



### Steven Rudolphy

MBBS, FRACGP, is Senior Lecturer, General Practice & Rural Medicine, James Cook University, Cairns Base Hospital Campus, and a general practitioner, Mt Sheridan, Queensland. [steven.rudolphy@mtsheridanmedical.com.au](mailto:steven.rudolphy@mtsheridanmedical.com.au)



# Asthma management in general practice

## A chronic disease health priority

### Background

Asthma mortality rates in Australia have declined over the past 20 years but are not low by international standards. Evidence based guidelines such as the National Asthma Council's *Asthma management handbook*, Enhanced Primary Care financial incentives, and practice recall infrastructure can be utilised in general practice to manage patients with asthma.

### Objective

This article provides an overview of asthma management based on the National Asthma Council's *Asthma management handbook*.

### Discussion

Asthma is one of the Australian Government's chronic disease health priorities. To promote ideal asthma care and management, incentives such as the Asthma Cycle of Care, GP Management Plans and Team Care Arrangements have been instituted. However, trends in the use of these incentives must be maintained if we are to continue to reduce Australia's asthma mortality rate.

■ **Australians – with their high rates of asthma prevalence and mortality – should have effective asthma care. The tools are in place to affect this care, such as evidence based guidelines, Enhanced Primary Care financial incentives, and practice recall infrastructure. The National Asthma Council's (NAC) *Asthma management handbook*<sup>1</sup> remains the essential resource for asthma management in Australia.**

### Asthma care in Australia is still not ideal

Asthma mortality rates in Australia have declined over the past 20 years but are not low by international standards.<sup>2</sup> Attendances at hospital emergency departments have not altered from 1999–2004.<sup>2</sup> The Asthma in Australia National Health Survey 2004–2005<sup>3</sup> found that:

- asthma prevalence in indigenous and lower socioeconomic groups has not declined
- less than a quarter of asthmatics possess a written action plan, despite strong evidence for their use
- only 14% of asthmatics report taking inhaled corticosteroids daily
- the majority of those taking inhaled corticosteroids are taking the most potent strengths
- a quarter of asthmatics smoke and 11% of asthmatic children are exposed to cigarette smoke
- asthmatics have higher levels of self reported ill health, psychological distress, behavioral problems, and those aged less than 35 years have twice the rate of arthritis than nonasthmatics.

However, Enhanced Primary Care items, GP Management Plans and Team Care Arrangements are increasingly used in general practice, as is the Asthma Cycle of Care and spirometry.<sup>4</sup> Walters et al<sup>5</sup> state that there is no substitute for 'regular detailed review and comprehensive education of patients with asthma'. Enhanced primary care can help



deliver evidence based medical care in the general practice setting. The Royal Australian College of General Practitioners standards mandate practices have recall systems.<sup>6</sup> These can be applied to asthmatics on GP Management Plans or asthma cycles of care.<sup>7</sup> If ongoing review is achieved, basic levels of asthma care delivery and the issues raised by the National Health Survey could be addressed.

## Diagnosis – make sure it is asthma

There is no gold standard in regard to asthma diagnosis. History, examination and diagnostic testing are recommended.<sup>1</sup> Spirometry is the most useful diagnostic and ongoing measure of lung function in general practice. Children can attempt spirometry from the age of 6 years. A short guide to spirometry can be found on the NAC website (see *Resources*). The NAC is currently rolling out a comprehensive spirometry training course.

If you do not get control with a low dose inhaled corticosteroid and long acting beta agonist, check adherence, inhaler technique and reconsider your diagnosis before increasing the dose of inhaled corticosteroid. Consider referral to a chest physician for a second opinion if you are not getting clinical improvement of symptoms, rather than just increasing the strength of inhaled steroid.

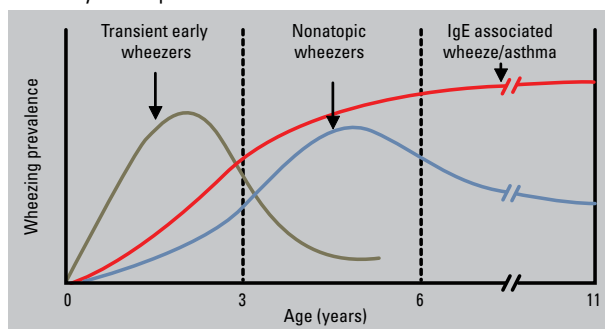
## Chronic obstructive pulmonary disease

It is important to differentiate asthma from chronic obstructive pulmonary disease (COPD). Chronic obstructive pulmonary disease is characterised by later onset of symptoms, a history of smoking, lack of atopy, and progressive deterioration of lung function. Spirometry will characteristically not be reversible. There will be a crossover of smoking asthmatics with COPD and chronic undertreated asthmatics that develop irreversible bronchiolar damage.<sup>8</sup>

## Wheezing in infants

This is a notoriously difficult area. Martinez<sup>9</sup> describes three groups of early infant wheezers (*Figure 1*): those who do not have

Figure 1. Three phenotypes of infant wheezers. The groups are not exclusive and clinically identifying which group a specific child falls into may not be possible<sup>11</sup>



asthma, are well and do not require treatment; those who are nonatopic wheezers, who act like asthmatics and may require asthma treatment but who 'grow out' of their wheezing; and atopic asthmatics, whose symptoms continue into later childhood. All three groups need individual assessment and consideration for a trial of a beta agonist, and an asthma symptom diary.

## Assessing severity

*Table 1* can assist with the assessment of asthma severity. The criteria relate to chronic symptoms not symptoms associated with an acute attack. This may help the patient perceive that they have a chronic disease that ranks with other chronic diseases; one which requires regular review.

## Medical assessment

The minimum assessment of asthma control during incidental reviews includes:

- Is there regular night time cough or wheeze?
- Is there exercise cough?
- Do asthma symptoms limit their activity?
- How often are beta agonists being used?
- Are they actually taking their preventer medication?

Table 1. Asthma severity assessment

	Mild	Moderate	Severe
Wheeze, tightness cough, dyspnoea	Occasional (eg. with viral infection or exercise)	Most days	Every day
Nocturnal symptoms	Absent	<once/week	>once/week
Asthma symptoms on wakening	Absent	<once/week	>once/week
Hospital admission or emergency department attendance in past year (for adults)	Absent	Usually not	Usually
Previous life threatening attack (ICU or ventilator)	Absent	Usually not	May have a history
Bronchodilator use	<twice/week	Most days	>3–4 days
FEV1 (% predicted)	>80%	60–80%	<60%
Morning peak flow on waking	>90% recent best	80–90% best	<80% best

Reproduced with permission. National Asthma Council. Asthma management handbook, 2006



Table 2. Assessment of asthma control

Parameters	Level of control		
	Good	Fair	Poor
Day time symptoms	None	<3 days/week	≥3 days/week
Night-time symptoms	Not woken	≤1 night/week	>1 night/week
Physical activity	Normal	Normal	Restricted
Exacerbations	None	Mild, infrequent	Moderate, severe frequent
Missed school/work due to asthma	None	None	Any
Reliever use*	None	<3 doses/week	≥3 doses/week
FEV1**	Normal	≥90% personal best	<90% personal best
FEV1/FVC**			
PEF**	Normal	≥90% personal best	<90% personal best

FEV1 = forced expiratory volume in 1 second; FVC = forced vital capacity obtained by spirometry; PEF = peak expiratory flow obtained with a portable peak flow meter

\* Does not include one dose per day for prevention of exercise induced symptoms

\*\* Applicable to adults and older children. Lung function parameters are not appropriate measures of asthma control in younger children

Reproduced with permission: National Asthma Council. Asthma management handbook, 2006

Consider using a validated asthma control tool to assess symptoms (Table 2). Checking inhaler technique cannot be done often enough. Table 3 may assist with a comprehensive assessment. Examination of the chest may or may not yield a wheeze in the nonacute setting. Consider examining the nasal mucosa for swelling, redness and clear discharge of allergic rhinitis.

## Asthma education

Asthma education is time consuming, and ideally, should be delivered by trained asthma educators. However, as they remain a sparse resource in many parts of Australia, practice nurses can provide patient education (Table 4). If undertaken by the GP, a long appointment should

be scheduled. However, if education needs to be condensed due to time pressures, concentrate on: explaining the concept of inflammation as the underlying pathological process, what the drugs do, asthma triggers and inhaler technique. Resources are available for indigenous and non-English speaking patients (see Resources).

## Develop an action plan

Action plans are widely available from clinical software packages and the NAC (see Resources). The principle is to have a written plan describing: maintenance treatment, stepping up treatment early in an exacerbation, actions to take if symptoms deteriorate further, and emergency management.

Doubling the dose of inhaled steroid in early exacerbations is not considered useful. A much higher dose of steroid is recommended (Table 5). The *Asthma management handbook* suggests a patient initiated short course of high dose inhaled steroids for 1–2 weeks.<sup>1</sup> It is unclear if this is as effective as a short course of oral steroids.

Using a budesonide/eformoterol combination as single maintenance and reliever is an alternative. It is only licensed for moderate to severe asthmatics and has its own action plan. During an exacerbation, increase the amounts of the combination therapy from a twice daily regular dose. Usually eight doses per day is sufficient, however, this may be increased up to 12 doses per day. No more than six doses on one occasion should be taken.<sup>10</sup>

The next step is oral corticosteroids. High dose prednisolone may cause side effects. There is data to suggest 20–30 mg/day prednisolone is sufficient.<sup>11,12</sup> Asthmatics should seek medical advice once they have started oral steroids.

## Regular review

Encouraging regular review may be difficult. In one survey, 73% of GPs identified patient failure to attend follow up was a barrier to using the Asthma 3+ Visit Plan.<sup>13</sup> With increased organisation of

Table 3. Asthma history checklist for new patients

When assessing a new patient with a prior asthma diagnosis, confirm the diagnosis. The history should include:

- current symptoms
- pattern of symptoms
- asthma history
- trigger factors
- current management (including complementary therapies)
- recent changes in management and the effect of those changes
- adverse effects of drug treatments
- pattern of a typical exacerbation
- impact of asthma on occupation
- atopic disorders
- general health and drug treatments
- patient (or carer's) knowledge and ability to self manage

Reproduced with permission: National Asthma Council. Asthma management handbook, 2006



Table 4. Asthma education template

<b>What is asthma?</b>
<ul style="list-style-type: none"> <li>• Asthma is an inflammatory disease</li> <li>• The underlying condition or tendency remains even when symptoms are absent</li> <li>• In people with asthma, the airways narrow and don't function normally when exposed to a trigger factor</li> <li>• Triggers are sometimes difficult to identify</li> <li>• During an asthma episode, a combination of factors causes airway narrowing: <ul style="list-style-type: none"> <li>– smooth muscle spasm</li> <li>– airway swelling, due to: <ul style="list-style-type: none"> <li>– oedema – fluid and proteins deposited across the airway wall</li> <li>– mucus hypersecretion</li> <li>– muscle and mucous gland enlargement</li> </ul> </li> </ul> </li> </ul>
<b>How asthma is treated</b>
<ul style="list-style-type: none"> <li>• Action and role of each of the classes of asthma medications: <ul style="list-style-type: none"> <li>– reliever medication (bronchodilators)</li> <li>– preventer medication (anti-inflammatory agents)</li> <li>– symptom controllers (long acting beta 2 agonists)</li> <li>– combination medications (preventer plus symptom controller)</li> </ul> </li> <li>• Emphasise the important role of preventers in those who need them</li> <li>• The difference between preventers and relievers</li> <li>• Preventers must be taken regularly, irrespective of symptoms</li> <li>• Common side effects and how to cope with these</li> </ul>
<b>Delivery devices</b>
<ul style="list-style-type: none"> <li>• Care of the device</li> <li>• Correct inhaler technique (demonstrate and practice until patient can perform correctly)</li> </ul>
<b>Key facts about childhood asthma</b>
<ul style="list-style-type: none"> <li>• Childhood asthma is common: 30% of children will have a form of asthma at some stage</li> <li>• Infrequent virus induced wheezing in infancy improves by the age 6 years in most children</li> <li>• Allergy is an important cause of asthma in children and can trigger acute attacks of asthma. Continuing asthma is more likely if eczema and hay fever are also present and there is ongoing allergen exposure</li> <li>• More than half of children with mild asthma will be free of symptoms or have only mild intermittent wheezing in later life</li> <li>• Moderate or severe asthma rarely goes away by itself, even in adolescents</li> <li>• Stopping treatment results in a return of symptoms, usually within days to weeks</li> </ul>
<b>Negotiate a plan of care and review and monitor the plan</b>
<ul style="list-style-type: none"> <li>• Reinforce the need for long term adherence to preventive therapy</li> <li>• What to expect about the duration of treatment: <ul style="list-style-type: none"> <li>• Asthma treatment is usually long term</li> <li>• Beginning treatment with asthma medications does not necessarily mean that life long treatment will be necessary</li> <li>• Discourage the notion that treatment can be discontinued as soon as the symptoms resolve</li> <li>• Emphasise the importance of attending for regular review of the current management plan</li> </ul> </li> </ul>
<b>Monitor and manage the symptoms and signs of asthma</b>
<ul style="list-style-type: none"> <li>• Develop a written asthma action plan: <ul style="list-style-type: none"> <li>• How to recognise of deteriorating asthma (peak expiratory flow monitoring or symptoms)</li> <li>• Steps to take if asthma control deteriorates, including: <ul style="list-style-type: none"> <li>– when to increase medication and by how much</li> <li>– when and how to seek medical treatment</li> </ul> </li> <li>• If using peak expiratory flow measurement to monitor asthma: <ul style="list-style-type: none"> <li>– instruct in correct technique and maintenance</li> <li>– tailor the monitoring schedule to the patient's daily program</li> </ul> </li> </ul> </li> </ul>
<b>How to avoid asthma exacerbations</b>
<ul style="list-style-type: none"> <li>• Recognising and avoiding triggers</li> <li>• Smoking cessation and avoiding other people's smoke</li> <li>• Managing exercise induced asthma</li> </ul>
<b>Minimising the effects of asthma on every day life</b>
<ul style="list-style-type: none"> <li>• Identify aspects of daily life (work, school, social activities) that are affected by asthma and develop strategies for minimising effects: <ul style="list-style-type: none"> <li>– effects of asthma on physical function</li> <li>– effects on emotions</li> <li>– effects on interpersonal relationships</li> </ul> </li> </ul>
Reproduced with permission: National Asthma Council. Asthma management handbook, 2006



Table 5. ICS dose equivalents: what is meant by low, medium and high daily doses

Dose level	Daily ICS dose			
	CIC*	BDP-HFA**	FP**	BUD**
Low	80–160 mcg	100–200 mcg	100–200 mcg	200–400 mcg
Medium	160–320 mcg	200–400 mcg	200–400 mcg	400–800 mcg
High	320 mcg and above	Over 400 mcg	Over 400 mcg	Over 800 mcg

ICS = inhaled corticosteroid, LABA = long acting beta 2 agonist, CIC = ciclesonide, BDP-HFA = beclomethasone dipropionate, FP = fluticasone propionate, BUD = budesonide \* ex actuator dose \*\* ex valve dose

Reproduced with permission: National Asthma Council. Asthma management handbook, 2006

general practice to recall patients for immunisation, Pap tests and diabetes reviews – perhaps we just have to be persistent.

## Other issues

### Nasal allergy

There is increasing awareness that treating allergic rhinitis with nasal corticosteroids is beneficial to asthma beyond relieving nasal symptoms.<sup>14</sup> Specific immunotherapy can be undertaken in asthmatics. Adrenaline, oxygen and resuscitation equipment should be on hand, plus a health professional competent to use them.

### Obesity

No facet of general practice is untouched by the obesity epidemic. Lung function can be significantly improved when obese asthmatics lose weight.<sup>15</sup>

### Undiagnosed older patients

Asthma mortality is higher in older patients. One might feel this is self evident, however, breathlessness is multifactorial in the elderly and asthma is a diagnosis that may not immediately come to mind.

### Asthmatics that only present to pharmacists for beta agonists

There appears to be little information available on this group. Research may be useful. Closer collaboration between GPs and pharmacists may help identify this group.

## Summary of important points

- Asthma care in Australia is still not ideal.
- The *Asthma management handbook* is an evidence based guide to best practice.
- Enhanced primary care items provide GPs with remuneration for delivery of ideal care.

## Resources

- Guide to spirometry: [www.nationalasthma.org.au/html/management/spiro\\_book/index.asp](http://www.nationalasthma.org.au/html/management/spiro_book/index.asp)
- Resources for indigenous patients: [www.nationalasthma.org.au/html/management/action\\_plans/print/Remote\\_Indigenous\\_Australian\\_Asthma\\_Action\\_Plan\\_Jan08.pdf](http://www.nationalasthma.org.au/html/management/action_plans/print/Remote_Indigenous_Australian_Asthma_Action_Plan_Jan08.pdf)
- Resources for non-English speaking patients: [www.healthtranslations.vic.gov.au/bhcv2/bhcht.nsf/PresentEnglishResource?Open&x=&s=Asthma](http://www.healthtranslations.vic.gov.au/bhcv2/bhcht.nsf/PresentEnglishResource?Open&x=&s=Asthma)

Conflict of interest: the author is a member of the GP Asthma Group, an advisory panel for the National Asthma Council and Australian Lung Foundation. He has received payment for speaking, accommodation, travel and hospitality from GlaxoSmithKline, AstraZeneca, Nycomed and Merck, Sharp and Dohme.

## Acknowledgment

Many thanks to the National Asthma Council for generous permission to use extracts from the Asthma Management Handbook 2006 and members of the NAC GP Asthma Group for feedback and comments especially Dr Russell Wiseman.

## References

1. National Asthma Council. Asthma management handbook 2006. Available at [www.nationalasthma.org.au](http://www.nationalasthma.org.au).
2. Australian Institute of Health and Welfare. Australian Centre for Asthma Monitoring. Asthma in Australia 2005. AIHW Asthma Series 2. Canberra: AIHW cat. no. ACM 6, 2005.
3. Australian Centre for Asthma Monitoring. Asthma in Australia: findings from the 2004–05 National Health Survey. Cat. no. ACM 10. Canberra: AIHW, 2007.
4. Medicare Australia. Available at [www.medicareaustralia.gov.au/statistics/mbs\\_item.shtml](http://www.medicareaustralia.gov.au/statistics/mbs_item.shtml).
5. Walters EH, Walters JA, Wood-Baker R. Why have asthma action plans failed the consumer test? *Med J Aust* 2003;178:477–8.
6. The Royal Australian College of General Practitioners. Standards for general practices. 3rd edn. South Melbourne: The RACGP, 2007.
7. Medicare Australia. Available at [www.medicareaustralia.gov.au/provider/incentives/pip/files/asthma-cycle-of-care.pdf](http://www.medicareaustralia.gov.au/provider/incentives/pip/files/asthma-cycle-of-care.pdf).
8. COPDX guidelines. Available at [www.copdx.org.au/guidelines/c\\_assess\\_sev\\_acu.asp](http://www.copdx.org.au/guidelines/c_assess_sev_acu.asp).
9. Martinez FD. Development of wheezing disorders and asthma in preschool children. *Pediatrics* 2002;109:362–7.
10. Product information Symbicort Turbohaler AstraZeneca.
11. Gibson P. Corticosteroids – clinical applications: exacerbations of asthma in adults. *Australian Prescriber* 1996;19:44–7.
12. Bowler SD, Mitchell CA, Armstrong JG. Corticosteroids in acute severe asthma: effectiveness of low doses. *Thorax* 1992;47:584–7.
13. Zwar NA, Comino EJ, Hasan I, Harris MF. Primary Health Care Research Network. General practitioner views on barriers and facilitators to implementation of the Asthma 3+ Visit Plan. *Med J Aust* 2005;183:64–7.
14. National Asthma Council. Allergic rhinitis and the patients with asthma. Available at [www.nationalasthma.org.au/html/management/info\\_ar\\_hp/index.asp](http://www.nationalasthma.org.au/html/management/info_ar_hp/index.asp).
15. Stenius-Aarniala B. Immediate and long term effects of weight reduction in obese people with asthma: randomised controlled study. *BMJ* 2000;320:827–32.