University of Georgia Sports Medicine
Asthma Medication Metered Dose Inhaler (MDI) Policies and Procedures

Revised 11/12/01

Asthma 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 it's peak 5-10 minutes after stopping the activity, and usually resolves in another 20-30 minutes.

Asthma 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 asthma symptoms or an asthma episode. 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 preventing swelling, 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 betaantagonist, it opens the airways in the lungs by relaxing smooth muscle 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 parts of the body.

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 the possibility of inadequate medicine delivery from poor patient technique.

Using the MDI

The UGA sports medicine 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 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 breathe 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, drowsy), 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 sports medicine staff should:

- call for EMS (if not on-site or in-route)
- maintain a patent airway
- suction any secretions
- administer oxygen therapy at 15 liters/minute with non-rebreather device
- be prepared to assist ventilation with positive pressure ventilation with bag-valve-mask
- administer epinephrine by a prescribed auto-injector (refer to Epi-Pen Policies and Procedures)
- initiate early emergency transport

Procedures for Training and Testing in Use of MDI

Personnel must complete a training session each year with review of signs and symptoms of asthma and instruction in the proper use of MDI with and without spacer.

Approved by _____ Medical Director Date: _____