Coastal Carolina University
Athletic Training Department
Policy and Procedure Manual
Asthma Management
Revised/Reviewed 7/2011

INTRODUCTION:

Although the exact causes of asthma are unknown, several factors, including exercise, may induce an asthma attack. The majority of patients with asthma and patients with allergies will have exercise-induced bronchospasm (EIB). EIB usually occurs during or minutes after vigorous activity, reaches its peak 5-10 minutes after stopping the activity, and usually resolves in another 20-30 minutes. 10-12% of the general population has EIB; close to 50% of those with allergies (allergic rhinitis) have EIB. 70-90% of all asthmatics have EIB. Those with a family history of asthma are at risk for EIB. Some signs and symptoms of EIB are, shortness of breath, coughing, chest tightening, and wheezing.

MEDICATIONS:

Depending on the severity of asthma, medications can be taken on an as-needed basis (prn) or regularly to prevent or decrease breathing difficulty. Most of the medications fall into two major groups: quick relief medications and long-term control medications.

Quick relief medications are used to treat acute asthma symptoms or an asthma exacerbation. The most common quick relief medications are the short-acting beta-agonists that relieve asthma symptoms by relaxing the smooth muscles around the airways. Common beta-agonists include Proventil and Ventolin (albuterol), Maxair (pirbuterol), and Alupent (metaproterenol). Atrovent (ipatroprium), an anticholinergic, is a quick relief medication that opens the airways by blocking reflexes through nerves that control the smooth muscle around the airways. Steroid pills and syrups, such as Deltasone (prednisone), Medrol (methylprednisolone), and Prelone or Pediapred (Prednisolone) are very effective at reducing swelling and mucus production in the airways; however, these medications take 48-72 hours to take effect.

Long-term control medications are used daily to maintain control of asthma and prevent asthma symptoms. Intal (cromolyn sodium) and Tilade (nedocromil) are long-term control medications, which help prevent swelling in the airways. Inhaled steroids are also long-term control medications. In addition to reducing inflammation, they also reduce swelling inside the airways and may decrease mucus production. Common inhaled steroids include Vanceril, Vanceril DS, Beclovent, and Beclovent DS (beclomethasone), Azmacort (triamcinolone), Aerobid (flunisolide), Flovent (fluticasone), and Pulmicort (budesonide). Leukotriene modifiers are new long-term control medications. They may reduce swelling inside the airways and relax smooth muscles around the airways. Common leukotriene modifiers include Accolate (zafirlukast), Zyflo (zileuton), and Singulair (muntelukast). Another long-term control medication, Theophylline, relaxes the smooth muscle around the airways. Common theophyllines in oral form include Theo-Dur, Slo-Bid, Uniphyl, and UniDur. Serevent (salmeterol), in inhaler form, is also a long-term control medication. As a long-acting beta-antagonist, it opens the airways in the lungs by relaxing smooth muscles around the airways.

Inhaled Medications
Inhaled medications are delivered directly to the airways, which is useful for lung disease. Aerosol devices for inhaled medications may include the metered-dose inhaler (MDI), MDI with spacer, breath activated MDI, dry powder inhaler or nebulizer. The most commonly used inhaled medications are delivered by the MDI, with or without the spacer. There are few side-effects because the medicine goes right to the lungs and not to other body parts.

It is critical that the patient use the prescribed MDI correctly to get the full dosage and benefit from the medication. Unless the inhaler is used in the right manner much of the medicine may end up on the patient's tongue, the back of their throat, or in the air. Use of a spacer or holding chamber helps significantly with this problem and their use is strongly recommended. A spacer is a device that attaches to a MDI and holds the medication in its chamber long enough for the patient to inhale it in one or two slow deep breaths. This eliminates that possibility of inadequate medicine delivery from poor patient technique.

Using the MDI
The CCU athletic training staff may assist a student-athlete in the use of a prescribed MDI as follows:

- Remove the cap from MDI and hold the inhaler upright
- Shake the inhaler
- Tilt patient's head back slightly and have patient breathe out
- Open mouth with inhaler 1-2 inches away (or mouth to spacer mouthpiece if spacer available)
- Press down on the inhaler to release the medication as patient starts to breath in slowly
- Patient breathes in slowly for 3-5 seconds
- Patient holds breath for 10 seconds to allow the medication to reach deeply into the lungs
- Repeat puffs as prescribed; waiting 1 minute between puffs may permit the 2nd puff to go deeper into the lungs

If possible, ausculate breath sounds and measure peak expiratory flow rate (PEFR) prior to and after MDI administration.

Basic Life Support Treatment for Severe Asthma
Patients who have progressed to severe asthma experience a combination of the following: shortness of breath (>30 respirations/min), mental status changes (anxious, confused, combative, and drowsy), and inability to speak in sentences, sweaty and unable to lie down. If the patient is not responding to or is unable to properly use their MDI, the Athletic Training staff should:

- Call for EMS (if not on-site or in-route)
- Maintain a patient airway
- Suction any secretions
- Be prepared to assist ventilation with positive pressure ventilation with bag-valve-mask or mouth-to-mouth resuscitation
- Administer epinephrine by a prescribed auto-injector (refer to Epi-Pen Policies & Procedures)
- Initiate early emergency transport

TESTING:

When there is a question regarding if EIB is present in an athlete:

1. Treat the athlete prophylatically (i.e. with an Albuterol MDI) and watch the response or
2. Do treadmill testing and watch FEV1 results.
    a. With treadmill, do pre-FEV1 and post-FEV1 testing.
    b. When walking on a treadmill, heart rate should be ≥85% of max predicted ([220 – age] x 0.85)
    c. Measure FEV1 pre-treadmill and at 1, 3, 5, 10, and 15min intervals
    d. Post-treadmill readings:
        i. 15% -20% Decrease in FEV1 = Mild EIB
        ii. 20% - 40% Decrease in FEV1 = Moderate EIB
        iii. >40% Decrease in FEV1 = Severe EIB
            - Note: 0% - 10% Decrease in FEV1 is Normal
    e. All asthma/allergy medications should NOT be used for 24 hours prior to testing

FOLLOW-UP AND CARE:

All student-athletes with asthma will be seen by the Team Physician to have a medical plan formulated, review medications, and to have the student-athlete demonstrate proper MDI usage. This will be done on a yearly basis.