5.2 Hospital emergency department visits

People with asthma may visit an emergency department (ED) when they experience an exacerbation or worsening of their disease. Since exacerbations may be a feature of severe or poorly controlled asthma, rates of ED visits for asthma are often considered to reflect the prevalence of severe or poorly controlled asthma in the community (Farber et al. 1998; Vollmer et al. 2002; Wakefield et al. 1997). The rate of ED visits for asthma may also be a useful indicator of the effects of interventions implemented to reduce the frequency and severity of exacerbations of asthma (Harish et al. 2001; Sin & Man 2002).

However, going to an ED is only one of a range of alternatives available for managing less severe flare-ups of asthma. Hence, variation in ED visits may, in part, be attributable to variation in access to general practitioner care (including after hours and home visit accessibility) and in the use of self-management plans for exacerbations. Also, the accessibility of the ED care itself may influence the likelihood that people with worsening of asthma will seek out this care.

Finally, it should be noted that not all ED visits for asthma are attributable to exacerbations of asthma. There is some evidence to show that people may use EDs as a source of routine primary care (Ford et al. 2001; Halfon et al. 1996; Hanania et al. 1997).

Currently, only New South Wales, Victoria and, more recently, Western Australia collect data on ED visits with diagnoses attached to each record. In this section we present combined data obtained from the New South Wales Emergency Department Data Collection and the Victorian Emergency Minimum Dataset.

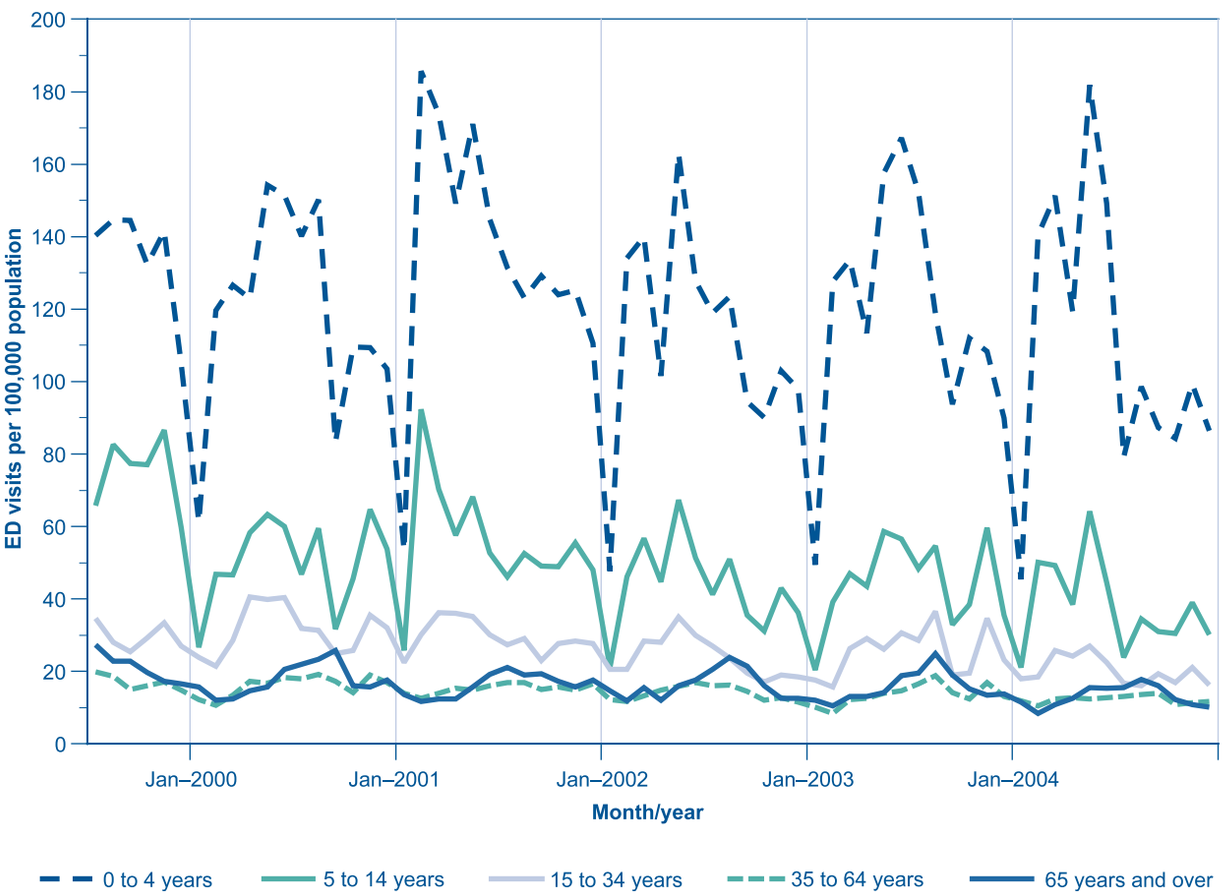
There are some limitations to the available data. Coverage of EDs is not complete and the estimated population-based attendance rates are an underestimate of the true rates. Furthermore, coverage is generally higher in metropolitan than rural areas, which results in some bias in the available data. Finally, in contrast to the hospital in-patient data (National Hospital Morbidity Database), the diagnoses used in the ED dataset are provisional and are not coded by a professional coder. Inconsistencies in coding may limit the ability to identify all presentations for asthma. However, it has been shown elsewhere that this form of ED data is reasonably accurate for the purpose of identifying people presenting with asthma (Premaratne et al. 1997). For a further description of this data source, refer to Appendix 1, Section A1.4.

Time trends in ED visits for asthma

There was marked month-to-month variability in the rate of ED visits for asthma, particularly among children. Of note, the lowest rate of ED visits for asthma, expressed as a rate per 100,000 population, consistently occurred in January when there was also the least difference between age groups. At other times of the year, the rate of visits to an ED for asthma was much higher among children aged 0 to 14 years than in all other age groups. Both the timing and the size of peaks in rates of ED visits varied with age (Figure 5.13). Among children under the age of 15 years, several very large peaks in ED visits occurred, most notably in February 2001, May 2002 and May 2004. Among persons aged 65 years and over, and to a lesser extent those aged 35 to 64 years, the fluctuations in ED visit rates were less marked.

Figure 5.13

Emergency department visits for asthma per 100,000 population, by age group and month, New South Wales and Victoria, July 1999 to December 2004



Note: As the coverage of the ED data is less than 100%, this rate will be an underestimate of the true ED visit rate among people with asthma. Data for the period July to December 2004 are for New South Wales only.

Sources: NSW Emergency Department Data Collection (EDDC) (HOIST), Centre for Epidemiology and Research, NSW Department of Health; Victorian Emergency Minimum Dataset (VEMD), Victorian Department of Human Services.

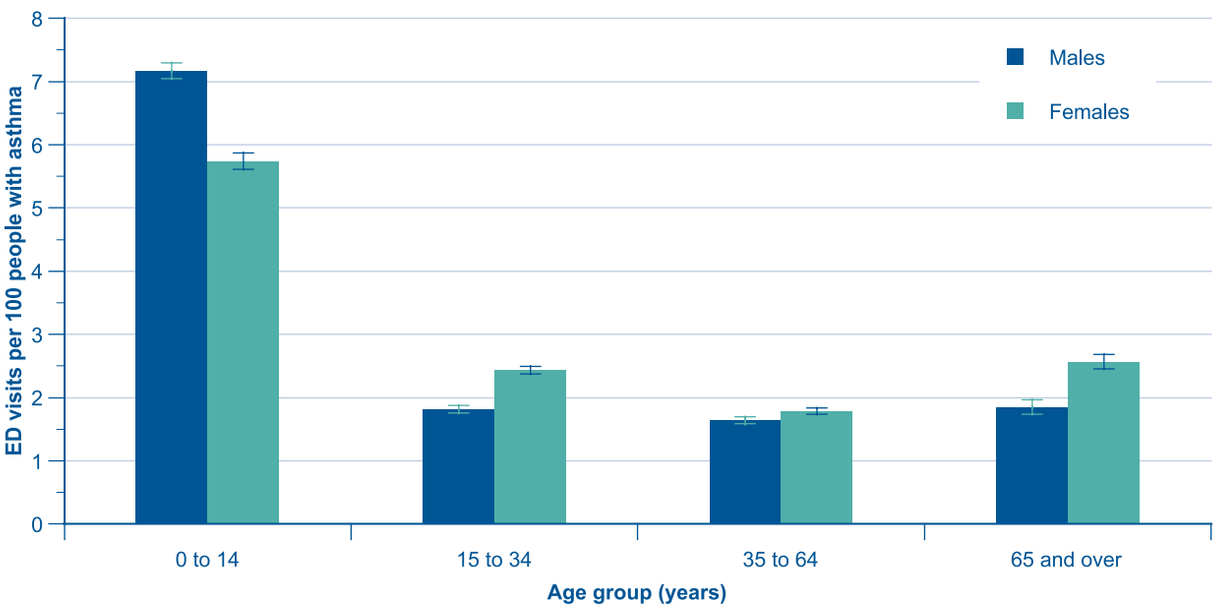
Differentials in ED visits for asthma

Age and sex

Overall, 1.7% of all ED visits were for asthma during the period 1999–2004. The proportion was highest among children aged 0 to 14 years (3.4%) and decreased with age.

The rate of visits to an ED for asthma, expressed as the rate per 100 people with asthma, was much higher among children aged 0 to 14 years than in all other age groups (Figure 5.14). Males with asthma had a higher ED visit rate than females during childhood and the gender difference was reversed in adult life. However, the differences between males and females were small except for the moderate excess of males in the youngest age group.

Figure 5.14
Emergency department visits for asthma per 100 people with asthma, by age group and sex, New South Wales and Victoria, July 1999 to June 2004



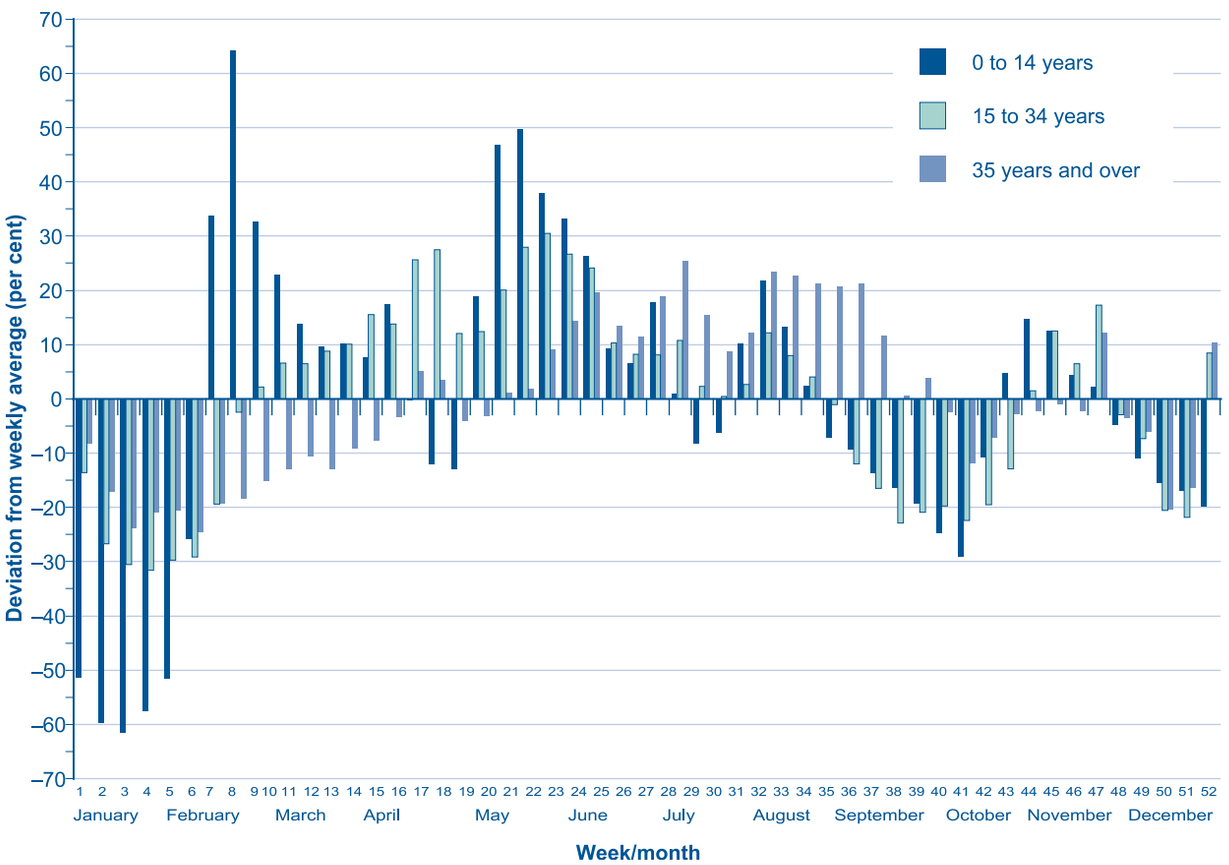
Note: The total number of people with asthma in New South Wales and Victoria was estimated by age group and sex based on the 2001 National Health Survey. As the coverage of the ED data are less than 100%, this rate will be an under-estimate of the true ED visit rate among people with asthma.

Sources: NSW Emergency Department Data Collection (EDDC) (HOIST), Centre for Epidemiology and Research, NSW Department of Health; Victorian Emergency Minimum Dataset (VEMD), Victorian Department of Human Services; ABS National Health Survey 2001.

Seasonal variation

Figure 5.15 shows the weekly variation in the number of ED visits for asthma during 1999–2004 in Victoria and New South Wales. The rate of ED visits for asthma was lower than average in all age groups during December and January. However, the rate peaked among children aged 0 to 14 years in mid-February to early March. There was a second, slightly lower, peak in May. In contrast, adults aged 35 years and over recorded lower than average visits at that time and had higher than average visits in late winter months (July and August). Young adults (aged 15 to 34 years), on the other hand, recorded a peak in visits in the April to June period. This age-related variability in ED visit rates for asthma highlights the importance of different environmental factors in triggering exacerbations of asthma at different ages.

Figure 5.15
Seasonal variation in emergency department visits for asthma, New South Wales and Victoria, July 1999 to June 2004

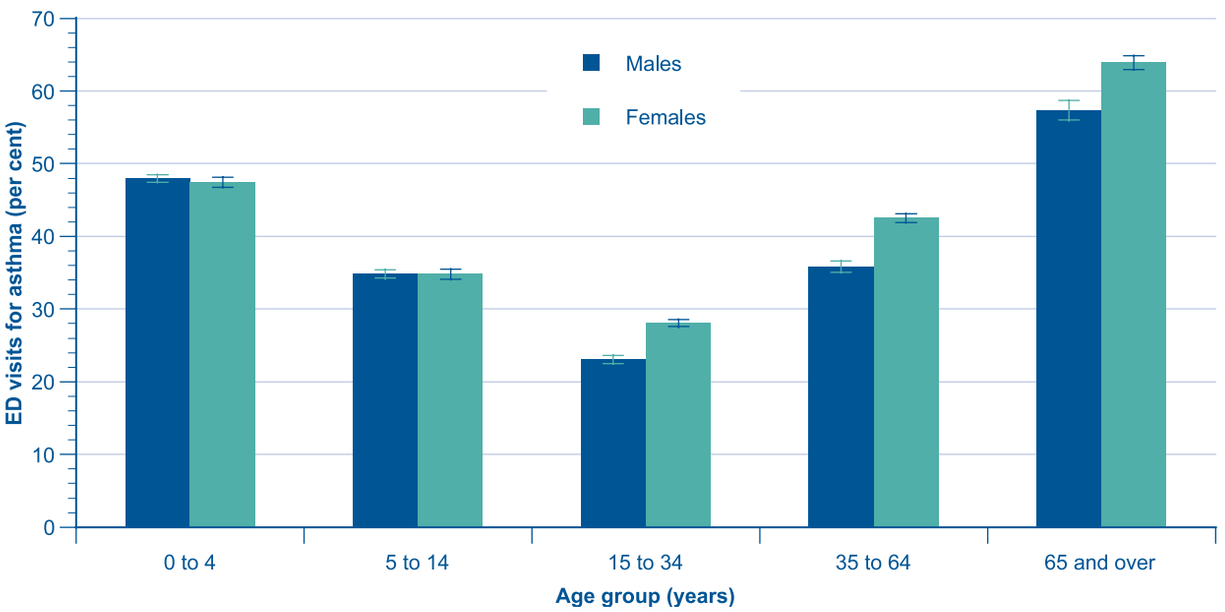


Sources: NSW Emergency Department Data Collection (EDDC) (HOIST), Centre for Epidemiology and Research, NSW Department of Health; Victorian Emergency Minimum Dataset (VEMD), Victorian Department of Human Services.

Outcome of ED visits for asthma

Among those visiting the ED for asthma during the period June 1999 to July 2004, 38.9% were admitted to hospital, rather than discharged home. The highest proportion of ED visits resulting in admission to hospital for asthma occurred in the elderly, followed by the youngest age group (0 to 4 years) (Figure 5.16). The lowest proportion of ED visits resulting in admission to hospital occurred in persons aged 15 to 34 years. There was no significant difference between boys and girls in the likelihood of being admitted to hospital from the ED, but among people aged 15 years and over, females were more likely to be admitted after visiting ED for asthma than males ($p<0.001$).

Figure 5.16
Proportion of emergency department visits for asthma resulting in admission to hospital, by age group and sex, New South Wales and Victoria, July 1999 to June 2004



Sources: NSW Emergency Department Data Collection (EDDC) (HOIST), Centre for Epidemiology and Research, NSW Department of Health; Victorian Emergency Minimum Dataset, Victorian Department of Human Services.

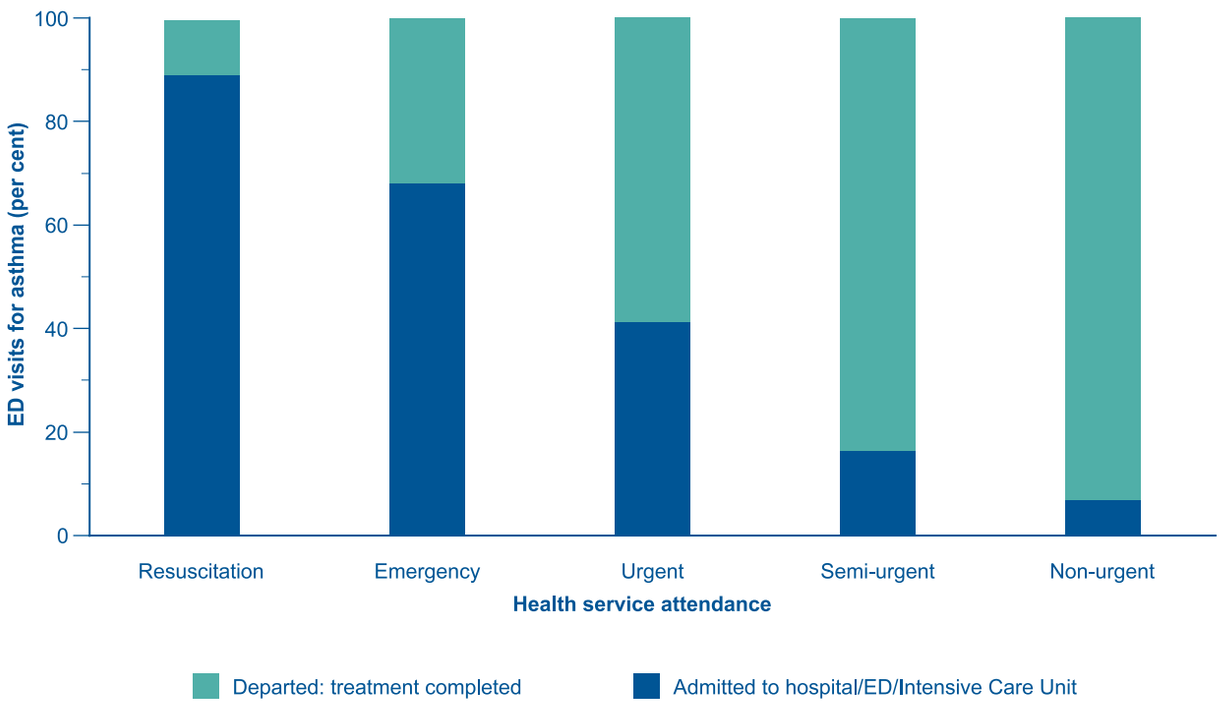
When people present to an ED they are assessed and assigned a triage category, based on their condition, that designates the maximum permissible waiting time. There are five levels of triage category and waiting times:

1 Resuscitation (within 1 minute)
2 Emergency (within 10 minutes)
3 Urgent (within 30 minutes)
4 Semi-urgent (within 60 minutes)
5 Non-urgent (within 120 minutes).

Among people visiting an ED for asthma, 88% of those who were assigned the triage category 'resuscitation' were subsequently admitted to hospital (including critical care, ED admission and transfer to another hospital), while 92% of those assigned to the 'non-urgent' triage category departed the ED after treatment (Figure 5.17). This indicates that triage categories generally reflect the level of severity of asthma exacerbations managed in EDs.

There were 16.4% and 6.8% of ED visits for asthma that were triaged as semi-urgent and non-urgent, respectively, where the person was subsequently admitted to hospital. This suggests that these individuals may have been triaged incorrectly and experienced a delay in receiving medical attention despite having severe enough asthma to result in hospital admission. However, it is important to recognise that the purpose of the triage system is only to decide on the urgency with which patients require medical attention in the ED. The decision to admit to hospital is not solely related to the acuity of the initial presentation. The response to initial treatment, the availability of care at home, self-management confidence and competence of the patient or carer, and remoteness from urgent medical care facilities all influence the decision on admission to hospital. These factors are unlikely to influence the triage category. More reassuring is the observation that only 0.3% of people with asthma triaged as semi-urgent or non-urgent were admitted to the Intensive Care Unit, compared with 8.6% in the more urgent triage categories of resuscitation or emergency.

Figure 5.17
Outcome status by triage category among people visiting emergency departments for asthma, New South Wales and Victoria, July 1999 to June 2004



Note: Data are aggregated from July 1999 to June 2004. Those that were dead on arrival were excluded. 'Admitted' includes admissions to hospital, ED and intensive care units and also transfers to another hospital. 'Departed: treatment completed' excludes people who did not wait for treatment.

Sources: NSW Emergency Department Data Collection (EDDC) (HOIST), Centre for Epidemiology and Research, NSW Department of Health; Victorian Emergency Minimum Dataset (VEMD), Victorian Department of Human Services.

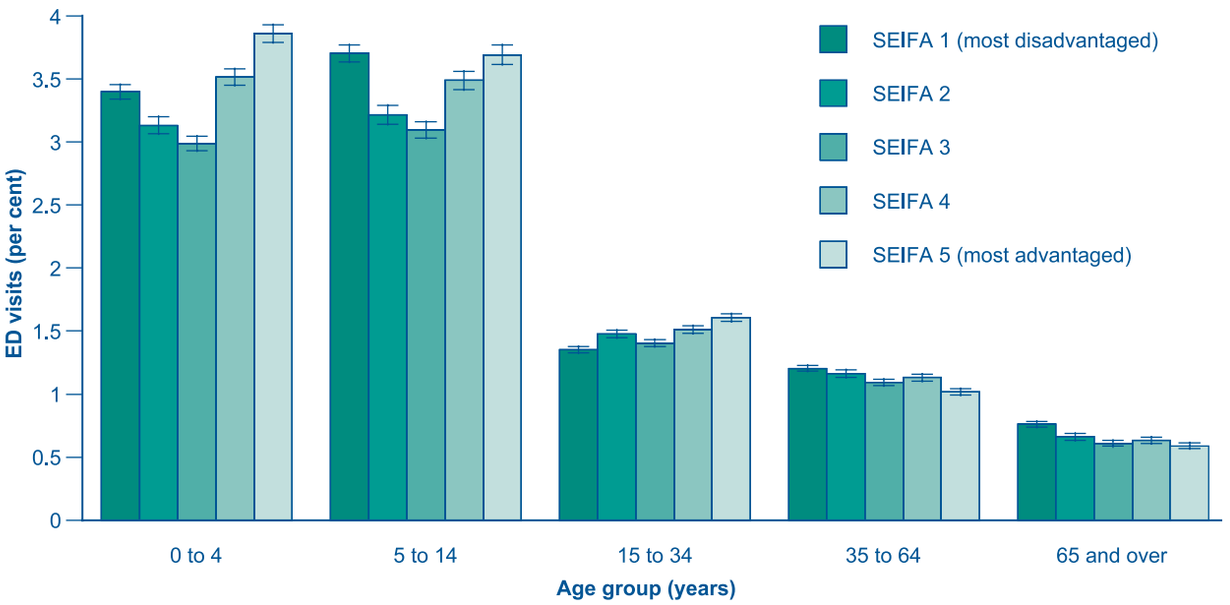
Socioeconomic disadvantage

Among children aged 0 to 14 years, the proportion of all ED visits that were for asthma was highest among children living in both the two most socioeconomically advantaged quintiles and the most disadvantaged quintile. It is likely that more than one factor, such as accessibility, availability of alternative forms of care, and efficacy of self-management, is responsible for this complex trend. Among adults aged 35 years and over, the proportion of all ED visits that were for asthma tended to be greater in people from more disadvantaged localities (Figure 5.18).

Among people attending the ED with a diagnosis of asthma, those who lived in both the most advantaged and most disadvantaged localities had higher rates of admission to hospital resulting from the ED visit than people who lived in localities with intermediate socioeconomic status (Figure 5.19).

Figure 5.18

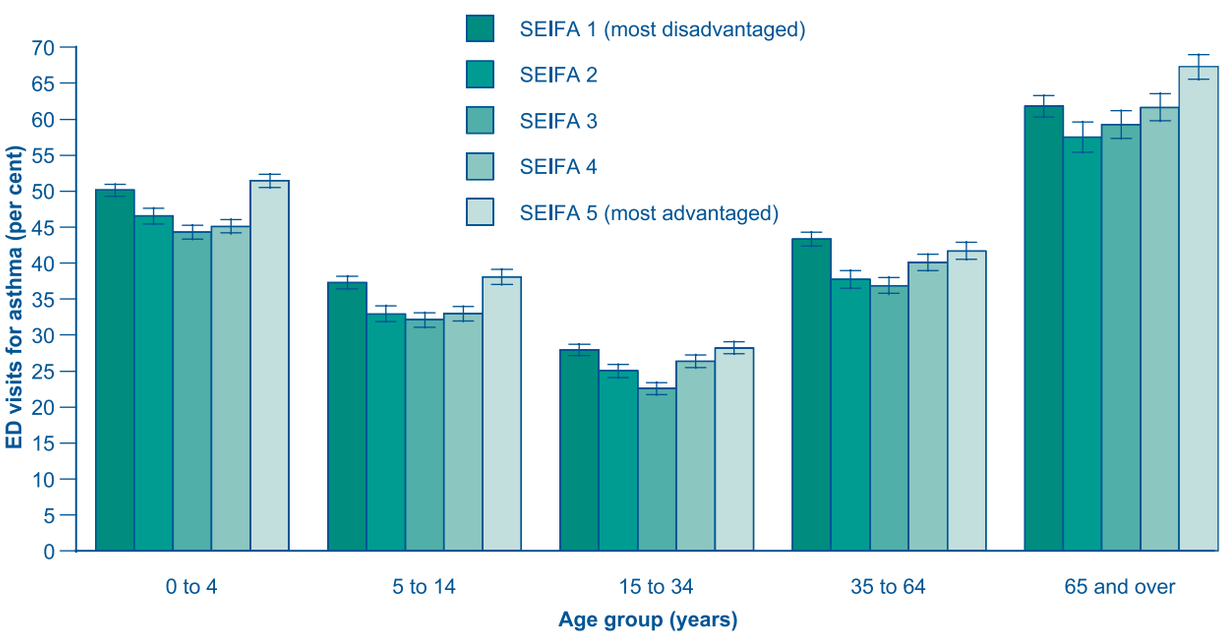
Proportion of all emergency department visits that are for asthma, by age group and socioeconomic status, New South Wales and Victoria, July 1999 to June 2004



Sources: NSW Emergency Department Data Collection (EDDC) (HOIST), Centre for Epidemiology and Research, NSW Department of Health; Victorian Emergency Minimum Dataset, Victorian Department of Human Services.

Figure 5.19

Proportion of emergency department visits for asthma that resulted in admission to hospital, by age group and socioeconomic status, New South Wales and Victoria, July 1999 to June 2004



Sources: NSW Emergency Department Data Collection (EDDC) (HOIST), Centre for Epidemiology and Research, NSW Department of Health; Victorian Emergency Minimum Dataset, Victorian Department of Human Services.