



## Overview

Asthma and exercise induced asthma (EIA) are obstructive airway diseases associated with airway inflammation and narrowing.

The airways are sensitive to different environmental triggers which include dry air, dust, pet hair, pollen, pollution and exercise.

Environmental triggers cause the walls of the airways to become inflamed and mucus-filled making the airway tubes narrower and more difficult for air to pass through. The muscles surrounding the airways also tighten and thicken further contributing to airway narrowing.

Airflow becomes restricted when airway narrowing occurs resulting in individuals experiencing the following symptoms:

- › Wheezing when breathing out
- › Coughing
- › Chest tightness
- › Excess mucus production
- › Breathing difficulties

It is possible to only experience these symptoms following exercise and be free from asthma in all other settings. This is known as EIA and is caused by breathing in 'unconditioned' air during exercise. This 'unconditioned' air needs to be warmed, filtered, and humidified causing the airways and lungs to dry out and become inflamed.

## Medication options

If you do not use appropriate medication to prevent airway inflammation and narrowing then your health and performance are likely to suffer. Your doctor will be able to advise you on the most appropriate medications available.

Inhaled corticosteroids (typically brown, red and orange coloured inhalers) and inhaled beta-2 agonists (typically blue, green and purple coloured inhalers) are the most widely used medications.

### Inhaled corticosteroids (e.g. beclomethasone, budesonide, ciclesonide, fluticasone propionate)

Inhaled corticosteroids are the most effective drugs for long-term control of asthma and prevention of EIA. This medication reduces the occurrence of symptoms and the need to use short-acting beta-2 agonist medication by preventing airway inflammation. It takes a few days to start feeling its effects and approximately 2 weeks for it to work optimally.

### Inhaled beta-2 agonists

This medication reduces airway narrowing by relaxing the muscle around the airways. Beta-2 agonist medication does not act against airway inflammation so unless your asthma rarely affects you it is recommended that you use inhaled corticosteroid therapy alongside this medication. There are two types:

- **Short acting beta-2 agonists** (e.g. salbutamol, terbutaline) – This is emergency medication as it instantly relieves symptoms and continues to work for 3-4 hours. Using this medication 3-4 times a week is a good indication that your asthma or EIA is not being controlled effectively and you should consider consulting your doctor for a medication review.
- **Long acting beta-2 agonists** (e.g. formoterol, salmeterol) – Takes between 10-30 minutes to begin to work and continues to work for 8-12 hours. It is not recommended that long acting beta-2 agonists are used without using inhaled corticosteroid medication.

### Alternative treatment

Approximately 50% of athletes with asthma or EIA also have a condition called inspiratory stridor. This condition occurs during exercise and is characterised by a wheeze when breathing in. Reducing or eliminating the inspiratory stridor will help optimise your breathing efficiency. Specialist centres to help improve your breathing technique can be found by contacting UK Sport.



## Overuse of beta-2 agonist medication

Overuse of short-acting beta-2 agonist inhalers is an easy trap to fall into as the results from inhaling salbutamol or terbutaline are instant and can get you through a training session or competition.

A down side to treating your condition in this way is that:

- > The body can build up a tolerance to medication. This means that your medication will become less effective in relieving your symptoms requiring you to use higher doses;
- > The airways become more sensitive to asthma triggers, meaning you are likely to experience more severe and frequent symptoms;
- > Side effects such as increased heart rate and the shakes can occur;
- > You put yourself at risk of inadvertent doping if salbutamol medication is overused.



## How to ensure overuse of medication does not occur

### 1. INHALER TECHNIQUE

It is important to inhale medication properly to ensure the full dose reaches your lungs. A poor inhaler technique will lead to overuse as you will require further doses to relieve symptoms.

### 2. SELF MANAGEMENT

Keeping a diary is useful to:

- keep track of medication use;
- record how many times you have experienced symptoms linked to asthma or EIA;
- identify training sessions or conditions which cause a worsening of your symptoms.

### 3. REVIEWING MEDICATION

It is important to reassess with your GP or team doctor whether the medication you are using is still optimal for your condition every 12 months.



## Risk of inadvertent doping if salbutamol medication is overused

Even if you have a Therapeutic Use Exemption (TUE) to use your salbutamol inhaler you can still commit an anti-doping rule violation if salbutamol levels in your urine are found to be over 1000 nanograms per milliliter. If you are using your inhaler as prescribed you will not reach this level. You are only likely to reach this level if you overuse your inhaler by taking more than the maximum dose of medication you are permitted to take per day.

If you find your symptoms are persisting consult your prescribing doctor rather than overuse your inhaler. This will not only reduce the risk of committing an anti-doping rule violation but will also result in an improvement in the care you receive towards treating your symptoms.

## Acknowledgement

UK Sport would like to thank John Dickinson for his contribution in producing this leaflet. John is a respiratory assessment specialist in the screening of elite athletes for asthma and EIA. Through his work with the Olympic Medical Institute, English Institute of Sport, and Carnegie Centre of Performance and Wellbeing he has screened over a 1000 athletes.