



The impact of oral corticosteroids in the management of asthma

A digital leaflet for healthcare professionals

Allergy UK Helpline 01322 619898

www.allergyuk.org

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Asthma is a common long term lung condition, incorporating both allergic and non-allergic presentations of asthma. This condition causes reversible airflow obstruction, bronchial hyperresponsiveness and airway inflammation, and requires ongoing management.

Asthma affects around 12% of the UK population and can affect people of any age, gender, ethnic or socioeconomic background. It can carry a huge physical, socio and economic burden, having a significant effect on school, work, or social activities.

The causes of asthma are not fully understood, but there is known to be a strong interplay between genetic and environmental influences.

Allergic asthma is very common in atopic individuals who become sensitised to inhaled allergens. In allergic asthmatics, the airways are very reactive and become inflamed and narrow on exposure to certain allergen or irritant triggers. This can lead to symptoms including coughing, wheezing, difficulty in breathing and chest tightness.

Triggers for asthma include:



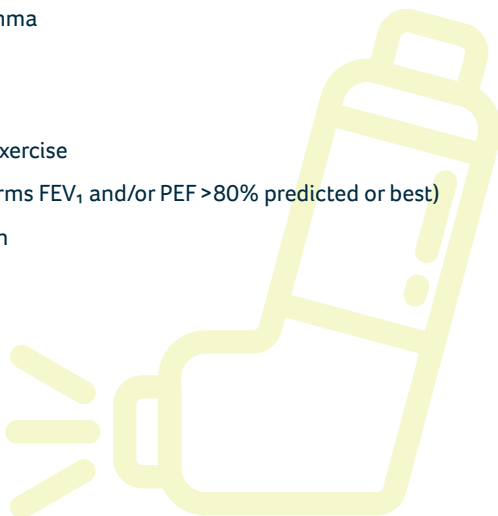
Therapeutic interventions

There is currently no therapeutic cure for asthma. However, for the majority of asthmatics, regular use of inhaled corticosteroids has been shown to be highly effective in preventing acute attacks of asthma. Importantly, topically applied inhaled steroids have a dramatically reduced side effect profile compared to oral corticosteroids. The introduction of short and long-acting bronchodilators, in combination with inhaled steroids, is a further major advance that reduces symptoms and maintains asthma control.

The development of novel treatments, including monoclonal antibodies, have revolutionised the treatment of severe or therapy refractory cases of asthma, and reduced the need to use medications that have serious side effects such as systemic corticosteroids. The use of allergen immunotherapy, where individual allergens such as house dust mite or grass pollen are identified as exacerbation triggers, represents a further therapeutic advance, now recognised as an alternative add-on treatment in carefully selected patients.

Aim of asthma treatment - Complete asthma control (SIGN BTS guidelines)

- no daytime symptoms
- no night-time awakening due to asthma
- no need for rescue medication
- no asthma attacks
- no limitations on activity including exercise
- normal lung function (in practical terms FEV_1 and/or PEF >80% predicted or best)
- minimal side effects from medication



Pharmacotherapy

Inhaled Corticosteroids or preventer inhalers – the main stay of asthma management – is inhaled corticosteroids and most individuals with asthma will benefit from a low dose of these to help manage their asthma. For the majority of allergic asthmatics, when used consistently and with the correct administration, they can help to reduce the inflammatory process that causes the swelling, inflammation, mucous production and very importantly reverse or prevent the scarring and remodelling process in the airway that can lead to more persistent or severe disease. Inhaled corticosteroids are the most commonly used treatment for asthma, delivering small doses of corticosteroid directly to the lungs. This method of delivery, introduced in the 1960s, has fewer side effects than oral corticosteroids and is safer for long term use.

Inhaled corticosteroids can often be combined with a Long Acting Bronchodilator (LABA) to help improve asthma control and reduce exacerbations, where asthma control is not achieved using inhaled corticosteroids alone or there is frequent use of a Short Acting Bronchodilator (SABA).

Side effects are often localised and can include a sore mouth or throat, hoarse voice, cough and oral thrush. However, there is the possibility of systemic side effect including adrenal suppression with high dose inhaled corticosteroids, especially in children who are also receiving corticosteroid treatment in other forms, including topical preparations for eczema and corticosteroid nasal spray for allergic rhinitis. These individuals should be monitored appropriately.

Inhaled corticosteroids are available as Metered Dose Inhalers (MDI), Dry Powder Inhalers (DPI), and Breath Activated Inhalers (BAI). In order to ensure the device you have prescribed is used correctly, they must be clearly explained and demonstrated to the patient. Another consideration when prescribing a MDI, is to also prescribe a spacer device with it, as this will increase the efficacy of drug delivery to the target area.

Short Acting Bronchodilator (SABA)

or reliver inhaler, the most common ingredients in reliever inhalers is salbutamol or formoterol. GINA guidelines 2022 recommend that SABA reliever inhalers are prescribed alongside inhaled corticosteroids even for patients with very mild occasional symptoms. This is due to the fact that airway inflammation is found in the majority of patients with asthma. SABA inhalers, if used regularly to treat asthma symptoms, may in fact reduce the bronchodilator response to SABA when needed during an asthma exacerbation and if overused (more than one cannister a month) may contribute to an increased risk of asthma exacerbations and fatal asthma.

Leukotriene Receptor Agonist (LTRA) can be a useful as a first line add on to therapy where allergy, especially allergic rhinitis affects asthma control. This therapy should be trialled for four to six weeks and if no improvement in symptoms control is noted after this period, then therapy should be discontinued. There are some reported side effects with this therapy, including neuropsychiatric reactions and regular monitoring for these side effects should be carried out.

Oral corticosteroids

Oral corticosteroids are reserved for acute exacerbations or more difficult to control asthma. When people with asthma experience an asthma exacerbation, a short course of oral corticosteroids can be an important and effective emergency treatment to relieve symptoms. However, this treatment strategy should only be used as a one-off emergency treatment and should not be used often or as a long-term strategy to treat difficult to manage asthma without specialist input due to the adverse side effects and long-term risks.

In contrast to inhaled steroids, oral steroid tablets are not selective and they affect

every system in the body including the immune system, gut, joints, bones, pancreas, eyes etc. This means that larger doses of steroid needs to be given with the inevitable risk of serious systemic side effects neuropsychiatric reactions as well as adrenal suppression particularly with long-term use (see box.1).

The GINA guidelines 2022 recommend that low dose corticosteroid therapy is considered in step 5 only as a last resort in the management of severe asthma due to this risk of systemic side effects.

Box.1 Oral corticosteroid side effects

- Weight gain
- Indigestion, heartburn
- Increased appetite, problems sleeping
- Mood changes, feeling irritable or anxious
- Sweating a lot
- Increased risk of infections
- High blood pressure
- Osteoporosis
- High blood sugar, diabetes
- Thin skin, easy bruising, and purple striae
- Cataract
- Glaucoma





Allergen immunotherapy is useful where specific individual allergen triggers are found to exacerbate or trigger symptoms. Allergen immunotherapy is highly effective for treating seasonal allergic rhinitis (hay fever) in patients who fail to respond to usual anti-allergic drugs (generally antihistamines and nasal steroid sprays). In hay fever sufferers, immunotherapy is especially effective in treating peak seasonal wheezing/asthma that occurs in patients with severe grass allergy.

Recent studies have shown that in house dust mite allergic asthmatics who have allergic rhinitis, house dust mite tablet immunotherapy is effective for reducing corticosteroids and for preventing asthma exacerbations. At present, house dust mite tablet immunotherapy should only be given to those asthmatics whose asthma is either well-controlled or at least partially controlled, in order to reduce the risk of systemic side effects. Although benefits are seen within two to four months, a course of allergen immunotherapy, whether administered by injection or as sublingual tablets, is generally given for three years. In contrast to anti-asthma/allergy medications, an advantage of immunotherapy is that three years treatment may provide long-term benefit for at least several years after discontinuation of the treatment.

Where immunotherapy is to be considered, the patient should be referred to an NHS specialist allergy centre for the appropriate diagnostic work up.

Biologic therapies – Monoclonal Antibodies (MABs)

Novel therapies, such as biologics, are designed to work by blocking or inhibiting specific chemical mediators or cytokines such as Interleukins (IL) in the immune system from mounting an allergic response and causing inflammation. Biologic therapies have been designed to target specific Interleukins (IL) depending on the type of allergic response and this is what makes the treatment effective at controlling the inflammatory process and reducing the potential for systemic side effects. Current available treatments for asthma, have been designed to target the TH2 allergic

immune response pathway with individual treatments available to target specific areas of the immune system anti IgE, interleukin (IL)-5 and its receptor and antibodies against the IL-4Ra subunit anti TSLP and anti TH2 receptors.

Research has shown that targeting these key cytokines can not only improve symptoms and reduce the need for 'rescue' or long term 'maintenance' with high dose corticosteroids, but has also been shown to have a therapeutic effect on other atopic disease comorbidities including eczema and allergic rhinitis.

Outlook

Asthma is a common and serious chronic inflammatory disorder of the lungs, which might become an even greater burden in the future due to increasing allergen exposures partly because of climate change, growing urbanisation and increased air pollution.

Recent advances in anti-inflammatory therapy for severe asthma have improved treatment choices and reduced the need for systemic corticosteroids in the more severely affected.



Measures to consider to reduce oral corticosteroid frequency

Ensure that the asthma is being treated in accordance with current guidelines – following the stepwise treatment approach to treating asthma and considering other treatment options where appropriate. Referral to a specialist asthma clinic if necessary.

Ensure other allergic conditions are treated – allergic rhinitis is a common reason for asthma exacerbations and can lead to an increase in hospital admissions if left untreated

Identify underlying causes for asthma exacerbations – common causes include, viral and bacterial infections, allergen and irritant triggers, medication, medical conditions including obesity and Laryngeal dysfunction. Also consider the impact of psychosocial factors including stress, anxiety, and other lifestyle factors such as smoking that may affect asthma control.

Question. For allergic asthma is there a pattern and frequency of exacerbations?
i.e. seasonal, timing, indoor, outdoor etc.

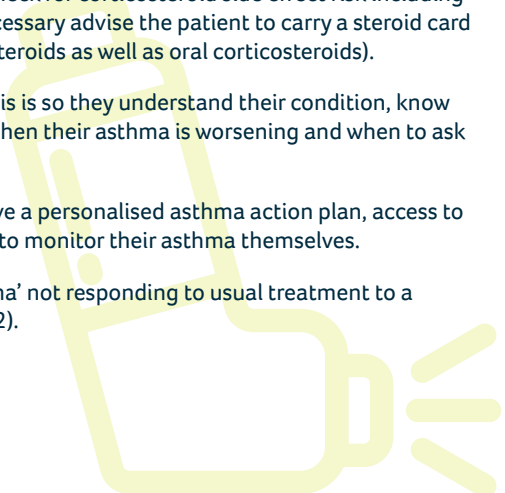
Trial avoidance or reduction in exposure measures to see if these help – common allergen avoidance measures can be put in place for pollen, pet dander and house dust mite where these allergens are identified as the potential cause of symptoms.

Check the patient is using their medication as directed and with the correct technique – patients often do not know how to use their inhalers and nasal corticosteroids correctly and will require a demonstration and follow up. Check for corticosteroid side effect risk including the risk of adrenal suppression and where necessary advise the patient to carry a steroid card (this includes high to medium-dose inhaled steroids as well as oral corticosteroids).

Educate and empower asthma sufferers – this is so they understand their condition, know their triggers, how to use medication, know when their asthma is worsening and when to ask for help.

Support self-management – ensure they have a personalised asthma action plan, access to necessary medications and peak flow meters to monitor their asthma themselves.

Refer – Patients with 'difficult or severe asthma' not responding to usual treatment to a specialist asthma clinic for assessment (Box. 2).



Box. 2 Signs of uncontrolled/ severe asthma

x2

Has the patient had more than two exacerbations of symptoms in the past week?



Has the patient required the use of a reliever inhaler two to three times during the week?



Are their symptoms interfering with day-to-day activities i.e. do they wake up at night with asthma symptoms or do they struggle or notice symptoms when carrying out usual activities?



Have they required more than two courses of oral corticosteroids during the last 12 months?



Have they required urgent or unscheduled appointments, A&E visits, or hospitalisation in the past 12 months?

Useful resources

GINA Global Initiative for Asthma treatment strategy GINA Pocket Guide 2022 Front Cover 5.5x8.5 (ginasthma.org)

ARIA Allergic rhinitis and its impact on asthma - Next-generation Allergic Rhinitis and Its Impact on Asthma (ARIA) guidelines for allergic rhinitis based on Grading of Recommendations Assessment, Development and Evaluation (GRADE) and real-world evidence - PubMed (nih.gov)

Euforea - European forum for research and education in allergy and airways disease Euforea | Allergic Rhinitis Pocket Guide

SIGN BTS - SIGN and BTS management of asthma in adults | Independent professional body guideline | Guidelines

NICE Overview | Asthma: diagnosis, monitoring and chronic asthma management | Guidance | NICE

Primary care respiratory group - Inspiring best practice in respiratory care | Primary Care Respiratory Society (pcrs-uk.org)

Guidance on inhaled corticosteroids - <https://www.respiratoryfutures.org.uk/media/1704/sfd10680-nhs-high-dose-ics-safety-card-guidance-notes-1.pdf>

Allergy UK <https://www.allergyuk.org/>

Asthma UK <https://www.asthma.org.uk/>

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We're here to help

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