Asthma — optimising care for patients

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Pharmacists can raise the expectations of asthma patients, who may believe that their condition cannot be better controlled

The British Thoracic Society and Scottish Intercollegiate Guidelines Network updated their guidance for the treatment of asthma last year. This article outlines the changes in the guidance and the role of the pharmacist in treating this chronic disease

Advances in management and pharmacological treatments mean that most asthma patients should now expect to live their lives, for the most part, free from symptoms. Nevertheless, many people with asthma continue to experience poor asthma control, often with serious implications — both for individuals and the NHS.

Around half of patients have unacceptable symptoms and lifestyle limitations.[1] Poorly controlled asthma is punctuated by exacerbations and symptoms will often be experienced weekly or even daily. In the UK, 2.1 million people with asthma continue to experience symptoms regularly because they are not receiving appropriate care. Asthma causes 69,000 hospital admissions in the UK annually and 1,400 deaths, 90 per cent of which could be avoided.[2,3]

Last year, the British Thoracic Society (BTS) and Scottish Intercollegiate Guidelines Network (SIGN) produced the first online update of the BTS/SIGN guideline for asthma management.[4] Based on recent research, this version incorporated a number of revisions on the previous guideline published in *Thorax* in 2003.[5] Key changes were made within the sections on pharmacological management, organisation and delivery of care, patient education and self-management.

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While management of asthma has undoubtedly got better over recent years, there is room for further improvement. Pharmacists have a key role to play in ensuring more patients are managed and treated in line with the latest clinical evidence and guidelines, and that patient outcome is improved.

This article provides an overview of the BTS/SIGN guideline, discusses the role of the pharmacist in the management of patients with asthma and highlights potential new approaches to improve asthma management.

Improving control

Asthma is a variable condition and patients' airway inflammation and symptoms fluctuate over time. However, exacerbations usually occur gradually over several days or weeks, or on a background of chronic poor asthma control. It is during this time that steps can be taken to prevent the onset of an exacerbation, although in practice this often does not occur.

Empowering people Many patients, particularly those with chronic conditions such as asthma, are now looking to have a greater involvement in their treatment and care. There is growing evidence that self-care improves patient outcome and relieves pressures on the NHS in terms of reduced emergency appointments and hospital admissions.[6] The NHS has introduced a number of initiatives to encourage health care teams to adopt a more patient-centred approach to disease management, such as the Expert Patient Programme[7] and the Department of Health report "NHS improvement plan: putting people at the heart of public services".[8] More recently, self-care was positioned as a core element of the DoH's strategy for improving care for people with long-term conditions.[9]

The latest guideline recommends that patients are placed at the centre of asthma management. Personalised action plans can empower people with asthma by helping them to recognise the deterioration of their condition and provide individual advice on treating the exacerbation in the early stages. The guideline recommends that all patients should be offered a written, personalised asthma action plan — unfortunately only a small proportion of patients with asthma have one. A wealth of research has been conducted to show that personalised asthma action plans significantly improve patient outcome.[10] They have been shown to be one of the most cost-effective interventions available in the management of asthma.[4]

Barriers to the wider implementation of written asthma plans include time pressures and complexity. Asthma action plans, however, can be provided simply, and time invested in the initial consultations to develop the plan will be more than paid back in the longer term through a reduction in unscheduled appointments and hospital admissions. Some hospitals and primary care organisations have developed their own self-management plans. Asthma UK has also produced a range of materials ("Be in control") for health care professionals to use with patients. Visit **www.asthma.org.uk/pros/resources.php** for details.

Asthma treatment

Inhaled corticosteroids remain the cornerstone of asthma therapy, but there is now compelling evidence that the addition of a long-acting inhaled beta2-agonist provides enhanced control in terms of reduced symptoms, improved lung function and fewer exacerbations.

The dose-response curve for the effect of inhaled corticosteroids on lung function becomes flat at only moderate doses.[11] For most adults with mild to moderate asthma, the steep part of the dose response curve for anti-inflammatory efficacy occurs for beclometasone doses below 800 micrograms per day (400 micrograms in children) or equivalent. Above this threshold, systemic adverse effects may occur. Most benefits in asthmatic patients have been demonstrated at lower doses of inhaled corticosteroid. When regular low doses are insufficient to control asthma, step three of the guideline recommends the addition of a long-acting beta2-agonist as first choice therapy in adults and children (aged five to 12 years).

Combination treatments The next logical step following the acceptance of long-acting beta2-agonists was the development of fixed combination inhalers (ie, salmeterol/fluticasone [Seretide], formoterol/budesonide [Symbicort]).

There is a scientific rationale for giving a long-acting beta2-agonist and corticosteroid together. There appears to be a beneficial interaction between the two drug classes, and several inflammatory cells and chemical mediators. Research indicates that beta2-agonists increase the anti-inflammatory effects of inhaled corticosteroids by enhancing their action within individual cells.[12]

The 2004 BTS/SIGN guideline states that there is no difference in efficacy between giving inhaled corticosteroid and long-acting beta2-agonist in combination or in separate inhalers. There are still no published data showing that a combination inhaler is clinically better than two separate inhalers but, in practice, there are advantages of using one inhaler if it is prescribed appropriately. Poor adherence to an inhaled corticosteroid is a significant problem. The use of combination inhalers can overcome the potential for over-reliance on one controller therapy at the expense of the other, while making it easier for patients to take their treatment as prescribed.

The key to ensuring the rational prescribing of combination inhalers is to make sure that patients respond well to the long acting beta2-agonist and are prescribed the correct level of inhaled corticosteroid to control their disease. This prescription is then reviewed according to symptoms. Far too often patients are prescribed high doses (greater than 800 micrograms beclometasone or equivalent) of inhaled corticosteroids within the combination inhaler and maintained at this level. This approach increases not only the risk of adverse effects to the patient but also the overall cost.

Fixed or adjustable? One suggested limitation of inhalers containing a fixed combination of long-acting beta2-agonist and inhaled corticosteroid is their lack of flexibility. This is potentially important given the variable airway inflammation inherent in asthma. The two combination treatments currently available offer different management strategies. The salmeterol/fluticasone combination offers a fixed dosing regimen, while the formoterol/budesonide combination enables patients to adjust their dose in line with changing symptoms.

The difference in approach is fundamentally due to the pharmacokinetic properties of the long-acting beta2-agonists — salmeterol and formoterol — in each of the combination inhalers. Studies have shown that 24 micrograms of formoterol has an equal bronchodilatory capacity to salmeterol 50 micrograms, both lasting for 12 hours. However, formoterol has a more rapid onset of action than salmeterol, equal to that of salbutamol. Furthermore, the dose response curve of salmeterol is relatively flat above 50 micrograms,[13] compared with formoterol which shows a dose response up to eight inhalations of 12 micrograms a day. These properties make formoterol suitable for adjustable dosing. The flexible formoterol dose also remains within the approved maximum daily recommended limits.[14] For flexible dosing of salmeterol/fluticasone, a new or additional inhaler must be used to increase or decrease the dose and it therefore lends itself to a more fixed approach to asthma management.

The salmeterol/fluticasone fixed approach involves increasing the dose at review in an attempt to suppress all symptoms of asthma. A recent study of the salmeterol/fluticasone combination used in this way showed improved control over the fluticasone alone group. The study found 41 per cent of patients treated with the salmeterol/fluticasone combination achieved complete freedom from symptoms, compared with 28 per cent taking an inhaled corticosteroid alone, clearly reinforcing the benefit of adding in a long-acting beta2-agonist to an inhaled corticosteroid.[15] However, the study did not address the need to step down treatment or what to do during an exacerbation.

A recent head-to-head study of combination medicines demonstrated that adjustable and fixed strategies achieve comparable levels of well-controlled-asthma weeks (the primary end point), but adjustable dosing with budesonide/formoterol resulted in fewer exacerbations.[16] A 40 per cent reduction in the rate of exacerbations was reported with formoterol/budesonide adjustable dosing compared with salmeterol/fluticasone combination fixed dosing, and a 32 per cent reduction compared with formoterol/budesonide fixed dosing. In addition to reducing the number of exacerbations, adjustable dosing has been shown to require less drug than fixed dosing.

A second head-to-head study contradicted these findings, showing that patients receiving the salmeterol/fluticasone combination averaged 24 more symptom-free days during the one year trial than those receiving adjustable maintenance dose formoterol/budesonide.[17] The salmeterol/fluticasone patients also experienced a 47 per cent reduction in the annual rate of moderate/severe exacerbations compared with the formoterol/budesonide patients. However, the results of the study need to be interpreted carefully. The study contradicts the findings of eight other studies investigating adjustable maintenance dosing with the formoterol/budesonide combination. The mean dose of the formoterol/budesonide combination used in this study was 1.8 inhalations per day, with 82 per cent of patients on a maintenance dose as low as one inhalation per day, while patients in the salmeterol/fluticasone arm were maintained throughout on two inhalations per day. This suggests that patients were effectively under-dosed and this may be responsible for the increase in exacerbation rate reported with the formoterol/budesonide combination.[16]

A recently published review article looked at data from fixed and variable dosing regimens in asthma.[18] The review highlights that a fixed-dosing regimen, which cannot be altered by patients in response to symptoms, may result in under-treatment during asthma worsenings or over-treatment during better periods. Since asthma is a variable disease, the review concludes that empowering patients to adjust their dose according to symptom severity holds potential benefits.[18]

BTS/SIGN guidelines

The first online update of the BTS/SIGN guideline on the management of asthma incorporated a number of revisions based on recent research within pharmacological management.

Inhaled corticosteroids The guideline recommends that inhaled corticosteroids should be introduced in milder cases than previously suggested. Inhaled corticosteroids should be considered for patients with any of the following:

- Exacerbation of asthma in the past two years
- Using inhaled beta2-agonist three times a week or more
- Symptomatic three times a week or more
- Waking one night a week

The guideline continues to support the need for inhaled corticosteroid dosage to be

titrated to the lowest dose at which effective control is maintained. While stepping down therapy once asthma is controlled is recommended, this is often not implemented in every day practice, leaving many patients over-treated.

A study in adults taking at least 900 micrograms per day of inhaled beclometasone diproprionate or equivalent doses has shown that for patients who are stable it is reasonable to attempt to halve the dose of inhaled corticosteroids every three months. This resulted in a mean inhaled corticosteroid dose reduction of 348 micrograms, without consequent deterioration in control. Some 49 per cent of patients reduced their inhaled corticosteroid dose by 50 per cent.

Secondary care management The latest evidence indicates that people with asthma admitted to hospital should be managed as inpatients in specialist rather than general units. People attending hospital with acute exacerbations should be reviewed by clinicians with particular expertise in asthma management, preferably within 30 days.

Self-management The guideline emphasises the need for patients to be placed at the centre of asthma management to improve outcomes. Before discharge, patients with severe asthma should be provided with a personal asthma action plan by someone with expertise in asthma management, containing advice on recognising loss of asthma control and action to take if asthma deteriorates. The evidence for this method is particularly good for those in secondary care with moderate to severe disease and those who have had recent exacerbations where successful interventions have reduced hospital admissions and accident and emergency attendance.

Role of the pharmacist

Good asthma care is a team effort, both in primary and secondary care. Following diagnosis by a doctor, members of the team provide education, inhaler device training and day-to-day clinical management. Whether they work in community pharmacies, hospitals, or GP clinics, pharmacists are in a pivotal position to contribute to the overall management of asthma. The management of all medicines is a specific role for pharmacists and they can help to drive the improvements in asthma patient outcome. Pharmacists can also be a valuable source of important information for other members of the health care team.

Improving compliance Compliance with treatment regimens is a key issue in asthma. A recent analysis of data from UK asthma patients over five years revealed that 25 per cent of patients have compliance rates estimated at 30 per cent or less.[19] Indeed, poor compliance with medicines is believed to contribute to 18–48 per cent of asthma deaths.[1]

A host of factors are involved in failures in compliance. This may reflect a lack of understanding of the benefits of treatment by the patient, inappropriate therapy, as well as poor adherence to regular prophylactic treatment. Compliance with inhaled corticosteroids can be particularly problematic because, in contrast to short-acting bronchodilator therapy, patients are not immediately aware of the benefits of treatment.

Simplicity is a key factor in improving compliance. Combination therapy may improve patients' adherence to drugs, as fewer inhalations and inhaler devices are needed. As mentioned previously, combining an inhaled corticosteroid and a long-acting beta2-agonist in a single inhaler also helps to ensure that patients are less able to neglect their inhaled corticosteroid in favour of their reliever therapy.

Raising expectations Evidence shows that many people with asthma mistakenly believe that their condition is under control, but that they continue to put up with symptoms. People also have low expectations of how well they could be if they were managed and treated more effectively. A study of more than 500 people with mild to moderate asthma highlighted the need to raise patient expectations. It reported that 91 per cent thought their asthma was under control, yet two-thirds experienced symptoms at least two or three times a week.[20]

The Asthma in Real Life study revealed that patients have a much more immediate sense of what constitutes a bad asthma day, referring to an inability to carry out daily activities, rather than focusing directly on symptoms. Patients also considered themselves to have good asthma control despite experiencing symptoms and when their reliever use would suggest otherwise.[21]

Pharmacists can educate patients by providing information on the types and purposes of asthma medicines and by explaining to patients the expected outcomes from their medicines. They can help patients understand that, with appropriate therapy, most can lead normal, productive, and physically active lives.

Review The fact that so many asthma patients remain symptomatic suggests the existence of widespread under-assessment and, in some cases, under-treatment. Symptomatic patients should have an assessment of their asthma and a medication review to guarantee they are on the correct step of the treatment ladder. This should ensure that the goals of asthma management are met and the patient's quality of life is improved. Both community pharmacists and prescribing advisers have the facility to monitor repeat prescriptions and could highlight asthmatic patients who are using more than two canisters of beta2-agonist a month, since this is indicative of poor control.

It may be possible for community pharmacists to highlight patients who are not filling their prescriptions for inhaled corticosteroids at a regular interval. Patients with asthma typically present repeatedly with respiratory symptoms — a recurring pattern of presentation which should alert the pharmacist. Community pharmacists should be prepared to question patients who present with regular prescriptions for cough medicines and antibiotics and those patients who frequently purchase non-prescription medicines for respiratory conditions. Patients who request emergency supplies of respiratory medicines should also be questioned and referred, if necessary, to their medical practice.

Studies have shown that inhalers are used incorrectly in many cases. Patients often require reinforcement of technique by repeated advice and encouragement. The choice of device may need to be individualised to ensure its acceptability to the patient and its effectiveness in practice. It is important to ensure that the patient is able to manipulate the device. The pharmacist can provide this support during a ward visit, at the outpatient hatch or within the community setting.

When hospital admission occurs due to poorly controlled asthma, pharmacists are in a position to ask about treatment plans and clarify instructions that will help prevent hospital admission recurring.

Extended roles

In 2003, some details of supplementary prescribing by pharmacists were published. Patients with asthma can now be assessed, reviewed and have their asthma medicines prescribed by a supplementary prescriber. The initial diagnosis needs to be confirmed by an independent prescriber who is a doctor. A clinical management plan must be agreed by the independent and supplementary prescriber before supplementary prescribing begins, with the patient also agreeing and having an active role in this decision-making process. Many pharmacists are embracing this extended role and are involved in the chronic disease management of patients with asthma and provide medication review clinics.

The new community pharmacy contractual framework will benefit patients with asthma by improving their access to health care advice and services. Under the new contract, by October 2005, community pharmacies will dispense repeat prescriptions, provide advice on healthy lifestyles and, in some cases, offer people with asthma and other long-term conditions a review of their medicines.

Conclusion

Despite major improvements in outcomes for many people with asthma over the past

few decades, too many patients remain suboptimally controlled. There is still a disproportionate burden, in terms of morbidity, mortality and financial costs, from uncontrolled asthma.

With good asthma care, patients experience fewer symptoms, hospital admissions and exacerbations as well as an improved quality of life. The responsibility for good asthma care falls not only to the GP, hospital doctors and specialist nurses, but also increasingly with the pharmacist. Every consultation with an asthma patient is an opportunity to review, reinforce and extend their knowledge. It is important to realise that education is an ongoing process and not a single event.

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