



Management



Key points

Written asthma action plans

- Asthma action plans are written instructions on how to recognise when asthma is getting worse, and what action to take when it does. They help many people control their asthma and stay out of hospital.
- Most people with current asthma do not have a written asthma action plan. Young adults, adult men, and persons living in less well-off areas are least likely to have a written asthma action plan.
- There was an increase in the number of people who had these plans in the early 1990s. However, the number of people with asthma who have written asthma action plans decreased during the period since 1995.
- People with current symptoms of asthma or more severe asthma are more likely to have a written asthma action plan.

Medications

- The most common type of respiratory medication used in all age groups is bronchodilators (mainly short-acting beta agonists), which are used by people with asthma and COPD for relief of symptoms.
- The use of nebulised administration of bronchodilators has declined since 2000.
- There is evidence that many people with asthma who would benefit from use of inhaled corticosteroids are not using them regularly.
- The majority of inhaled corticosteroids are taken in the highest dose. It is likely that for many people their asthma could be well controlled with a lower dose of inhaled corticosteroid.
- In 2004, two-thirds of inhaled corticosteroids used were in a combined formulation with long-acting beta agonists. Use of this combined medication should allow the use of lower doses of inhaled corticosteroids, with equivalent efficacy.

Spirometry

- Spirometry is a breathing test used to help diagnose and monitor asthma and other lung diseases.
- Between 1994 and 2004, there was little apparent change in the use of spirometry among all age groups. There was a steady decline in spirometry claims from 1998 to 2004 in those aged 5 to 34 years.
- There is a lot of variation between the states and territories in the number of claims for performing spirometry. The reason for this variation is not known.

Introduction

Over the last 20 years a consensus has emerged, based on available evidence, that written asthma action plans and regular use of medications that control the disease and prevent exacerbations are key elements in the effective management of asthma. Additionally, the important role of spirometry in the diagnosis, assessment and follow-up of patients with asthma has been recognised for many years.

This chapter will review the data relating to the use of these management strategies and their implementation in the Australian population.

6.1 Written asthma action plans

A written asthma action plan (AAP) enables people with asthma to recognise a deterioration in their condition promptly and respond appropriately, by integrating changes in symptoms or peak expiratory flow measurements with written instructions to introduce or alter their medication. The aim of an AAP is to assist the process of early intervention and to prevent or reduce the severity of acute asthma episodes. There is evidence that, in patients with asthma, the use of a written AAP in conjunction with training in self-management and regular medical review improves outcomes. This includes less need for hospitalisation, urgent GP visits, and additional medication, as well as better lung function (Gibson et al. 2002). It has also been shown that written AAPs reduced the risk of death from asthma by 70% (Abramson et al. 2001). Written asthma action plans have formed part of national guidelines for the management of asthma since 1989 (Woolcock et al. 1989) and have been promoted in public education campaigns by the NAC (NAC 2002).

AAPs may be provided in various formats. The following features, which are common to most of the AAPs that have been shown to be beneficial, are considered to be the four essential components:

1. The AAP should be in a written format.
2. It should be individually prescribed, rather than a generic example.
3. It should contain information that allows the user to recognise the onset of an exacerbation.
4. It should contain information on what action to take in response to that exacerbation (usually increase or commence steroids and/or seek urgent medical care).

While most existing surveys on the use of AAPs have asked about the possession of a written AAP, most have not specifically established whether it contains the other essential components.

Possession of written asthma action plans

In recent surveys the proportion of adults with current asthma who possess an asthma action plan ranged from 15% to 22% (Table 6.1).

People with recent asthma symptoms or with more severe asthma were more likely to report that they possessed a written AAP. In New South Wales in 1997, 43% of adults with severe asthma possessed a written AAP (Marks et al. 2000). In the same state, in 2003, 41.2% of people who had taken treatment for asthma or had symptoms of asthma in the last 4 weeks reported having a written AAP (Centre for Epidemiology and Research 2004). At the same time, in Victoria, 51% of people who had experienced asthma symptoms in the last 12 months had an AAP (Department of Human Services, unpublished data 2004).

Table 6.1**Possession of asthma action plans: people with current asthma, Australia, 1998–2001**

| Place | Age (people with current asthma) | Year | Rates | 95% CI |
|---|----------------------------------|-----------|-------|------------|
| Possession of a written asthma action plan | | | | |
| Australia (1) | All ages (n=3,157) | 2001 | 17.0% | 15.6–18.5% |
| | 15 years and over (n=2,170) | 2001 | 14.6% | 12.9–16.4% |
| ACT (2) | 4 to 6 years | 1999–2001 | 23.2% | 21.3–25.1% |
| Possession of an asthma action plan (written instructions on what to do if asthma is out of control) | | | | |
| SA (3) | 15 years and over (n=388) | 2001 | 22.2% | 18.1–26.3% |
| | 15 years and over (n=346) | 1998 | 29.2% | 24.3–34.6% |
| Possession of a written asthma management plan from a doctor on how to treat asthma | | | | |
| Qld (4) | 18 years and over (n=795) | 2000 | 21.1% | 18.3–23.9% |
| NSW (5) | 16 years and over (n=1,897) | 1998 | 34.4% | 31.4–37.3% |
| NSW (6) | 2 to 12 years (n=1,296) | 2001 | 43.6% | 40.1–47.2% |

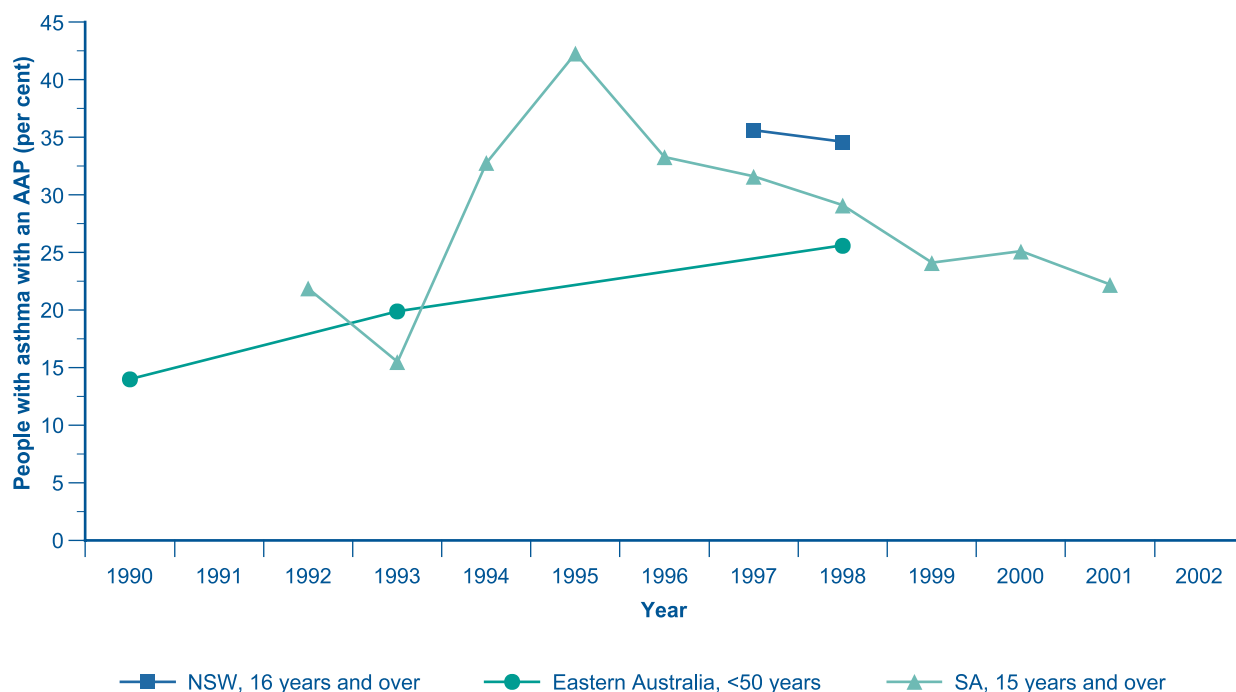
Notes: Only people with current asthma (n) were asked about the possession of AAPs. The definitions for current asthma were: NSW Survey and Queensland Chronic Disease Survey: Doctor diagnosis of asthma plus treatment or symptoms of asthma in the last 12 months; National Health Survey and SA Omnibus: 'Yes' to the question 'Have you ever been diagnosed by a doctor with asthma?' and 'Yes' to 'Do you still have/get asthma?' While the currently accepted term for written instructions on how to manage one's asthma is an 'asthma action plan', it was previously known as an 'asthma management plan'. As a result, the questions used in some surveys reported in the table refer to an 'asthma management plan' while others refer to an 'asthma action plan'.

Sources: (1) ABS National Health Survey 2001 (CURF); (2) ACT assessment of new primary school entrants (Glasgow et al. 2003); (3) South Australian Health Omnibus Survey (Wilson et al. 2003); (4) Queensland Chronic Disease Survey (Epidemiology Services Unit 2002); (5) NSW Health Survey 1998 (Public Health Division 2001); (6) NSW Child Health Survey (Centre for Epidemiology and Research 2002).

Time trends in the possession of written asthma action plans

The data from the series of South Australian Health Omnibus surveys show that, between 1992 and 1995, there was a rise in the proportion of adults with asthma who reported that they had AAPs (Figure 6.1). This trend is confirmed by the NAC studies in eastern Australia in 1990 and 1993. However, the rate of AAP ownership has declined since 1995 in the South Australian series. No other time series is available for the recent period, but the single studies performed in recent years in other states and nationally show rates of possession of AAPs equivalent to the most recent, lower, rates found in the South Australian series (Table 6.1).

Figure 6.1
Possession of asthma action plans: adults with current asthma, Australia, 1990–2001



Notes: Only people with current asthma were asked about the possession of AAPs. Definitions used to identify AAP possession are SA: Current asthma = 'Yes' to the question 'Have you ever been diagnosed by a doctor with asthma?' and 'Yes' to 'Do you still have asthma?' then asked 'Do you have an asthma action plan (written instructions of what to do if your asthma is out of control)?'; NSW: Current asthma = doctor diagnosis of asthma plus treatment or symptoms of asthma in the last 12 months, 'Do you have a written asthma action plan?'; Eastern Australia: Current asthma = self-reported diagnosis of asthma, 'Do you have a written action plan?'

Sources: Comino et al. 1996; Gibson et al. 2000; Public Health Division 2001; Wilson et al. 2002, 2003.

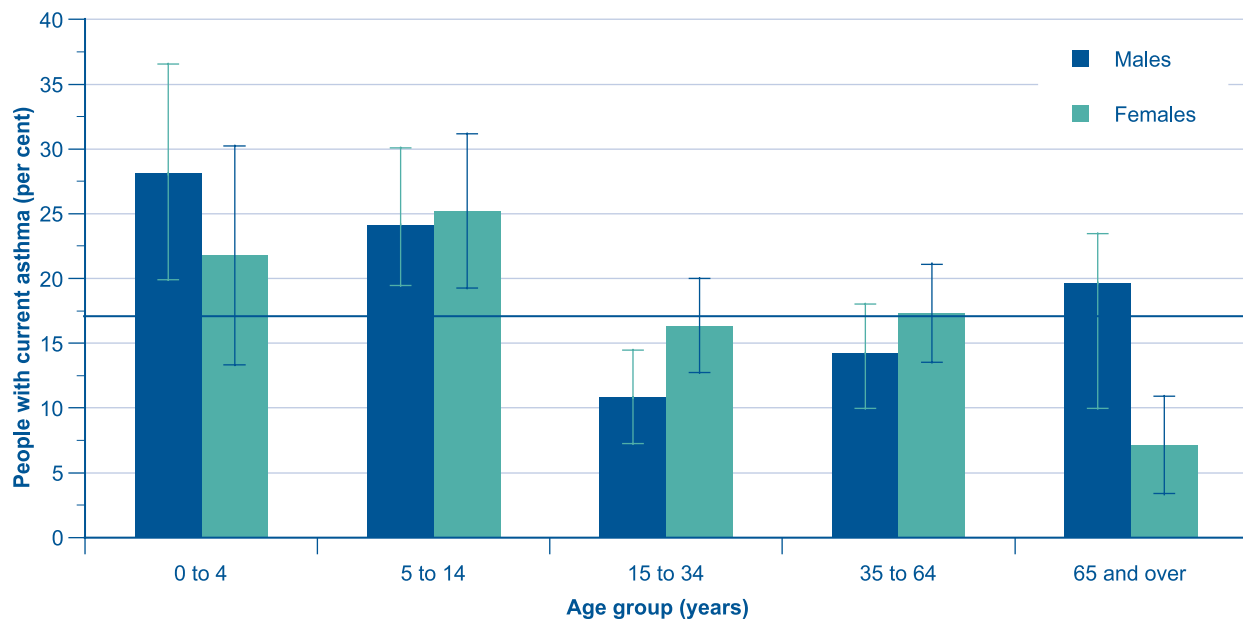
Differentials in the possession of written asthma action plans

Age and sex

Among people with asthma, the highest rate of possession of written AAPs was among children and the lowest rate was among young adults (Figure 6.2). In the adult age range, females were more likely than males to report having a written AAP, except in the elderly. Males aged 15 to 34 years and females aged 65 years and over had a very low rate of possession of written AAPs (10.8% and 7.1%, respectively).

Figure 6.2

Possession of a written asthma action plan in people with current asthma, by broad age group and sex, Australia, 2001



Note: Horizontal line represents the proportion of people of all ages with a written AAP (17.0%).

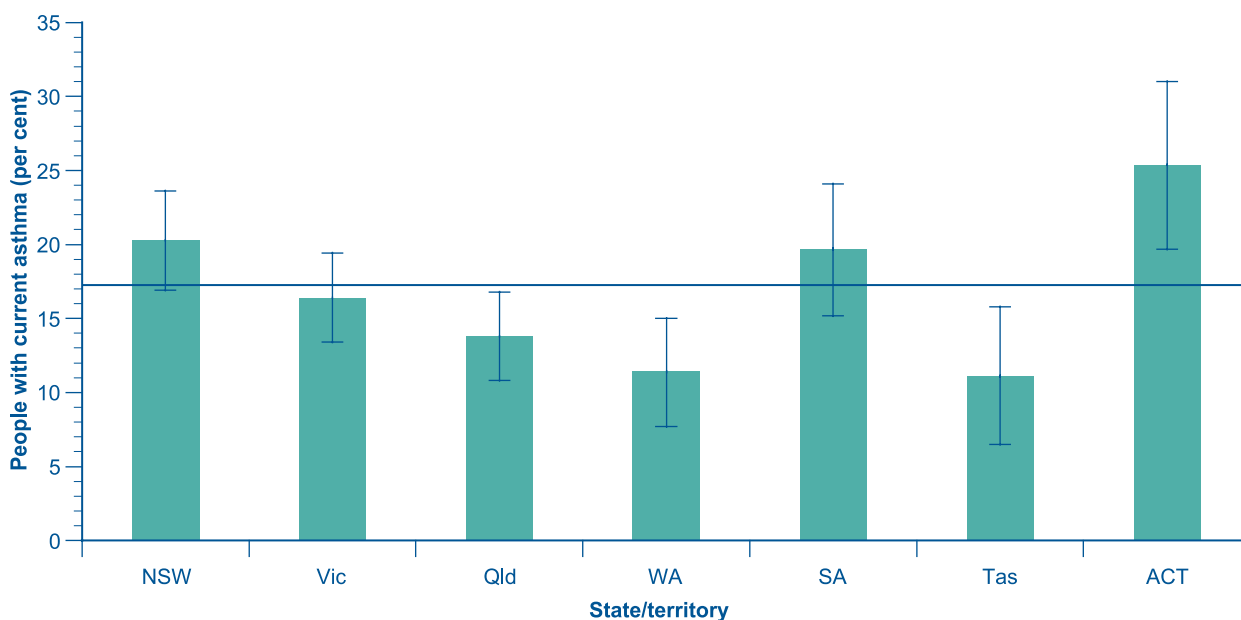
Source: ABS National Health Survey 2001.

States and territories

The proportion of people with current asthma who reported having a written AAP was relatively high in the Australian Capital Territory and New South Wales and relatively low in Western Australia, Tasmania and Queensland (Figure 6.3).

Figure 6.3

Possession of a written asthma action plan in people with current asthma, by state and territory, all ages, Australia, 2001



Note: Horizontal line represents the proportion of people of all ages with a written AAP (17.0%). Northern Territory excluded because numbers too small to produce reliable estimates.

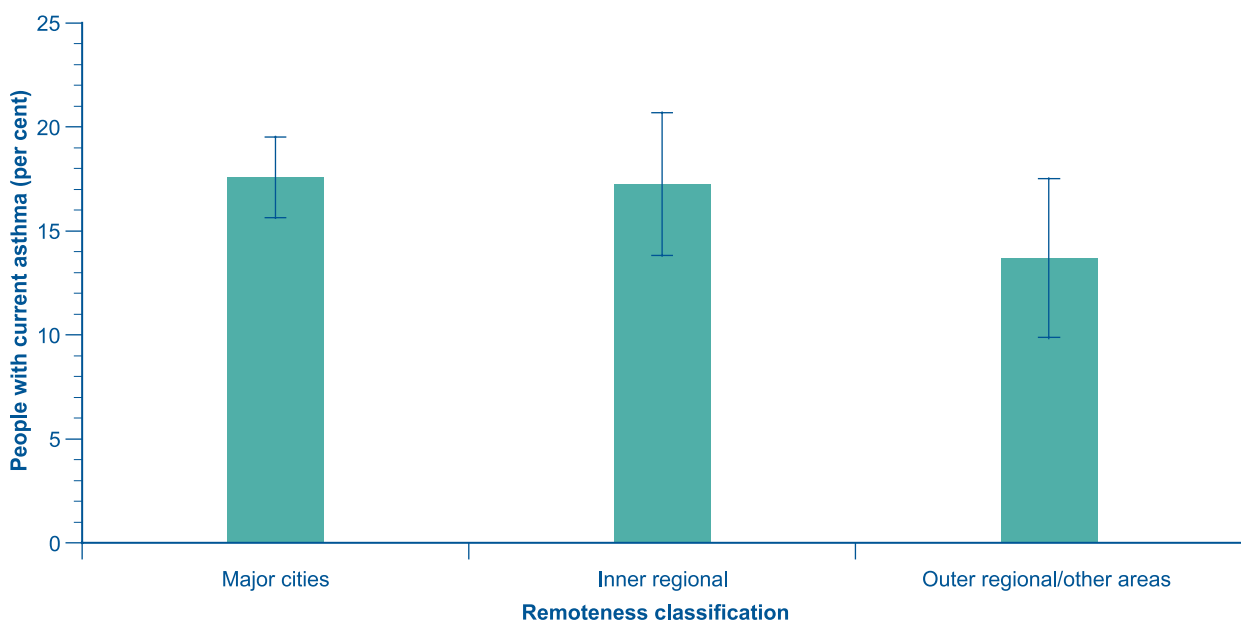
Source: ABS National Health Survey 2001.

Urban, rural and remote areas

There was no significant difference in the rate of ownership of a written AAP among people with current asthma living in major cities, or in regional and remote areas (p trend=0.1) (Figure 6.4).

Figure 6.4

Possession of a written asthma action plan in people with current asthma, by remoteness, all ages, Australia, 2001



Note: Remoteness is classified according to the Australian Standard Geographical Classification (ASGC) of remoteness.

Source: ABS National Health Survey 2001.

Culturally and linguistically diverse background

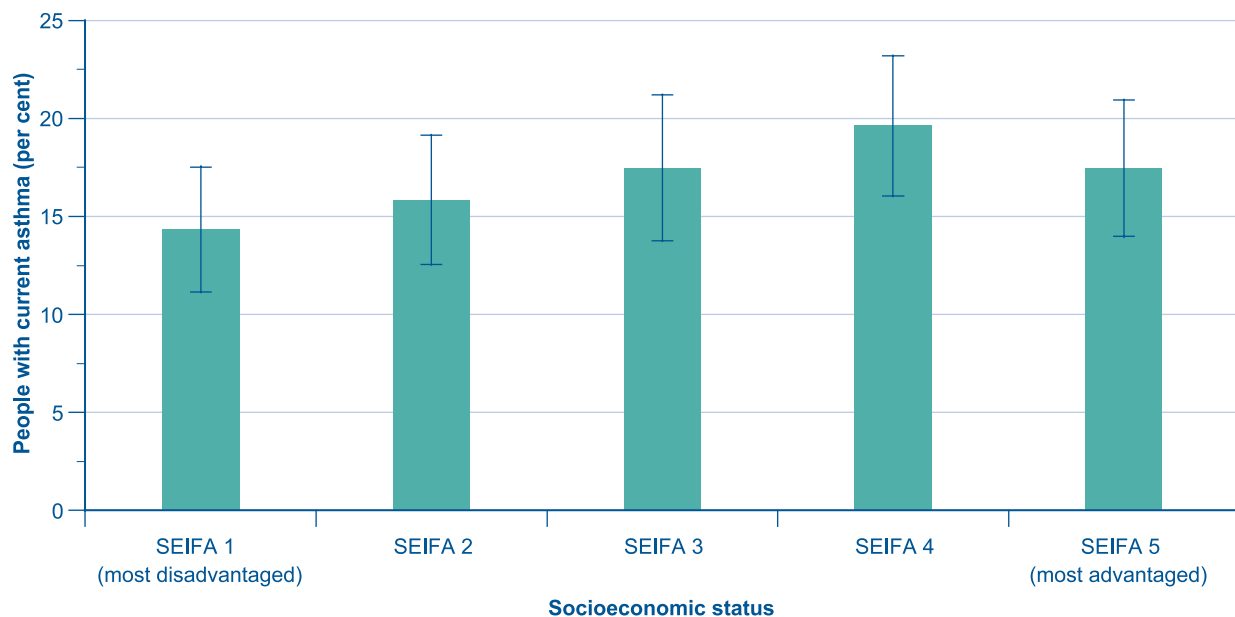
In the 2001 National Health Survey (ABS 2002a), approximately 17% of people from English-speaking backgrounds reported possession of written asthma action plans, compared to 13% from non-English-speaking backgrounds (ACAM 2003). This difference was not statistically significant.

Socioeconomic disadvantage

There was a lower rate of possession of written AAPs among people with asthma living in localities with greater levels of socioeconomic disadvantage (p trend=0.04), (Figure 6.5).

Figure 6.5

Possession of a written asthma action plan in people with current asthma, by socioeconomic status, all ages, Australia, 2001



Note: SEIFA 1 represents the most disadvantaged socioeconomic quintile and SEIFA 5 the most advantaged.

Source: ABS National Health Survey 2001.

Summary

The majority of people with asthma do not have a written asthma action plan. Although there was apparently an increase in the use of AAPs during the early part of the 1990s, coinciding with the public awareness campaigns of the National Asthma Council (Comino et al. 1996), this trend has not been sustained. Young adults, adult men, and persons living in outer regional and remote areas and in socioeconomically disadvantaged areas were least likely to have a written AAP. People with more severe asthma or those experiencing symptoms were also more likely to have AAPs. There was some variation among the states and territories in the proportion of people with asthma who reported possessing a written AAP.

There are no data on the extent to which the AAPs that are in use incorporate those elements that are required for their effectiveness.

6.2 Medication use

Drug therapy is the mainstay of asthma management. Broadly speaking, there are three ways in which medications are used in the treatment of asthma:

1. to relieve symptoms when they occur;
2. to control the disease and attempt to prevent symptoms and exacerbations; and
3. to treat exacerbations of the disease.

The most commonly used class of medications for relief of symptoms are short-acting beta agonists. However, short-acting anti-cholinergic drugs can also be used for this purpose.

There is evidence from systematic reviews that inhaled corticosteroids are highly effective for the second purpose, to minimise symptoms and prevent exacerbations (Adams et al. 2003, 2004a, 2005). Recent analyses of data from clinical trials has demonstrated that most people with asthma can be well controlled with relatively low doses of inhaled corticosteroids, resulting in a low risk of adverse effects (Powell & Gibson 2003). The addition of long-acting beta agonists to inhaled corticosteroids, now available in a combined formulation, allows equivalent or greater effectiveness in disease control with lower doses of inhaled corticosteroids (Greening et al. 1994). Leukotriene antagonists are also used for disease control, though they are less effective than inhaled corticosteroids (Ng et al. 2004). Cromoglycate (a cromone) has been traditionally used for the prevention of asthma exacerbations in children but evidence for its effectiveness for this purpose is generally lacking.

Oral corticosteroids have long been the mainstay of treatment for exacerbations of asthma. The role of intermittent use of inhaled corticosteroids or short-term increases in the maintenance or usual dose of inhaled corticosteroids remains uncertain.

In this chapter we review data on use of medications for the treatment of asthma in Australia, focussing in particular on medications used to control the disease, principally inhaled corticosteroids. Various sources of data have been used for this purpose. Information on the wholesale supply of medications in the community and on reimbursements for the purchase of prescription medications is available from IMS Health and the Pharmaceutical Benefits Scheme, respectively. In 2002, data from the Pharmaceutical Benefits Scheme (PBS) and the Repatriation Pharmaceutical Benefits Scheme (RPBS) provided information about 80% of prescribed medications purchased in Australia. IMS Health collects data from all pharmaceutical wholesalers about the sale of both prescription and non-prescription medications to the hospital and community sectors (see Appendix 1, Section A1.8, for more details about these data sources). However, data from these sources cannot be linked to the reason for medication use or to the characteristics of the purchaser. Since many of the medications used to treat asthma are also used by people with COPD, wheezy bronchitis and other related illnesses, this reduces the specificity of conclusions drawn from analyses of these data. Health surveys, including the ABS National Health Survey, are the best source of information about actual use of medication by people with asthma.

The data on medication use from all sources is expressed in units of defined daily doses (DDDs) per 1,000 population per day. This unit of measurement represents the number of standard daily doses of each medication or class of medications that have been supplied, prescribed or used within a population. See Appendix 1, Section A1.8.3, for more details of these calculations.

Time trends in medication supply for respiratory conditions

Classes of medications

Short-acting beta agonists, mainly salbutamol and terbutaline, remain the most commonly supplied class of medications among those used to treat respiratory disorders in Australia (Figure 6.6). The number of DDDs of this class of medications that were supplied wholesale was greater than the number of DDDs for which prescriptions were reimbursed. This is because this class of medication is commonly dispensed over the counter, that is, without a prescription. Short-acting beta agonists and anti-cholinergics are also commonly used in patients hospitalised with respiratory illness, for which it is dispensed by hospital pharmacies. In both these circumstances, usage would be recorded in the wholesale supply data but not in the reimbursed prescription data. Apart from this difference, the data on wholesale supply and reimbursed prescriptions agree very closely (Figure 6.6).

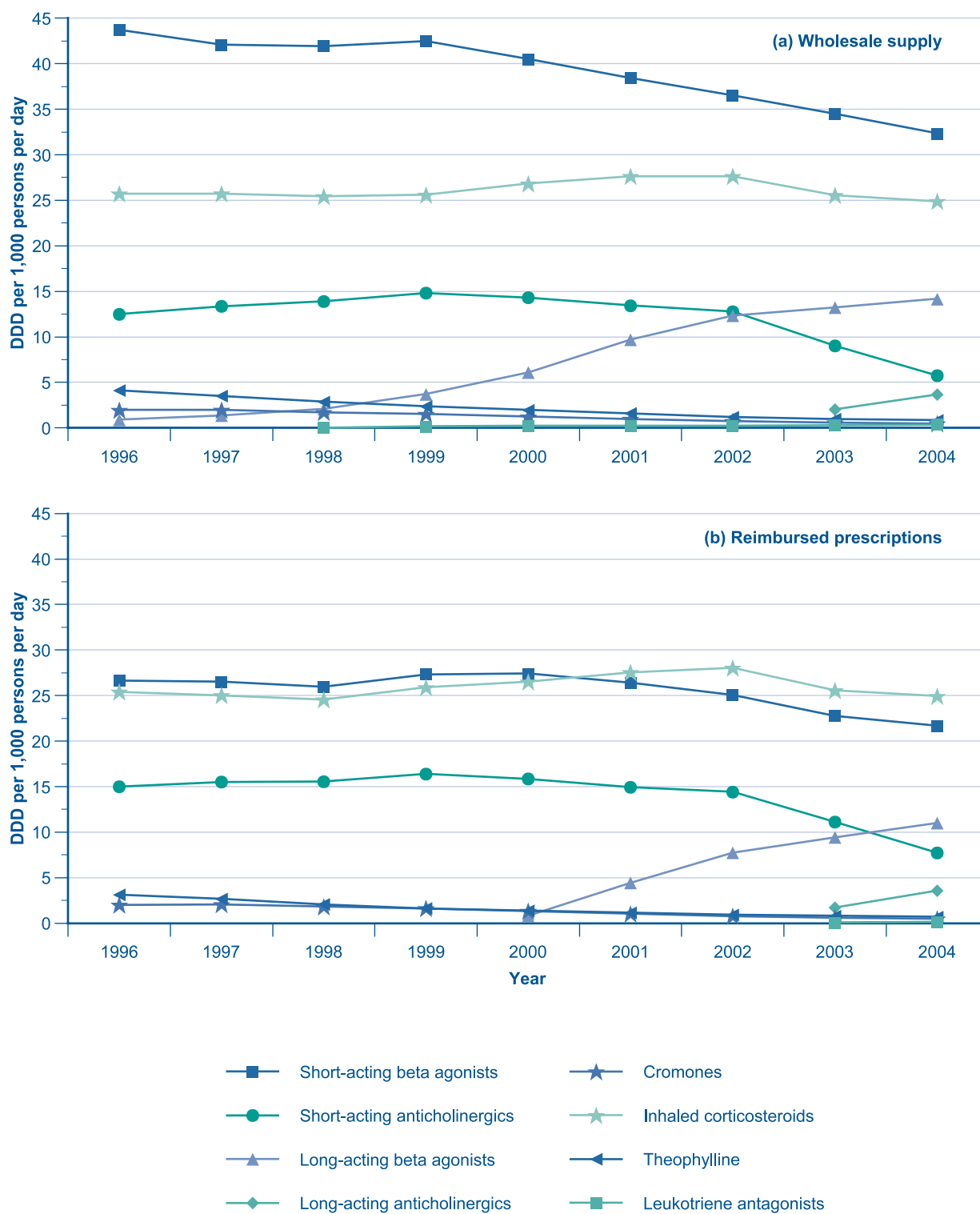
Supply of short-acting beta agonists has been decreasing since 1999 and, more recently, use of the short-acting anti-cholinergic ipratropium bromide has also been declining. The latter trend may have been accelerated by the introduction of tiotropium, a long-acting anti-cholinergic medication that is mainly recommended for use by patients with COPD.

The number of DDDs of inhaled corticosteroids distributed per year has been remarkably stable since 1996. There was a small increase between 1999 and 2002 and a small decrease back to pre-1999 levels since then.

Long-acting beta agonists first became eligible for reimbursement under the PBS in 2000. Since that year, there has been a rapid increase in the use of this class of medications.

The use of other medications for asthma and other respiratory disorders, cromones (cromoglycate and nedocromil) and theophylline, was low and decreased during this period. Reimbursement for prescriptions for leukotriene antagonists has only recently been introduced. The overall usage of this class of medications remains low, relative to other respiratory medications.

Figure 6.6
Respiratory medications (a) supplied by wholesalers and manufacturers and (b) reimbursed prescriptions, by defined daily dose (DDD) per 1,000 persons per day, Australia, 1996–2004



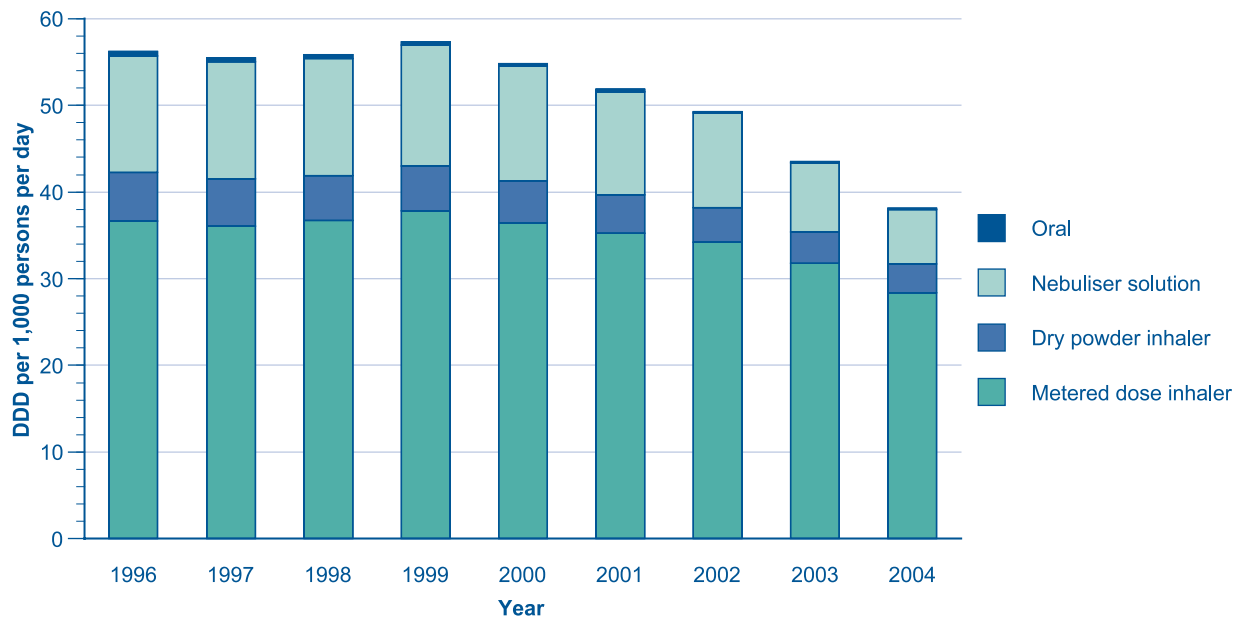
Note: Respiratory medications classified according to ATC. Short-acting anticholinergics include ipratropium. Long-acting anticholinergics include tiotropium.

Sources: (a) IMS Health; (b) Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS); Australian Bureau of Statistics.

Route of administration of bronchodilators

Nearly all short-acting beta agonist and anti-cholinergic bronchodilator medication was administered by inhalation (as opposed to oral tablets or syrups) (Figure 6.7). Metered dose inhalers (puffers) were the most popular devices supplied for this purpose. Approximately one-quarter of the supply of this class of medication was in the form used for nebulised delivery. This proportion declined by 50% between in 2000 and 2004, in accordance with current evidence and recommendations (Cates 1999).

Figure 6.7
Delivery devices supplied by wholesalers for the administration of short-acting beta agonist and anticholinergic medication, by defined daily dose (DDD) per 1,000 persons per day, Australia, 1996–2004



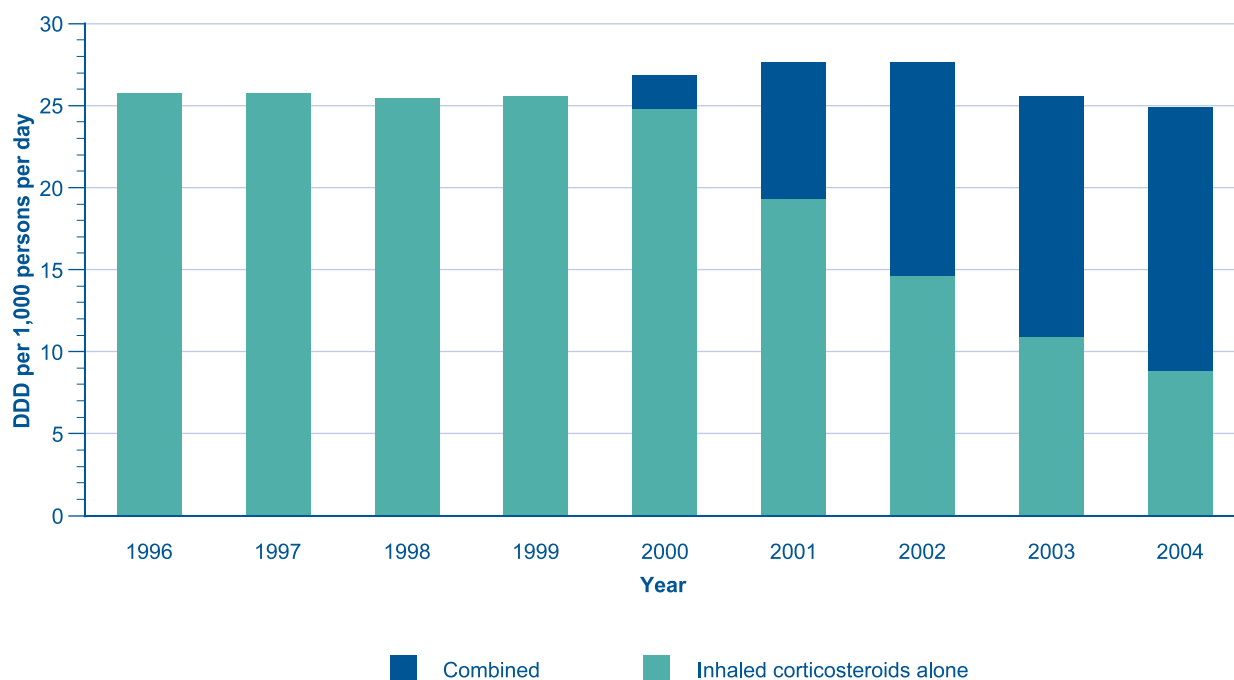
Sources: IMS Health; Australian Bureau of Statistics.

Combined medications

Inhalation devices that combined long-acting beta agonists and corticosteroids in the same unit were introduced onto the Australian market in 2000. In subsequent years, the proportion of all inhaled corticosteroids that were supplied by wholesalers in combination with long-acting beta agonists steadily increased. By 2004, combined therapy represented 64% of all DDDs of inhaled corticosteroid therapy supplied by wholesalers (Figure 6.8).

Figure 6.8

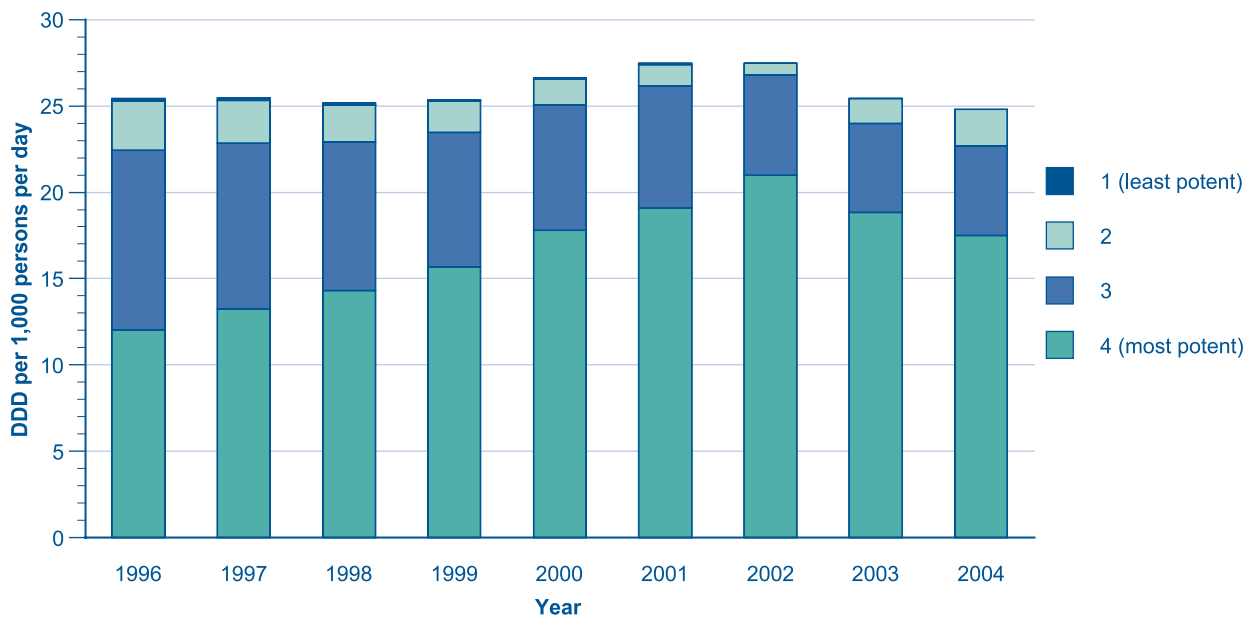
Inhaled corticosteroids supplied by wholesalers separately or as part of combined therapy, by defined daily dose (DDD) per 1,000 persons per day, Australia, 1996–2004



Sources: IMS Health; Australian Bureau of Statistics.

The proportion of DDDs of inhaled corticosteroids that were supplied in the most potent formulations, that is, the highest doses of budesonide and fluticasone, increased from 47% in 1996 to 76% in 2002. It then decreased slightly to 70% in 2004 (Figure 6.9). The major increase in the use of combined medications since 2000 (Figure 6.8) should lead to a further decrease in the frequency of use of the most potent formulations of inhaled corticosteroid as there is evidence that combined therapy allows equivalent effectiveness at lower corticosteroid doses (Greening et al. 1994). Furthermore, as noted above, recent analysis has highlighted the fact that most of the benefits of inhaled corticosteroids can be achieved at relatively low doses (Powell & Gibson 2003).

Figure 6.9
Relative potency of inhaled corticosteroids supplied by wholesalers separately or as part of combined therapy, by defined daily dose (DDD) per 1,000 persons per day, Australia, 1996–2004



Notes

- 1: (least potent): Includes Pulmicort MDI 50, BDP (CFC) MDI 50, BDP rotahaler 100.
- 2: Includes Flixotide/Seretide AH 100, MDI 50; Pulmicort TH/MDI 100; Symbicort 200; Qvar 50; BDP(CFC) 100.
- 3: Includes Flixotide/Seretide AH 250, MDI 125; Pulmicort TH/MDI 200; Symbicort 400; Qvar 100; BDP(CFC) 250.
- 4: (most potent): Includes Flixotide/Seretide AH 500, MDI 250; Pulmicort TH 400.

Sources: IMS Health; Australian Bureau of Statistics.

Differentials in the use of asthma medication

Data on reported medication use by people with asthma are available from the ABS National Health Survey.

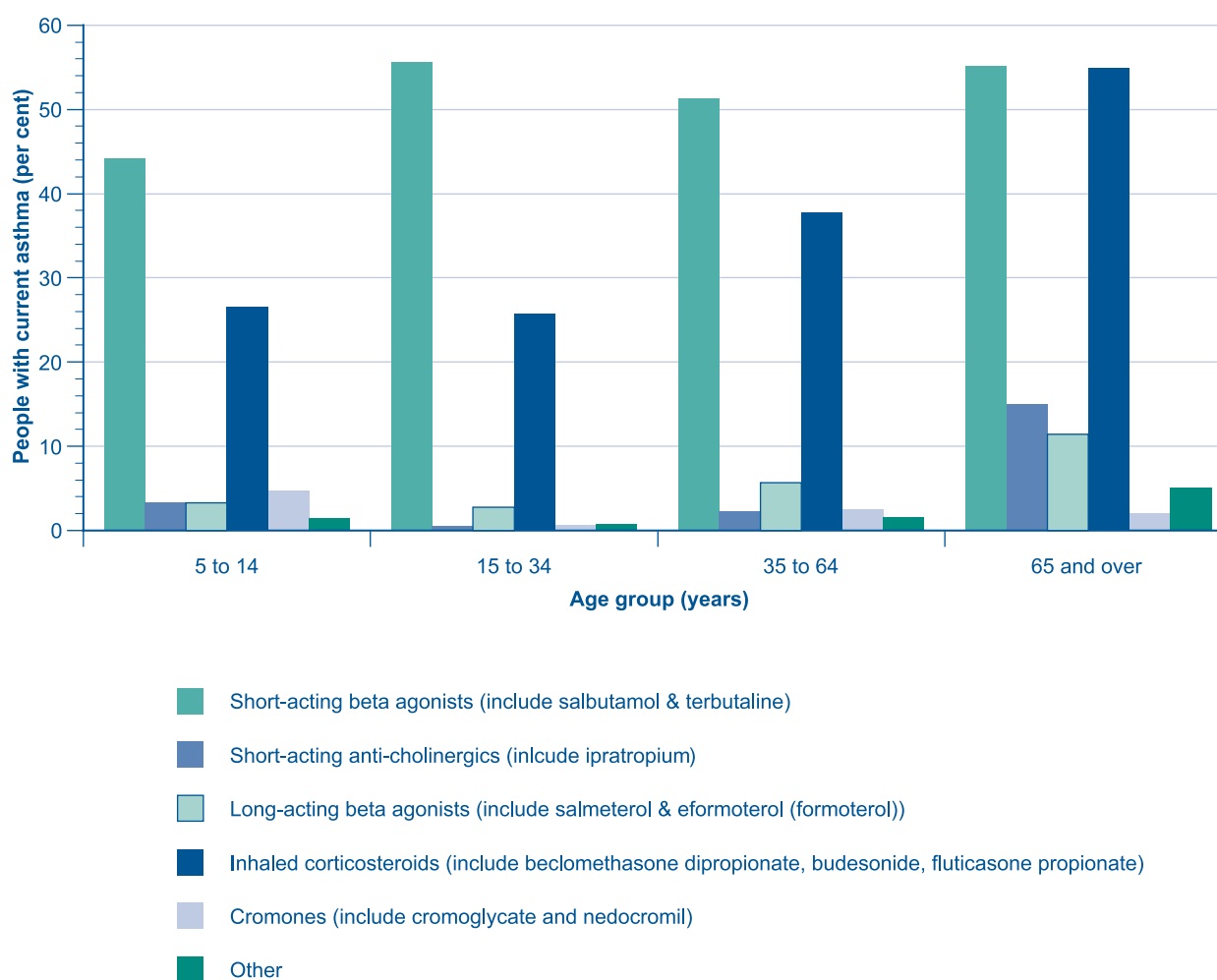
Age groups

Short-acting beta agonists (relievers) were the most commonly used medications for asthma in all age groups (Figure 6.10). Inhaled corticosteroid use increased with increasing age, as did the use of short-acting anti-cholinergics and long-acting beta agonists. This reflects the increasing severity and persistence of the condition with increasing age. In older age groups, the distinction between asthma and COPD is less certain and it is possible that some medication use that has been attributed to asthma would more appropriately be attributed to COPD.

Only 25% of young adults with asthma reported using inhaled corticosteroids for treatment of their illness in the preceding 2 weeks. This finding is consistent with the observation in an earlier study in New South Wales that only 30% of adults with asthma used inhaled corticosteroids daily or most days during 1997 (Marks et al. 2000). In that study, only 43% of a subset of respondents who had features of moderate to severe asthma, and hence would have benefited from regular use of this class of medications, were using them regularly. The more recent, nationwide survey almost certainly supports that conclusion.

Figure 6.10

Use of asthma medication in the last 2 weeks in people with current asthma, by broad age group and type of medication, people aged 5 years and over, Australia, 2001



Source: ABS National Health Survey 2001.

Remoteness and socioeconomic status

In the 2001 National Health Survey, the prevalence of use of inhaled corticosteroids and long-acting beta agonists among people with asthma did not differ between urban, regional and remote communities (ACAM 2003). There was also little variation in reported use of inhaled corticosteroids or short- and long-acting beta agonists across socioeconomic groups in 2001 (ACAM 2003) (data not shown).

Summary

Inhaled short-acting beta agonists and inhaled corticosteroids are the most commonly used medications among people with asthma. Almost all bronchodilator medication is delivered by inhalation, the majority by metered dose inhaler. The use of nebulised solutions for administration of bronchodilators is decreasing in accordance with current recommendations.

Most inhaled corticosteroids are delivered in the most potent available formulation. It is unlikely that this dosage level is required in all individuals who are receiving it. Since 2003, the majority of inhaled corticosteroid doses have been delivered in combination with long-acting beta agonists. This should lead to reduction in the potency of inhaled corticosteroid that is required.

Despite evidence of relatively high doses of inhaled corticosteroids being delivered to those that are taking them, there is also evidence that the majority of people with asthma do not use inhaled steroids regularly. This almost certainly includes a substantial proportion of people who would stand to benefit from using this class of medications.

6.3 Spirometry

Measurement of lung function has an important role in the diagnosis, assessment and follow-up of patients with asthma (NAC 2002). Spirometry is used to establish the presence of airflow obstruction and its reversibility in response to the inhalation of a bronchodilator. This is an important feature in the diagnosis of asthma. The degree of airflow obstruction is an indicator of one aspect of the severity of asthma, and guidelines for the assessment of impairment and disability due to asthma, based upon spirometric function, have been published (American Thoracic Society 1993). Finally, change in spirometric function has an important role in the periodic assessment of patients with asthma: both at times of symptomatic deterioration and, routinely, to assist in the

management of back-titration of medication and maintenance of optimal asthma control. It is for this reason that the measurement of spirometric function is recommended as part of the initial GP consultation in the Asthma 3+ Visit Plan (DoHA 2003).

In addition to providing clinicians with important information relevant to the management of asthma, spirometry has a role in providing patients with objective evidence about the presence and severity of their asthma.

The main source of information about the performance of spirometry in Australia is data derived from claims for reimbursement of the fee for performing this test. The level of payment, and hence the item number, for the performance of spirometry depends on the setting in which it was performed. For the purpose of this analysis we have divided the claims into those that were performed outside a lung function laboratory (item 11506, which includes most office-based spirometry) and spirometry that was performed in a lung function laboratory (item numbers 11503, 11509, and 11512, depending on what other tests are performed at the same time).

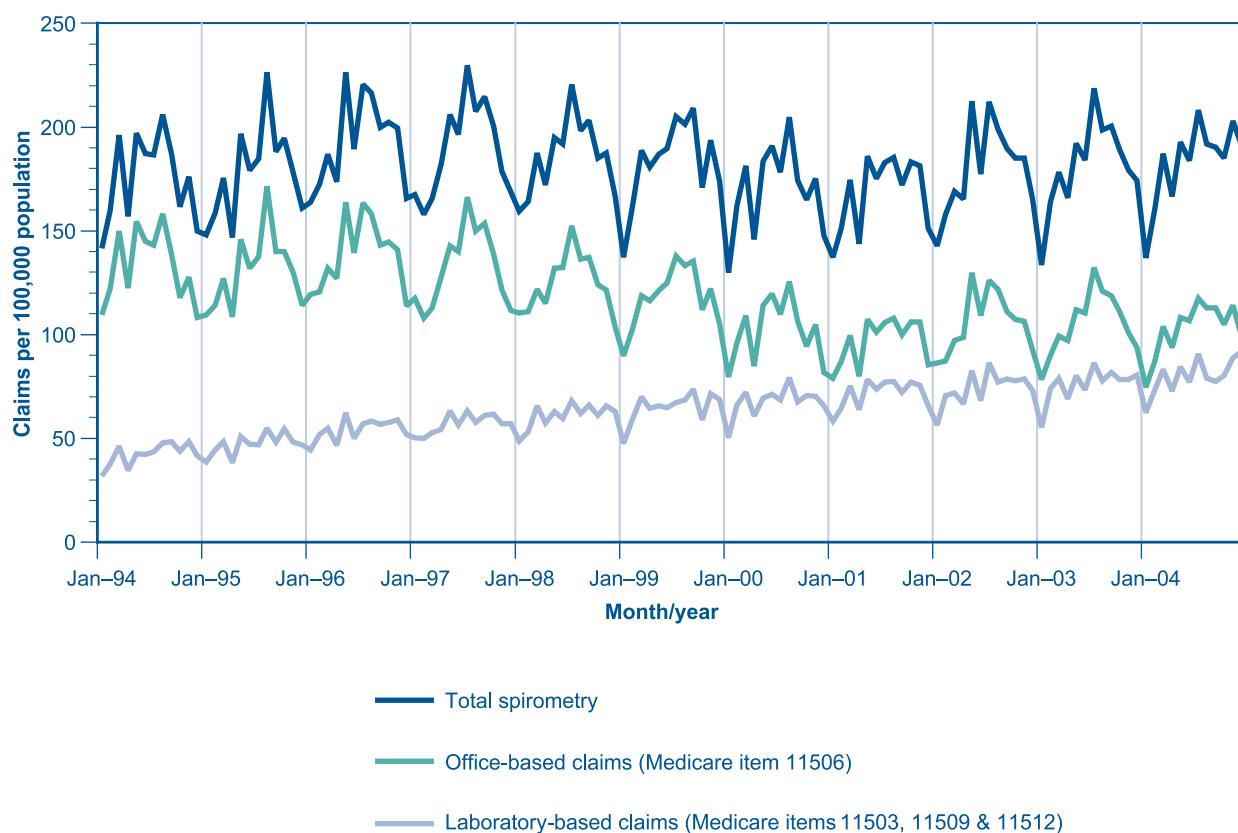
Spirometry is not solely used for the diagnosis and assessment of asthma. It may be used in the assessment of a range of other lung diseases, most commonly chronic obstructive pulmonary disease (COPD), and also to exclude disease. In order to provide a more valid indicator of the use of spirometry in people with asthma, we have conducted a secondary analysis of the data in the subset of people aged 5 to 34 years, in whom we believe most spirometry measurements would have been made for the assessment of asthma, as opposed to other respiratory diseases (see Appendix 1, Section A1.7, for a further discussion on this data source).

Time trends in spirometry use

There was no long-term increase or decrease in the rate of claims for spirometry in Australia over the period 1994 to 2004 (Figure 6.11). However, during this period there was a gradual decline in claims for office-based spirometry (that is, tests performed in the doctor's examination room) and an increase in claims for lung function laboratory-based tests. Among people aged 5 to 34 years, in whom we believe most spirometry would be performed for the assessment of asthma, there was an overall decline in total spirometry claims between 1994 and 2000 (Figure 6.12). There was a small rise in claims for office-based spirometry from 2000 in those aged 5 to 34 years, for whom the claims are more likely to reflect those for asthma management or assessment. The increase, which arrests the previous downward trend, coincides with the introduction of the Asthma 3+ Visit Plan. The performance of office-based spirometry declined steadily during the period 1996 to 2004, apart from a small reversal of this trend in 2002–03. This trend was only partially offset by the small rise in claims for the performance of spirometry in the lung function laboratory in this age group, during this period.

Figure 6.11

Claims for the performance of spirometry and complex lung function tests which included spirometry per 100,000 population, all ages, Australia, 1994–2004

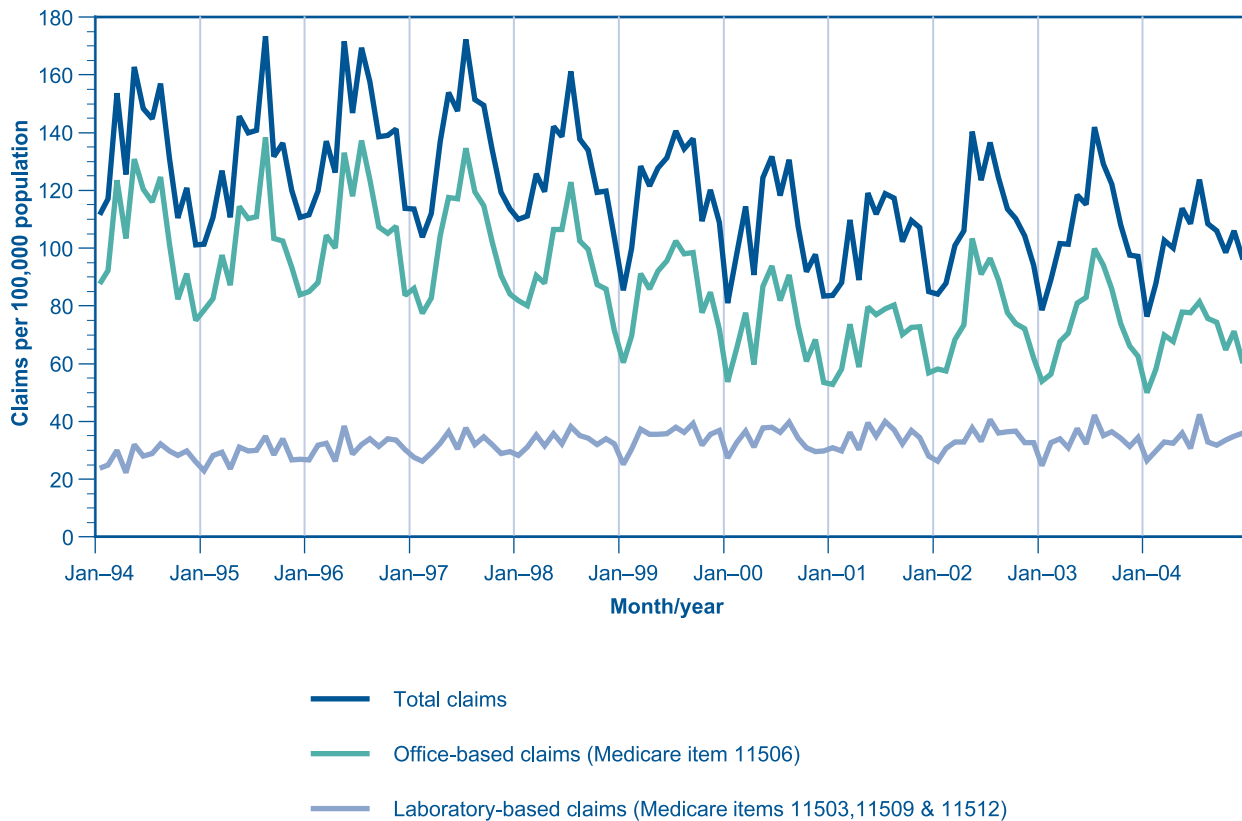


Sources: HIC health statistics; Australian Bureau of Statistics.

There was evidence of marked seasonal fluctuations in the use of office-based spirometry for all ages (Figure 6.11) and also for people aged 5 to 34 years (Figure 6.12). The number of spirometry procedures performed peaked in the winter months, when respiratory tract infections are most common, and was generally lowest in the summer months. There was a small increase in the number of spirometry procedures performed in February and March. This period coincides with the beginning of the school year and has been shown to be a period of increased risk of asthma exacerbations in school-aged children (Sheppeard et al. 2001).

Figure 6.12

Claims for the performance of spirometry and complex lung function tests which included spirometry per 100,000 population, people aged 5 to 34 years, Australia, 1994–2004



Sources: HIC health statistics; Australian Bureau of Statistics.

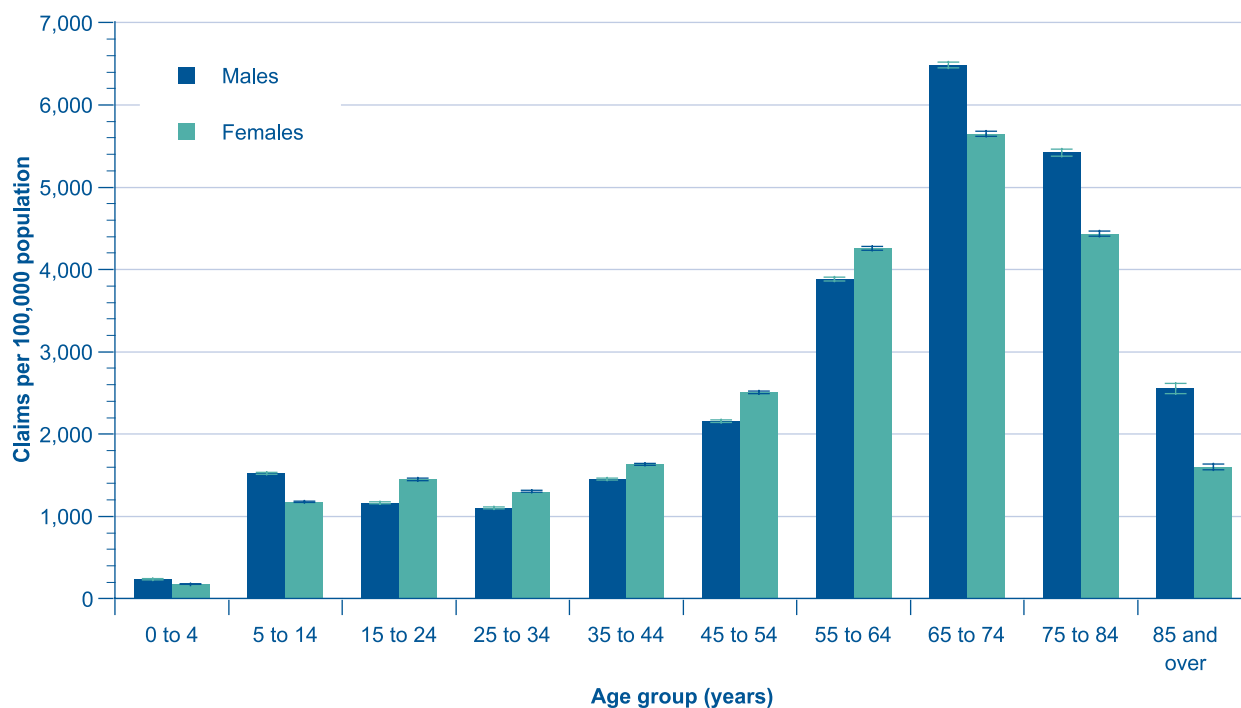
Differentials in spirometry use

Age and sex

The rate of claims for the performance of spirometry increased with increasing age over the range 35 to 74 years (Figure 6.13). This suggests that most measurements are performed in persons with known or suspected COPD. There were equal numbers of claims for males and females for most age groups except for those aged 65 years and over, among whom claims for spirometry among males exceeded claims among females. Once again, this is consistent with the higher prevalence of COPD among males than females (AIHW 2002c, 2004b).

Figure 6.13

Total claims for the performance of spirometry and complex lung function tests which included spirometry per 100,000 population, by age group and sex, Australia, 2002–2004



Note: Data are aggregated from 2002, 2003 and 2004 claims for Medicare items 11503, 11506, 11509 and 11512. Population is Australian population as estimated by the ABS for the relevant years.

Sources: HIC health statistics; Australian Bureau of Statistics.

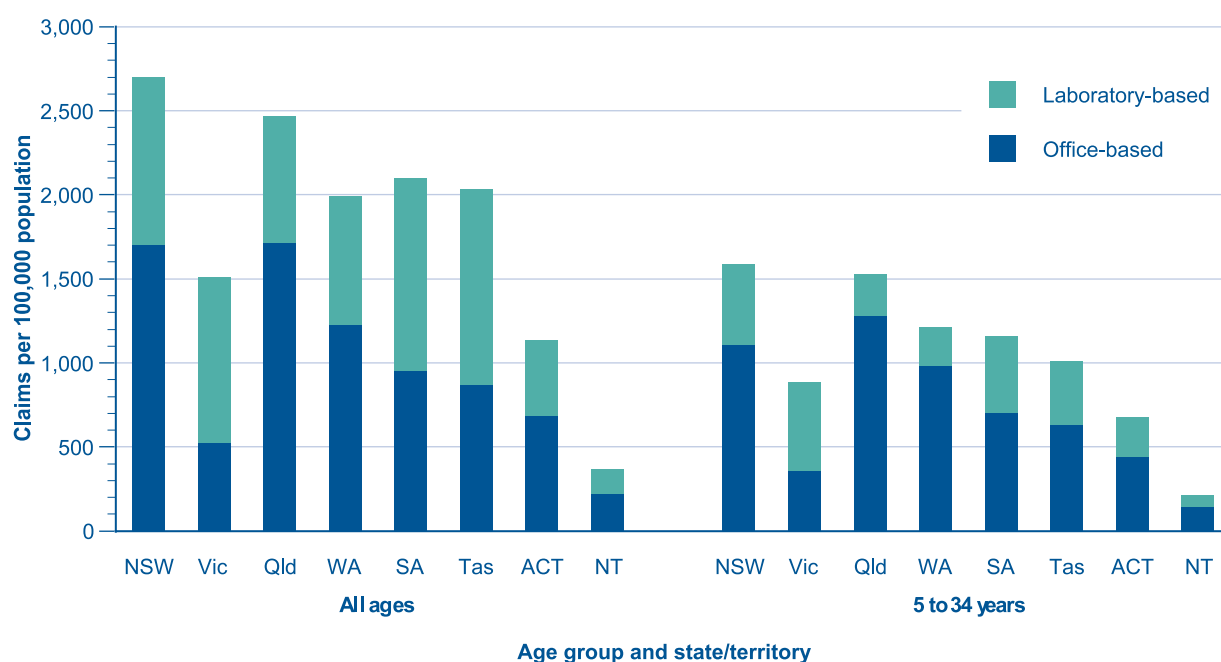
States and territories

There was substantial variation between states and territories in the rates of claims for office-based spirometry between 2002 and 2004, with higher rates in New South Wales and Queensland and lower rates in Victoria than average (Figure 6.14). This variation was not offset by claims for laboratory-based spirometry and is largely unexplained. A similar pattern was reflected in the data for 5 to 34 year olds, except that the proportion of laboratory-based testing was lower in this age group. This would be consistent with the procedure being performed most commonly as a routine, office-based tool in the management of people with asthma.

In some areas, particularly remote regions, spirometry may be performed in community health centres that do not claim for Medicare reimbursement from the HIC. In states and territories with substantial non-metropolitan areas, claims per 100,000 population may underestimate the rate of spirometry tests being conducted.

Figure 6.14

Claims for the performance of spirometry and complex lung function tests which included spirometry per 100,000 population, by state and territory and type, Australia, 2002–2004



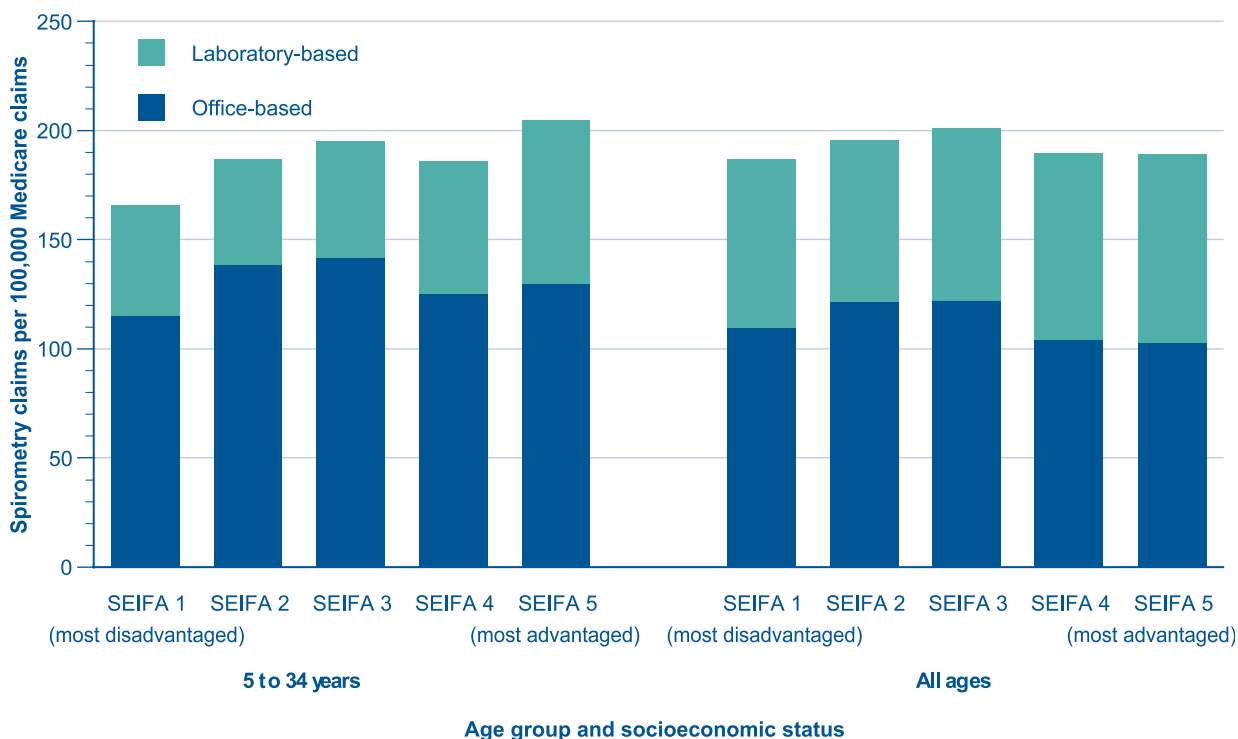
Note: Data are aggregated from 2002, 2003 and 2004. Laboratory-based claims include claims for Medicare items 11503, 11509 and 11512. Office-based claims comprise claims for Medicare item 11506 only. Population is Australian population as estimated by the ABS for the relevant years.

Sources: HIC health statistics; Australian Bureau of Statistics.

Socioeconomic disadvantage

There was no obvious trend in the spirometry claims as a proportion of Medicare claims among people of all ages. However, among people aged 5 to 34 years, this rate was greater among those living in more socioeconomically advantaged localities (Figure 6.15) than those in more disadvantaged localities.

Figure 6.15
Claims for the performance of spirometry per 100,000 Medicare claims, by socioeconomic status, Australia, 2002–2004



Note: Data are aggregated from 2002, 2003 and 2004. Laboratory-based claims include claims for Medicare items 11503, 11509 and 11512. Office-based claims comprise claims for Medicare item 11506 only.

Source: HIC health statistics.

Summary

Measurement of spirometric lung function (spirometry) has an important role in the diagnosis and management of asthma and other lung diseases. It is an objective measure providing information relevant to the establishment of the diagnosis, the assessment of severity, and the monitoring of change over time. The test may be performed at the time of consultation (in the doctor's office) or in a lung function laboratory. In the latter case it would usually form part of a complex range of lung function tests.

Analysis of data from claims for reimbursement demonstrates a trend towards more laboratory-based lung function tests and less office-based spirometry over the last 9 years. Spirometry is most commonly performed in people aged over 55 years. Many of the patients in this age group who have spirometry performed probably have chronic obstructive pulmonary disease, rather than asthma. There is unexplained variation among the states and territories in the rate of claims for this procedure.

Among people aged 5 to 34 years, spirometry rates tend to be higher among those living in more socioeconomically advantaged localities.

