

# Strategies to manage asthma

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### Learning objectives:

After reading this article, the reader should be able to:

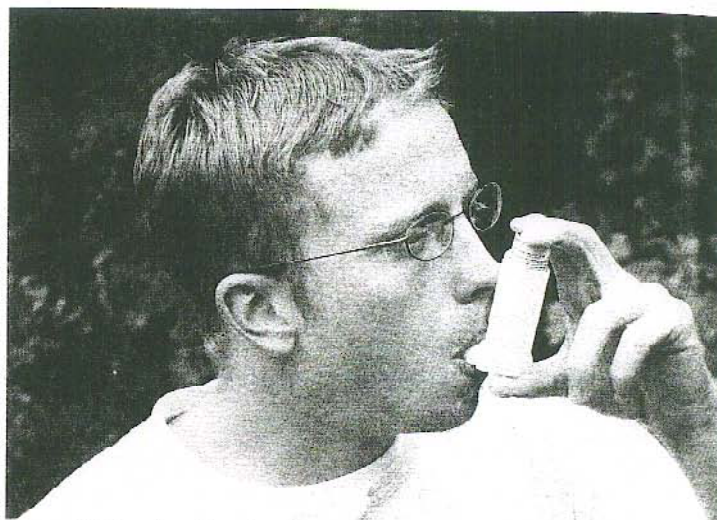
- Understand the types of management strategies for asthma; and
- Discuss the evidence behind current asthma management strategies, and be confident in making recommendations to patients and GPs.

### Case study

Mr RB, a 24-year-old non-smoker, comes into your pharmacy and asks for a salbutamol inhaler. He says he normally has a prescription for it but he has run out of repeats. You check his dispensing history and see that Mr RB has consistently received one budesonide 200 mcg turbuhaler every six to eight weeks and two salbutamol inhalers every month, over the last 18 months. You ask him how often he requires his salbutamol and he replies that he needs to use it every morning, and then occasionally throughout the day. He says that his asthma 'has always been pretty bad' and he is 'used to putting up with it.'

### Introduction

Asthma is recognised as a National Health Priority Area in Australia, and is responsible for significant morbidity and mortality in the community. International population-based studies suggest that Australia has one of the highest prevalence rates for asthma in the world,<sup>1</sup> affecting an estimated two million people.<sup>2</sup> Exacerbations of asthma lead to approximately 40,000 hospitalisations and 105,000 emergency department visits annually.<sup>3</sup> Despite the existence of national initiatives aiming to improve asthma care,<sup>4,5</sup> findings from a recent National Health Survey showed that the management of asthma remains suboptimal.<sup>2</sup> Significant clinical problems persist, including under-treatment with inhaled corticosteroids (ICS), over-reliance on reliever medications, and poor patient self-management skills.<sup>2</sup> It is well-recognised that the achievement and maintenance of asthma control reduces the risk of acute exacerbations and improves prognosis. To achieve and maintain asthma control for prolonged periods, recommendations for asthma



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management have been made in a number of interrelated areas. The focus of this article is to review the evidence for the strategies used to optimally manage asthma and prevent exacerbations.

### The Australian Asthma Management Plan

The Australian Asthma Management Plan<sup>6</sup> was published in 1989 by the National Asthma Council (NAC),<sup>6</sup> and was the first of many international, consensus-based asthma guidelines. It provides guidance and recommendations for health professionals in the management of asthma according to a six-step plan. The Asthma Management Plan is a dynamic document, which has been modified to reflect changing evidence in best practice. Although the availability of newer medications has altered the means by which best lung function is achieved and maintained, the underlying concepts of the plan have remained the same.

There is now good evidence that particular elements of the Asthma Management Plan improve patient self-management through monitoring asthma symptoms, seeking regular medical review, and using a written Asthma Action Plan (AAP).<sup>7</sup> Evidence-based review, based on randomised controlled trials (RCTs), has demonstrated the efficacy of some aspects of the plan but could find no evidence in favour of other aspects.<sup>8</sup> For example, there is good evidence of the effectiveness of preventive medications, reliever medications and symptom controllers (long-acting beta-2-agonists; [LABAs]) in the treatment of asthma. The evidence for alternative therapies



and the avoidance of trigger factors for asthma is not strong. Importantly, the review found strong evidence for the provision of training in self-management involving self-monitoring of symptoms, regular medical review and use of written AAPs in adults. The Asthma Management Plan remains the backbone of asthma care in Australian clinical practice.

## Asthma Cycle of Care

In recognition of the significant burden that asthma places on the Australian community in terms of health, social, economic and emotional costs, Australian Health Ministers announced asthma as a National Health Priority Area in 1999.<sup>9</sup> Subsequently, the Commonwealth Government announced the \$48.4 million National GP Asthma Initiative in the 2001 National Health Budget to improve health outcomes of people with moderate-to-severe asthma.<sup>10</sup> The GP Asthma Initiative promotes the use of the Asthma Cycle of Care (formerly the Asthma 3+ Visit Plan), which utilises a structured approach to asthma care, as the best practice model of managing asthma, recognising that effective long-term management requires ongoing care and regular review. The Asthma Cycle of Care encourages partnerships in proactive asthma care between the patient and their health professionals, and involves at least two asthma-related consultations within 12 months for a patient with moderate to severe asthma. The visits include an assessment of asthma severity and level of asthma control, a review of the patient's use of asthma medication and devices, asthma self-management education, and the development of an AAP. Systematic review has shown that people who see their GP regularly, receive education in self-management and have a written AAP require significantly fewer emergency department visits, hospital admissions, days off work or school and unscheduled doctor visits, and have significantly reduced nocturnal asthma symptoms and significantly higher quality of life scores.<sup>7</sup>

Ongoing patient education is a vital component of the partnership between patients and healthcare professionals, and can contribute to successful asthma care.<sup>11</sup> However, it has been demonstrated that the acquisition of knowledge by patients does not necessarily translate into effective self-management behaviour.<sup>12</sup> It is therefore imperative that the patient not only understands their condition, including the purpose of medication and correct inhalation technique, but also the importance and value of self-management of their asthma.

## Asthma Action Plans

An integral part of the Asthma Cycle of Care is the development of a written AAP, which helps the patient or carer recognise worsening asthma. AAPs have become a core, albeit under-utilised, component of asthma management in Australia in accordance with best practice guidelines. The function of a written AAP is to provide the patient with a set

of rules by which to alter therapy, dependent on either peak expiratory flow monitoring or symptom levels. The implication is that an appropriate, early response to deterioration will prevent dangerous exacerbations and will generally improve health-related quality of life. AAPs contain the following essential components:

- i) Instructions on when and how to intensify treatment;
- ii) The duration of the treatment increase; and
- iii) When to cease self-management and seek medical help.<sup>13</sup>

A key objective of AAP use is to help people with asthma to monitor themselves and their own actions, learn from these actions to support self-care behaviours, and then integrate these into their daily routines.<sup>13</sup> Increasing patient participation in their own care has been associated with significantly improved asthma symptoms and adherence with preventive medication, as well as significantly fewer hospitalisations, days off school or work and reduced need for reliever medication.<sup>14</sup> It has also been found that the possession of a written AAP reduces the risk of death from asthma by 70%.<sup>15</sup>

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## Regular ICS therapy

Current Australian guidelines recommend that all patients with persistent asthma of all levels of severity use ICS as preventive therapy.<sup>16</sup> ICS are currently the most effective anti-inflammatory medication for the management of persistent asthma. Studies have demonstrated their efficacy in reducing asthma symptoms,<sup>17</sup> improving lung function,<sup>18</sup> controlling airway inflammation,<sup>19</sup> reducing the frequency and severity of exacerbations,<sup>20</sup> and reducing asthma mortality.<sup>21</sup> However, they do not cure asthma, and when they are discontinued, deterioration of clinical control follows within weeks to months in a proportion of patients.<sup>22</sup> It is well established that in adults, persistent asthma requires long-term preventive medication to maintain good control.<sup>19</sup> Evidence-based guidelines over the past decade, including the NAC's six-step Asthma Management Plan, have emphasised the importance of the regular use of anti-inflammatory drugs (preferably ICS) as first-line therapy for anything more severe than occasional mild asthma, and a shift of approach away from reliance on relievers. There have been a number of studies in the





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international literature indicating that a high usage of reliever medication, relative to preventer medication, is associated with poorer clinical outcomes of asthma, including increased emergency department visits and hospital admissions.<sup>23, 25</sup> Short-acting beta-2-agonists are recommended in all stages of asthma on an as-needed basis only. Asthma guidelines recommend that maintenance ICS be prescribed at the lowest effective dose according to the severity of the condition.<sup>16</sup> It is essential that the ICS treatment is individualised, as too high a dose may result in adverse effects and too low a dose may result in under-treatment and poor asthma control.

A systematic review of RCTs demonstrated that the addition of a LABA to ICS therapy improves asthma symptoms. The addition of LABA has an ICS-sparing effect, which permits a reduction in ICS maintenance dose.<sup>26</sup> Specifically, studies that compared reduced dose ICS/LABA combination to a fixed moderate-to-high dose ICS reported significant improvements in lung function and percent rescue free days with the ICS/LABA combination therapy.<sup>26</sup> However, the review also found no significant difference in the number

of severe exacerbations requiring oral corticosteroids when comparing the combination to ICS alone. Greenstone, *et al.* reported similar findings, concluding that there is no apparent superiority of adding LABA to ICS in terms of exacerbations, but improved symptoms and lung function tests favours additional LABA therapy.<sup>27</sup> The NAC recommends a LABA should be the first choice for add-on therapy in patients for whom adequate asthma control is not achieved despite low dose ICS treatment, after ruling out poor adherence and poor inhalation technique as causes.<sup>16</sup> In an attempt to improve adherence, devices are available combining ICS and LABA therapy in a single inhaler.

### Maintenance and reliever therapy

In light of the growing evidence that many patients neglect their preventer medication and over-rely on reliever medication, a new asthma management strategy has recently been evaluated in a series of clinical trials.<sup>28-31</sup> The strategy utilises a single inhaler containing an ICS (budesonide) and a LABA (formoterol) for both maintenance therapy and symptom relief. For patients with persistent asthma symptoms despite the regular use of ICS, studies have found that fewer severe exacerbations occurred with the maintenance and reliever regimen when compared to the conventional combination regimen of regular ICS plus a short-acting beta-2-agonist when required. Table 1 summarises the results of COMPASS, the only published double-blind trial where the maintenance and reliever regimen was compared to a higher-dose conventional regimen.<sup>28</sup>

In August 2007, the Pharmaceutical Benefits Scheme listing of budesonide with formoterol 100/6µg and 200/6µg (*Symbicort*) was extended to allow Australians who experience frequent asthma symptoms while receiving combination ICS/LABA therapy or ICS alone to use the alternative budesonide with formoterol maintenance and reliever regimen.<sup>32</sup> The NAC has endorsed this new regimen (commonly called *Symbicort*

Table 1. Rates of severe exacerbations in the COMPASS trial<sup>28</sup>

Treatment group	Severe exacerbations per 100 patients per six months	Average daily ICS dose (budesonide equivalent)
Budesonide with formoterol (maintenance and reliever regimen) n = 1107	12*	604µg
Budesonide with formoterol plus terbutaline as needed (conventional regimen) n = 1105	16	800µg
Fluticasone with salmeterol plus terbutaline as needed (conventional regimen) n = 1123	19	800µg

\*The number of severe exacerbations was significantly less than with the budesonide with formoterol conventional regimen ( $P = 0.0048$ ) and also significantly less than with the fluticasone with salmeterol conventional regimen ( $P < 0.001$ ).



Maintenance And Reliever Therapy: SMART), with a SMART-specific written AAP now available.<sup>33</sup>

While the drug treatments used in the management of asthma have proven efficacy, effective management strategies and adherence with therapy are imperative to reduce the morbidity and mortality associated with the condition. Even in patients with uncontrolled asthma, guideline-defined control can be achieved and maintained with appropriate treatment.<sup>34</sup> The aforementioned strategies are useful and proven approaches to aid in the achievement of treatment goals in asthma, and should be promoted by pharmacists.

## Case study

You advise Mr RB that he shouldn't have to put up with his asthma symptoms as evidence has demonstrated that even patients with severe asthma can gain control of their symptoms with appropriate therapy. You indicate to Mr RB that you are concerned that his asthma could be better controlled, and recommend that he see his GP as soon as possible for a review of his asthma therapy, and for the development of an individualised Asthma Action Plan. You provide Mr RB with a salbutamol inhaler to use in the interim and check his inhaler technique. You also provide him with some educational materials from the Asthma Foundation and the Pharmacy Self Care Fact Cards on Asthma and Asthma Medicines.

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Even in patients with uncontrolled asthma, guideline-defined control can be achieved and maintained with appropriate treatment.

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