

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).

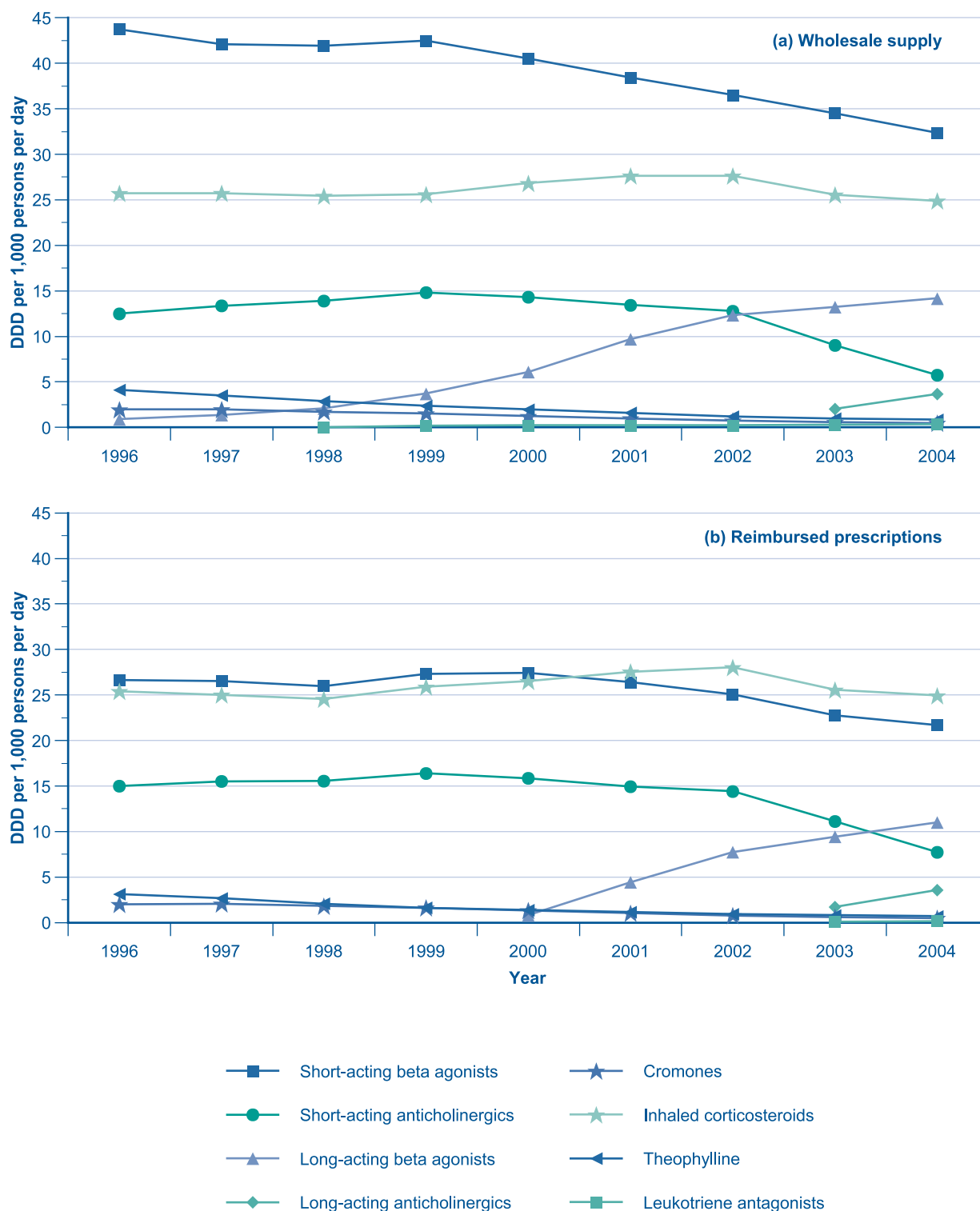
Supply of short-acting beta agonists has been decreasing since 1999 and, more recently, use of the short-acting anti-cholinergic ipratropium bromide has also been declining. The latter trend may have been accelerated by the introduction of tiotropium, a long-acting anti-cholinergic medication that is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

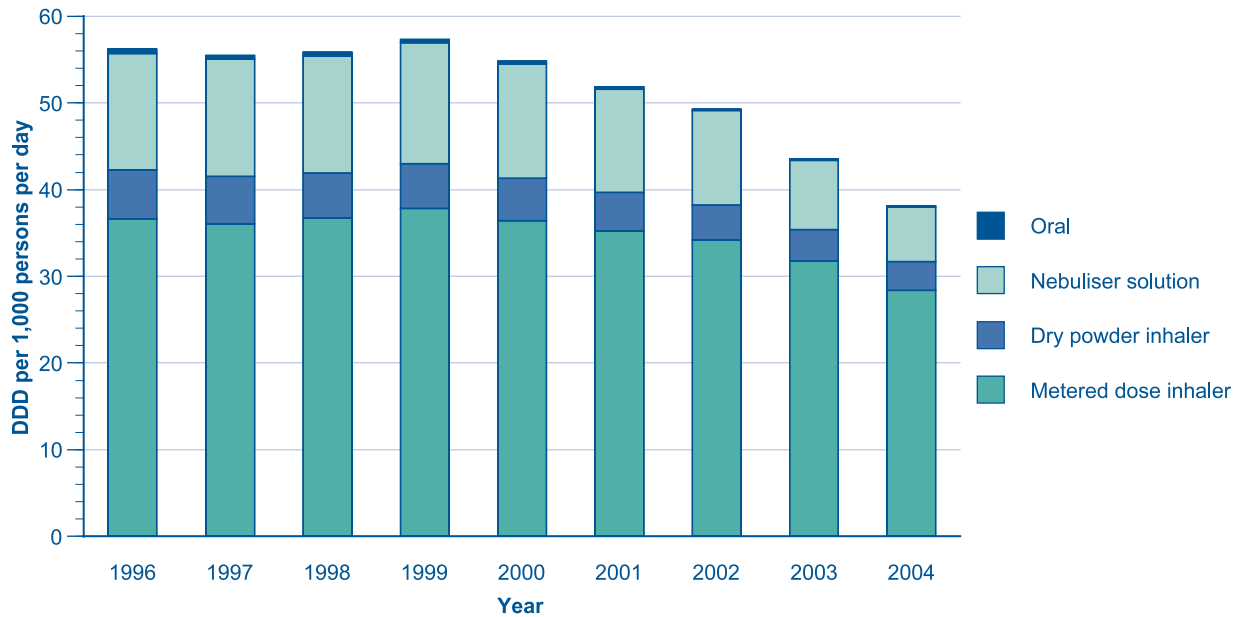
Sources: (a) IMS Health; (b) Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS); Australian Bureau of Statistics.

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

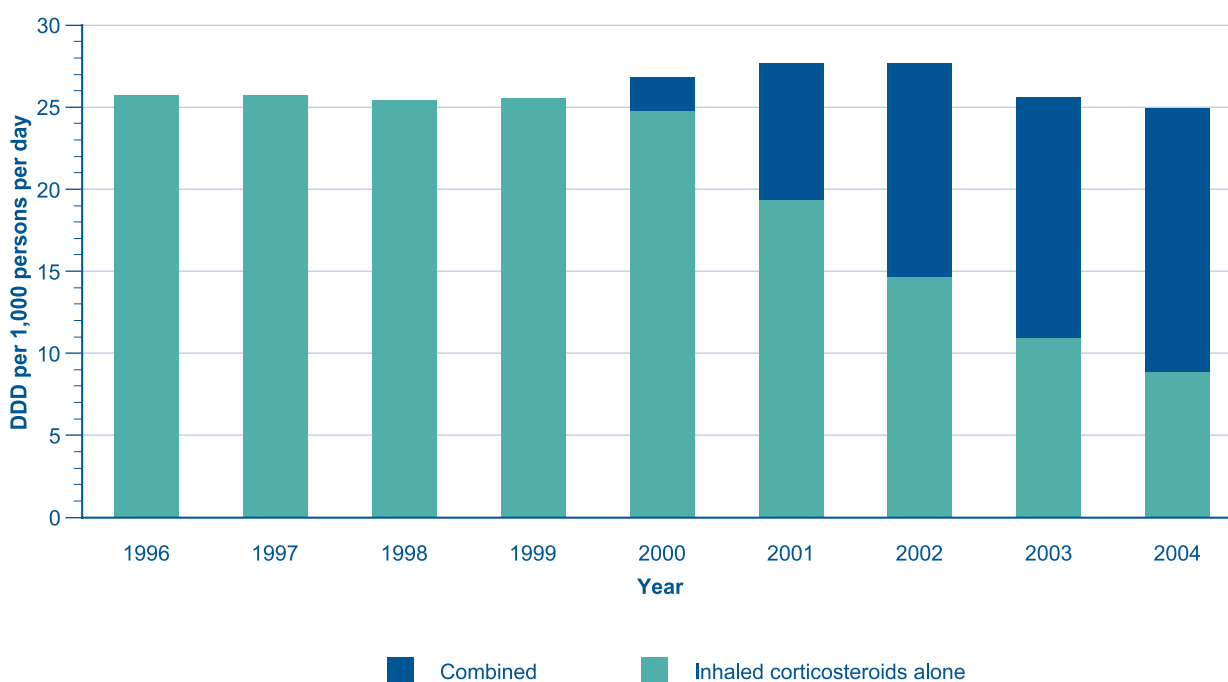


Sources: IMS Health; Australian Bureau of Statistics.

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).

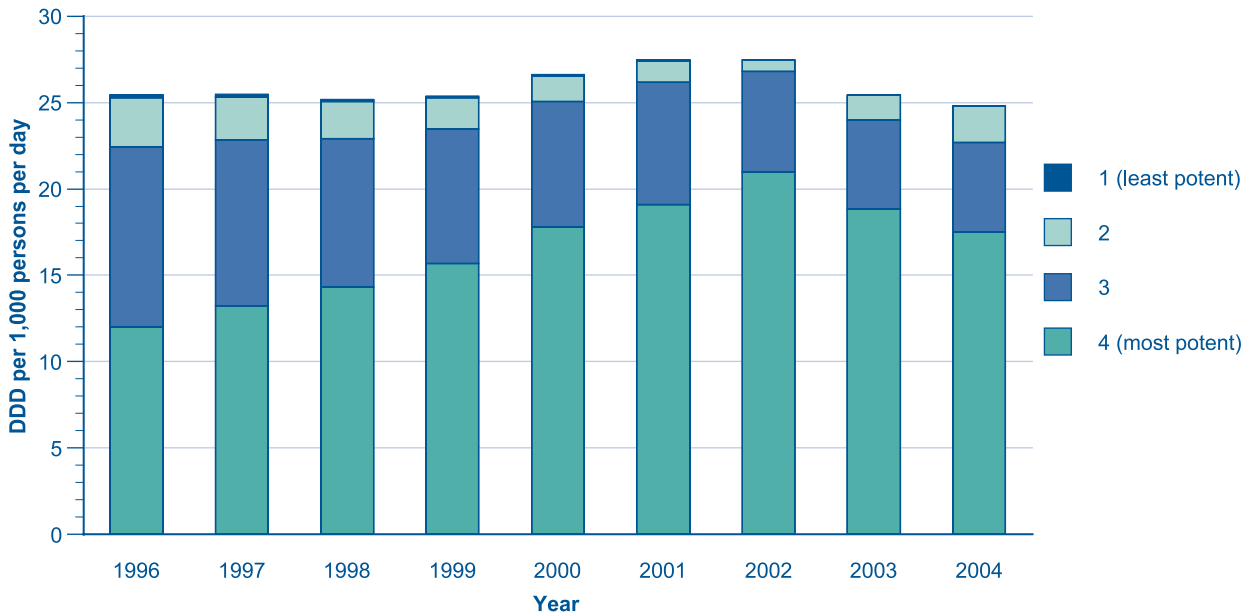
Figure 6.8
Inhaled corticosteroids supplied by wholesalers separately or as part of combined therapy, by defined daily dose (DDD) per 1,000 persons per day, Australia, 1996–2004



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.

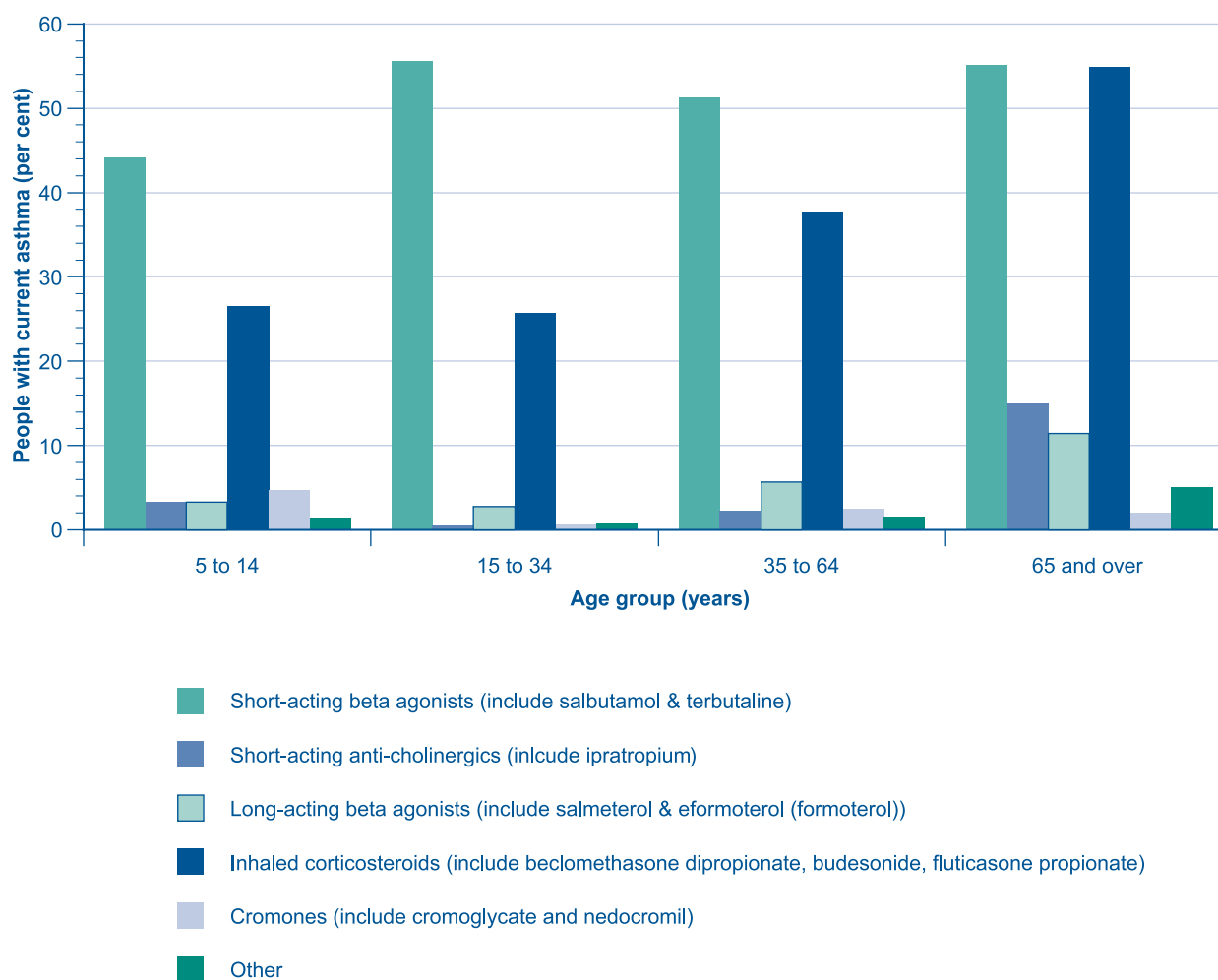
Age groups

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.