use
• If a compliant athlete responds poorly to treatment consider vocal cord dysfunction
Signs and Symptoms we tend to miss as Athletic Trainers

• Use of accessory muscles to breathe
• Symmetry of chest and ribs (lift up jersey and LOOK how athlete is breathing)
• An athlete who is well conditioned but doesn’t seem to be able to perform at the level of other athletes who do not have asthma
• How often the athlete is using their rescue inhaler
Accessory Muscles of Inspiration

• Scalenes

• Pec Major

• Sternoceleidomastoid

• Trapezius
Major signs and symptoms Athletic Trainers should be knowledgeable about:

- Chest tightness
- Coughing (especially at night)
- Dyspnea
- Difficulty sleeping
- Wheezing (especially after exercise)
- Inability to catch their breath
- Breathing difficulty upon awakening or when exposed to allergens or irritants
- Family history of asthma
Dysfunctional Breathing

• Belly breather
• General mouth respiration
• Use of accessory muscles as primary during inhalation
• Shallow and asymmetrical
Turf, Oils, Lotions, Rubs, Glues and Dusts
Environmental Issues Athletic Trainers face...

- Turf Fields
- Insecticides on grass fields
- Tape spray
- Cramer Gesic; Biofreeze, etc.
- Zamboni (Ice chemicals): Chlorine
- Fumes from plastics
- Microwave popcorn
- Air quality in Madison and surrounding areas
- Pollens during Spring and Fall
- Powders in gloves; TheraBand
Challenges for Athletic Trainers on the job...

• Convincing kids to use spacers with inhalers
• Too many inhalers and peak flow meters to keep track of. Can’t keep them all in your pocket yet if we let them get cold sitting in a medical kit they are less effective
• A **MINUTE** between puffs is really a long time in some sports
• How do I tell if the kid is just really out of shape or really has asthma?
“PUNT” with a spacer...

- Use a tape roll
- Toilet paper or paper towel roll
- Plastic water/soda bottle
- Roll up a piece of paper

**performance is variable** however better performance than no spacer.
Correct inhaler use...

- **Keep inhaler at room/body temperature**
- Shake inhaler
- Keep inhaler VERTICAL
- Breathe OUT and then take a quick puff IN and HOLD for 10 seconds
- Wait ONE minute before another puff (tell them 1 minute and you can usually get them to wait 15-30 seconds which is adequate)
Correct Inhaler Use

• If an athlete’s head is in a downward position not even using a spacer will deliver the aerolized medicine

• The athlete should have their head in a slightly extended position to improve delivery
Inhalers...

• Keep them out of the cold
• Keep them out of the humidity

• Yeah right...I’m an athletic trainer working in a high school

• **Reassess each year to make sure your athletes are using their inhalers correctly.
How many puffs should I let them have?
Nebulizers
On field management of an athlete having an asthma attack...

- Keep them sitting; don’t let them lie down
- Encourage them to slow their breathing down; DO NOT make them try to take a deep gulp of air
- Stay calm and get people away from them
- Don’t send a kid to the locker room/showers by themselves
Why do so many swimmers have asthma?

• Swimmer’s inhale large amounts of air that floats just above the water surface. They are swimming in chlorine gas or hypochlorite liquid. This can lead to possible micro aspirate water in the trachea or bronchi.

• The environment is conducive to kid’s with asthma (moist; few outdoor irritants)
Non-traditional Ways to Treat

• Buteyko breathing
• Bronchial thermoplasty