Responsible prescribing for asthma and COPD

5 key points

1. Effective use of inhalers will benefit patients and reduce costs

2. Inhaled steroids at the lowest appropriate dose should be used for persistent asthma

3. Once asthma is under control, consider cautiously stepping down treatment

4. COPD patients should receive regular bronchodilator treatment

5. Inhaled steroids for COPD should be commenced in moderate/severe disease

In this article...

- How drug treatment of asthma and COPD differs
- Nurses’ roles in prescribing and encouraging adherence
- Why it is vital to choose the right inhaler

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Long-acting bronchodilators can be tried if corticosteroids fail to control asthma.
Inhaled corticosteroids in COPD

Corticosteroids are also used in COPD to treat and reduce inflammation in the airways. However, because COPD is a progressive disease, corticosteroids do not produce the dramatic improvements that can be seen when they are used in asthma. They are used in patients with moderate or severe COPD (forced expiratory volume in one second (FEV1) <50% predicted) who have had two or more exacerbations requiring treatment with antibiotics or oral corticosteroids in a 12-month period (NICE, 2010).

There is no good evidence that inhaled corticosteroids improve survival in people with COPD, or reduce the rate of FEV1 decline, but they may reduce the frequency of COPD exacerbations, and improve quality of life (Burge, 2000).

**Adverse effects**

Local side-effects of inhaled corticosteroids include candidiasis of throat and mouth and/or hoarse voice. Cleaning the teeth and rinsing the mouth after inhalation may reduce these. Correcting inhaler technique and/or adding a spacer device to a metered dose inhaler may reduce oropharyngeal deposition (BTS/SIGN, 2012).

High-dose inhaled corticosteroids may contribute to corticosteroid-induced osteoporosis. They also carry a small risk of glaucoma or cataracts and, if used for prolonged periods, may cause adrenal suppression (Joint Formulary Committee, 2012).

**Bromchodilators**

Bromchodilators may be short acting or long acting. Beta-agonists have a direct action on the beta2-receptors, and reduce bronchospasm. They are licensed for both asthma and COPD.

**Short-acting bromchodilators**

Inhaled short-acting beta2-agonist bromchodilators (SABAs), such as salbutamol and terbutaline, are effective in 5-15 minutes and have a 2-4 hour bromchodilator effect. They are prescribed on an “as needed” basis for mild intermittent asthma at step 3 of the BTS/SIGN guideline (2012) and for relief of breathlessness and exercise limitation in COPD (NICE, 2010).

**Long-acting bromchodilators**

The inhaled long-acting beta2-agonist bromchodilators (LABAs) salmeterol and formoterol have a 9-12 hour duration of action. Salmeterol has an effect within 30 minutes and formoterol has a faster onset. In asthma, they are used at step 3 of the BTS/SIGN guideline, as an add-on to inhaled corticosteroid therapy to improve symptom control, and lung function and reduce exacerbations. Long-acting beta-agonists should be taken twice a day and should not be used for the relief of an acute exacerbation of asthma.

The BTS/SIGN guideline for asthma recommends the addition of a LABA to an inhaled corticosteroid only if regular use of standard-dose inhaled corticosteroids has failed to control asthma adequately, and states that such an addition should be treated as a therapeutic trial. If there is no response to treatment, the LABA should be discontinued. If there has been partial benefit, it should be continued, and the dose of inhaled corticosteroid increased (up to 800mcg/day for adults and adolescents, 400mcg/day for children aged 5-12 years).

Along with the above LABAs, indacaterol has a licence as monotherapy for COPD (NICE, 2010). As a new product, it is subject to monitoring under the Medicines and Healthcare products Regulatory Agency’s “black triangle” scheme (MHRA, 2012).

**Combination inhalers**

Although there is no clinical difference between using an inhaled corticosteroid and a LABA in a single or in separate inhalers, combination preparations are recommended for asthma at step 3 and beyond (BTS/SIGN, 2012). A combination LABAICS may be appropriate for COPD when an inhaled steroid is required (Burge, 2000).

Combination inhalers may improve adherence as regular therapy will necessitate the use of only one inhaler (Ni Chroinin et al, 2010). Combining can also reduce prescription costs to the patient. However, reviews of clinical practice have raised questions on the prescribing of inhaled corticosteroids, including whether inappropriately high doses are being prescribed in combination inhalers. It is important to review the cost of the inhaler/medication combination to prescribe the most appropriate and cost-efficient inhaler (NHS Midlands and East PresQIPP, 2012). In addition, NICE (2008; 2007) recommends the choice of combination product should be made on an individual basis.
Discussion

Stepping down in asthma

Regular review of patients is clinically important and stepping down therapy should be considered when good long-term asthma control has been achieved.

Health professionals should focus on stepping down treatment with inhaled corticosteroids and LABAs, where appropriate, to inhaled corticosteroids alone, rather than a cheaper combination inhaler.

For asthma, a reduction in the dose of inhaled steroid should be slow as patients deteriorate at different rates. Reductions should be considered every three months, decreasing the dose by approximately 25-50% each time (BTS/SIGN, 2012). This may be done by reducing the number of daily doses or by reducing their strength. Again, the most cost-efficient method should be considered. Some children and young adults, with milder asthma and a clear seasonal pattern to their symptoms, may have a more rapid dose reduction during their “good” season.

Anticholinergic drugs for COPD

Muscarinic antagonists (also called anticholinergics) block cholinergic receptors and cause the bronchial muscles to relax.

They are licensed for COPD, are not recommended for routine management of asthma, although nebulised short-acting muscarinic antagonists (SAMAs) are recommended to treat acute asthma exacerbations (BTS/SIGN, 2012). The inhaled SAMA ipratropium bromide is effective within 15-30 minutes and has a 4-6 hour bronchodilator effect.

The long-acting muscarinic antagonist (LAMA) tiotropium is licensed for maintenance treatment of COPD, but is not suitable for the relief of acute bronchospasm. It is taken once every 24 hours.

Side-effects of anticholinergic bronchodilators include dry mouth, constipation, headache and nausea.

Triple therapy in the form of LAMA, LABA and inhaled corticosteroids is recommended for more severe COPD. Before triple therapy is started, non-drug management should be optimised (NICE, 2010).

Other medications

Leukotriene inhibitors

Leukotriene inhibitors (montelukast, zafirlukast) are oral preparations that act by inhibiting one part of the asthmatic inflammatory cascade.

They are licensed for use in both adults and children (can be used in young children as a monotherapy) and are recommended as add-on therapy at step 3 of the BTS/SIGN guidelines where long-acting beta2-agonists have not produced improvement or are unsuitable for other reasons. They should be given as a trial for two months to see if they are effective.

Methylxanthines

Methylxanthines (theophylline, aminophylline) are used as an add-on therapy for acute or severe chronic asthma at level 4, and are also used in the management of severe COPD (Clinical Knowledge Summaries, 2011a).

Methylxanthines have a narrow therapeutic window above which they are toxic, and below which they are ineffective. They are administered orally or intravenously and regular monitoring is needed.

Systemic corticosteroids

Systemic corticosteroids may be required to manage deteriorating asthma or COPD exacerbations. For adults with COPD, continuous oral prednisolone 30-50mg daily should be prescribed for 7-14 days.

A single daily dose should be taken in the morning to minimise the disturbance to sleep patterns. Enteric-coated tablets are six times more expensive and there is no firm evidence that they provide more effective gastric protection (Wan, 2010).

Inhaled corticosteroids should be continued, or started, as part of chronic asthma or COPD management, while oral prednisolone is given for the acute phase.

Short courses of oral corticosteroids (less than three weeks) can be stopped abruptly, but gradual withdrawal should be considered for those who have received over three weeks of treatment, or have had repeated courses (CKS, 2011b).

Side-effects of systemic corticosteroids include adrenal suppression, gastrointestinal symptoms such as dyspepsia or peptic ulceration, weight gain, increased appetite, euphoria, thinning of skin, diabetes mellitus and hypertension. However, these should be minimal if they are used within recommended doses for the shortest period necessary.

There is an increased risk of hypokalaemia when corticosteroids are given with methylxanthines, and bone protection therapy such as bisphosphonate should be considered if patients are taking oral corticosteroids for three months or longer (CKS, 2011c).

Summary

Although similar drug therapy is used for both asthma and COPD, the introduction of medications varies.

For example, in asthma, the lowest dose of inhaled corticosteroids to maintain control should be prescribed and treatment stepped down once control has been achieved. NICE (2010) recommends that inhaled corticosteroids should be an “add-on” therapy for people with COPD who have two exacerbations of COPD in one year, and high-dose usage is recommended.ICS and combination ICS/LABA inhalers remain high-cost products and NICE (2008; 2007) recommends that the least costly device that is suitable for the individual should be prescribed. NT

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