

An approach to paediatric asthma: the role of the community pharmacist

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Abstract

Asthma is one of the most common childhood illnesses with which patients will present to general practitioners. Despite this, the associated mortality and morbidity remain high, particularly in South Africa. This is largely due to the diagnostic and therapeutic challenges that are associated with asthma in childhood. This results in under-diagnosis of asthma and poor control of known patients who are on treatment. Creating awareness among patients and health practitioners, as well as including the allied healthcare providers in the management of childhood asthma, can help improve the diagnosis and care of patients with asthma. Specifically, community pharmacists can play a major role in improving the outcomes of patients with asthma.

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Introduction

Asthma is one of the most common chronic childhood illnesses, and affects up to 20% of South African children.¹ According to the International Study on Asthma and Allergies in Childhood (ISAAC), the prevalence of allergic diseases, including asthma, is rising, particularly in the developing world.² Despite this, 2 500-3 500 asthma deaths occur per annum in South Africa. Most asthma deaths could have been prevented by better use of existing diagnosis and treatment techniques. The burden of asthma extends beyond high mortality. It affects patients in terms of impaired quality of life, missed school days and hospitalisations, and also influences the families of patients and general society. Green³ demonstrated that most patients receiving asthma treatment still had symptoms of asthma. This was observed in so-called "treated" asthmatics.

Why is the morbidity and mortality that is associated with asthma in childhood so high? Unfortunately, airway hyper-responsiveness and inflammation, which are the hallmarks of the disease, are difficult to measure in children. This translates into under-diagnosis of asthma and difficulty in monitoring control in known asthmatic patients.

The goal of every physician who manages an asthmatic child should be to ensure that he or she lives an essentially "normal life". Many surveys of asthma care have been published from around the world. They suggest that in total, only five per cent of asthmatics meet the "goals of asthma management" as set out in the European asthma guidelines.⁴ With the help of allied medical health providers, such as community pharmacists, this should be a realistic goal, as suggested in the South African Asthma Guidelines.

The criteria for a "normal life" are to:⁵

- Be completely free from any symptoms, i.e. coughing, wheezing and breathlessness.
- Attend school regularly and participate fully in all school activities, including sport.
- Sleep restfully, free from night-time coughing or wheezing.
- Grow and develop normally.
- Minimise the number of acute asthma attacks, and avoid hospitalisation.
- Avoid or minimise medication-related side-effects.

Community pharmacists can assist in identifying children who may have undiagnosed asthma, as well as recognising asthmatics who are not controlled, and who may need to be reviewed by their family physician. Pharmacists are in contact with patients on a monthly basis when issuing repeat prescriptions. Patients often go to the pharmacy when they are sick before seeing a doctor. Community pharmacists can play an integral role in the management of asthma and prevention of its complications.

So what can pharmacists do?

Be alert to signs and symptoms suggestive of undiagnosed asthma

The pharmacist should be alert to signs and symptoms that are suggestive of undiagnosed asthma.

Chronic nocturnal coughing and wheezing are highly suggestive of asthma, particularly if precipitated by exercise or play in young

Table I: Features suggestive of asthma in children under five years of age⁵**Evidence A**

Exercise-induced coughing or wheezing
Coughing at night
Symptoms that persist after the age of three years old

Evidence B

Absence of seasonal variation
Symptoms that worsen when exposed to certain things
Colds that repeatedly go to the chest
Response to a bronchodilator
Response to a course of a steroid
Concomitant rhinitis, eczema or food allergies
A family history of allergy or asthma

Evidence C

Wheezing that lasts for more than a month

Evidence D

Modified bronchodilator response test

children. A child who is older than three years who presents to the pharmacy with these symptoms should be referred to a paediatrician for an asthma assessment. The South African Guidelines for the management of chronic asthma in children list several features that can alert pharmacists to a possible asthma diagnosis, particularly in the context of a child at preschool (Table 1).⁵

Assess asthma control

Every patient who presents to collect repeat asthma medication should be assessed for control of asthma. This can be carried out by asking about day or night symptoms, limitations in activities, the need for reliever medication or recent exacerbations. Pharmacists should be alert to patients who are not well controlled by asking a few simple routine questions (Table II).⁵ Level of asthma control, devised by the Global Initiative for Asthma (GINA) guidelines (Table III)⁶ will help to define if patients are uncontrolled, and need specialist referral.

Table II: Routine asthma follow-up questions⁵

- How often, in the last week, have you had asthma symptoms?
- How often, in the last week, have you woken at night because of asthma symptoms?
- How often, in the last week, have asthma symptoms limited your ability to be active?
- How many puffs of reliever medicine have you administered in the last week?
- Have you missed any days of school or work because of asthma in the last month?

Check inhaler technique and compliance

Topical administration of drugs, specifically corticosteroids and β_2 agonists to the lower respiratory tract by inhalation, is the mainstay of treatment for asthma in children. The improper use of aerosol devices or non-adherence is associated with poor asthma control. It is essential that caregivers are familiar with the correct aerosol administration technique. However, careful consideration should also be given to choosing the inhaler device. Pressurised metered-dose inhalers (MDIs) remain the dominant means of delivery of drug to the lungs, accounting for more than 80% of the market. However, they are not easy to use, as they require good patient co-ordination between inhalation and activation of the device. This is rarely perfect in children. Giraud has demonstrated that 71% of patients misuse MDIs, and that 47% of patients could not co-ordinate activation and inspiration.⁷ This results in drug deposition in the upper airway and, side-effects such as oral candidiasis, as well as poor asthma control, even in patients who are adherent. Lung deposition rates can be improved with spacers which retain large drug particles that would otherwise be deposited in the oropharynx, and so reduce oropharyngeal side-effects. The addition of a face mask to the spacer has revolutionised the treatment of asthma in infants and young children. However, this is dependent on a good seal without leaks. A general inhaler strategy for children of different ages is given in Table IV.⁵ When issuing the repeat prescription, pharmacists can quickly check that the appropriate device is being used, the correct size face mask is obtained, and that the inhaler technique is correct. This is also an opportunity to reinforce compliance and address concerns about side-effects of the medication.

Table III: Levels of asthma control in the Global Initiative for Asthma revision (2006)⁶

Characteristic	Controlled	Partly controlled (any measure present in any week)	Uncontrolled
Daytime symptoms	None (or minimal)	More than twice a week	Three or more features of partly controlled asthma present in any week
Limitations of activities	None	Any	
Nocturnal symptoms and awakening	None	Any	
Need for reliever or rescue treatment	None (or minimal)	More than twice a week	
Exacerbations	None	One or more a year	One in any year

Table IV: Choice of inhaler device for children⁵

Age group	Preferred device
Younger than 4 years	Pressurised metered-dose inhaler (MDI) plus spacer with face mask
4-6 years	Pressurised MDI plus spacer with mouthpiece
Older than 6 years	Pressurised MDI plus spacer and mouthpiece, or dry powder inhaler, or breath-actuated pressurised MDI

Reinforce the need for immunisation

Children with asthma should receive all standard immunisations, including the influenza vaccine annually. Pharmacists who issue follow-up asthma prescriptions to patients should encourage this practice.

Refer to the family physician

Children with asthma should follow up with their family physician and have annual lung function tests if they are well controlled. If a child is not well controlled despite employing the correct inhaler technique and being compliant, it is necessary for earlier evaluation by the paediatrician. This can be encouraged by pharmacists when such a patient has been identified. Other reasons for poor asthma control are listed in Table V.⁵

Table V: Reasons for poor asthma control (Evidence A)⁵

- Lack of adherence to controller medication
- Inability to use the inhaler or powder device correctly
- Inadequate drug dosage
- Ongoing allergen exposure
- Uncontrolled allergic rhinitis or sinusitis
- Gastro-oesophageal reflux
- Psychosocial problems, such as family dysfunction, behaviour problems or depression
- Use of medications with adverse effects, e.g. β blockers, aspirin and nonsteroidal anti-inflammatory drugs
- Incorrect diagnosis

Important points to remember

Antihistamines are only indicated if there is concurrent allergic rhinitis.

Oral bronchodilators, mucolytics and cough syrups are not efficacious in the treatment of asthma. They have cost implications, as well as unwanted side-effects.

Parents often buy home nebulisers to use in the event of an acute exacerbation, but nebulising without oxygen can be disastrous for some asthmatics with severe exacerbations.

Conclusion

It is clear that asthma control in children remains a challenge, and should be a health priority. Reinforcing simple principles, such as employing a correct inhaler technique, can help to solve this problem. The aim of any treatment should be complete asthma control so that the children can live normal lives. Even more importantly, indications of poor control should be actively sought. Community pharmacists can play a vital role in identifying these patients, and can help to attain the goal of well-controlled asthma in children who can then lead normal lives.

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