



Asthma, associated comorbidities and risk factors

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Citation

AIHW

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About

People with asthma often have other chronic and long-term conditions. This is called ‘comorbidity’, which describes any additional disease that is experienced by a person with a disease of interest (the index disease). Comorbidities are typically more common in older age groups.

Cat. no: ACM 41

Findings from this report:

- Adults with asthma were 1.4 times as likely to be obese as people without asthma
 - 49% aged 45 and over with asthma also had arthritis, 37% had back problems and 33% had mental and behavioural conditions
 - 81% of Australians aged 45 and over with asthma had at least one other selected chronic condition in 2017-18
 - 54% of people aged 45 and over with asthma had 2 or more other selected chronic conditions in 2017-18
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About asthma and associated comorbidities

Comorbidity

Some people with asthma have other chronic and long-term conditions. This is called ‘**comorbidity**’, which describes any additional disease that is experienced by a person with a disease of interest (the index disease). For people with asthma, having a comorbid chronic condition can have important implications for their health outcomes, quality of life and treatment choices.

Australians diagnosed with one or more chronic conditions often have complex health needs, die prematurely and have poorer overall quality of life (AIHW 2018). In terms of comorbidities, in 2017–18 one in five Australians (20%) had two or more chronic conditions (ABS 2018). The chance of developing chronic conditions increases with age, and since asthma often starts early in life, people with asthma are likely to develop another chronic condition during their lifespan (AIHW 2019).

The chronic conditions that have been selected for this asthma comorbidity analysis are: arthritis, back problems, cancer, chronic obstructive pulmonary disease (COPD), diabetes, heart, stroke and vascular disease, kidney disease, mental and behavioural conditions and osteoporosis. They have been selected because they are common in the general community, pose significant health problems and have been the focus of ongoing national surveillance efforts and action can be taken to prevent their occurrence (AIHW 2019). Other chronic conditions that are commonly found in people with asthma, and that can impact on asthma, include obesity, allergic rhinitis, obstructive sleep apnoea, and gastro-oesophageal reflux disease (Boulet 2009; Caughey et al. 2008; Cazzola et al. 2012).

The National Asthma Strategy 2018 (the Strategy) was launched in January 2018. The Strategy ‘aims to outline Australia’s national response to asthma and inform how existing limited health care resources can be better coordinated and targeted across all levels of government’ (Department of Health 2017). The Strategy identifies the most effective and appropriate interventions to reduce the impact of asthma in the community and continue to be an international leader in asthma prevention, management and research (Department of Health 2017). The Strategy notes that ‘the presence of one or more comorbid conditions in people with asthma is likely to compromise their quality of life and may complicate their management of asthma’ (Department of Health 2017). The AIHW has monitored and reported on the outcome measures associated with The Strategy by reporting on the 10 national asthma indicators. For more information, see [National asthma indicators - an interactive overview](#) and [National Asthma Strategy 2018](#).

Treatment and management

Management of asthma includes [medicines](#) to minimise symptoms such as shortness of breath, wheezing and coughing, and to reduce the risk of adverse outcomes, such as flare-ups (AIHW 2019).

Treatment of comorbidities depends on individual patient needs. As recommended in the Australian Asthma Handbook, some comorbidities such as obesity, mental illness, allergic rhinitis and obstructive sleep apnoea, should be treated not only to improve patient health outcomes, but to also reduce their impact on asthma control and risk of flare-ups (National Asthma Council Australia 2019).

Medications prescribed for some comorbidities may interact with one another, which can cause problems for people with asthma. One example is beta-blockers, a treatment sometimes used for cardiovascular disease, glaucoma or anxiety. In people with asthma, beta-blockers given by tablet or eye-drops can cause severe asthma flare-ups, requiring more intense treatment and management (AIHW 2019). Another example is non-steroidal anti-inflammatory medications (NSAIDs) including aspirin, which may be used to treat cardiovascular disease or arthritis. These medications can cause severe flare-ups in around 7% of people with asthma (Rajan et al. 2015).

For patients who have both asthma and COPD, treatment usually includes inhaled corticosteroids (anti-inflammatory medications) and long-acting bronchodilators together with management of modifiable risk factors (such as smoking cessation and increasing physical activity), pulmonary rehabilitation, and influenza vaccinations (National Asthma Council Australia 2019). Short-acting bronchodilators are also to be used as needed for symptom relief.

Due to the potential for interactions between different chronic conditions and the medications used to treat them, it is important that people with asthma tell their doctor(s) about any other conditions that they have, and any other treatment they are taking, so that their health can be carefully monitored.

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Asthma and associated comorbidities

Number of comorbid chronic conditions in people with asthma

An estimated 2.7 million Australians (11% of the total population) currently have asthma, based on self-reported data from the 2017-18 National Health Survey (ABS 2018a). Of these, around 1.6 million people (6.6% of the total population) also had one or more of the following selected chronic conditions:

- arthritis
- back problems
- cancer
- chronic obstructive pulmonary disease (COPD)
- diabetes
- heart, stroke and vascular disease
- kidney disease
- mental and behavioural conditions
- osteoporosis.

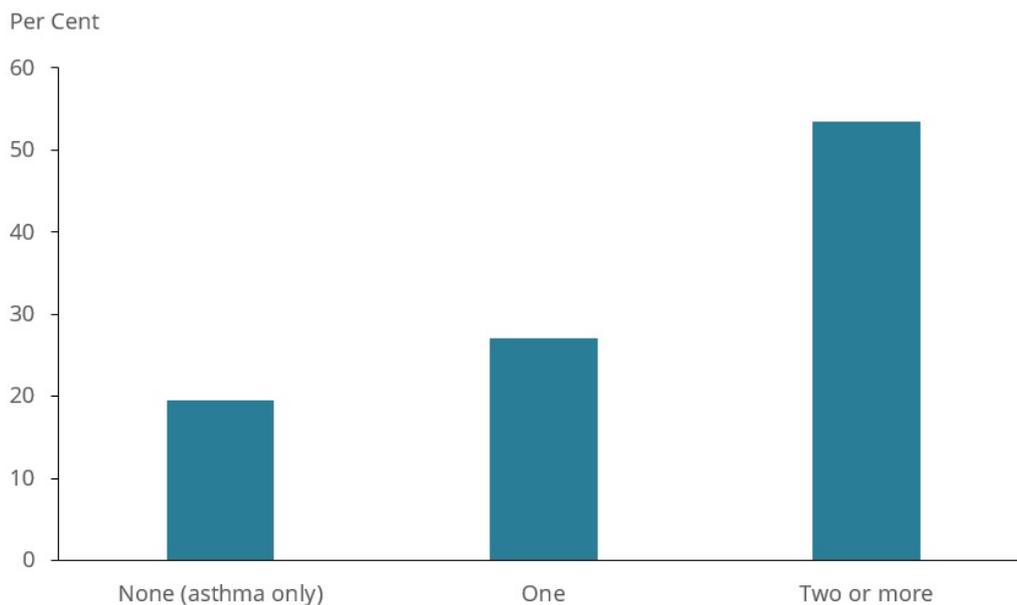
These 9 chronic conditions have been selected because they are common in the general community, pose significant health problems, have been the focus of ongoing national surveillance efforts, and action can be taken to prevent their occurrence.

Asthma affects people of all ages; however, many of the people with asthma and comorbid conditions are older Australians, reflecting the fact that chronic conditions are more widespread in older age groups.

Additional chronic conditions that are commonly found in people with asthma, and that can impact on asthma, include allergic rhinitis, obstructive sleep apnoea, mental illness, nasal polyps (soft, painless, non-cancerous growths) and gastro-oesophageal reflux disease (GORD) (AIHW 2019).

For all persons who had asthma, 41% had only asthma with none of the other selected chronic conditions, while 59% had at least one of the nine other selected chronic conditions (ABS 2018a). Of those aged 45 and over who had asthma, 20% had asthma only, and 81% had at least one other of the selected 9 chronic conditions (Figure 1). Over 1 in 4 (27%) had one other selected chronic condition, and 54% had 2 or more other selected chronic conditions.

Figure 1: Comorbidity of selected chronic conditions in people aged 45 and over with asthma, 2017-18



Notes

1. The 9 selected chronic conditions were arthritis, back problems, cancer, COPD, diabetes, heart, stroke and vascular disease, kidney disease, mental and behavioural conditions, and osteoporosis.
2. Proportions may not add to 100% due to rounding.

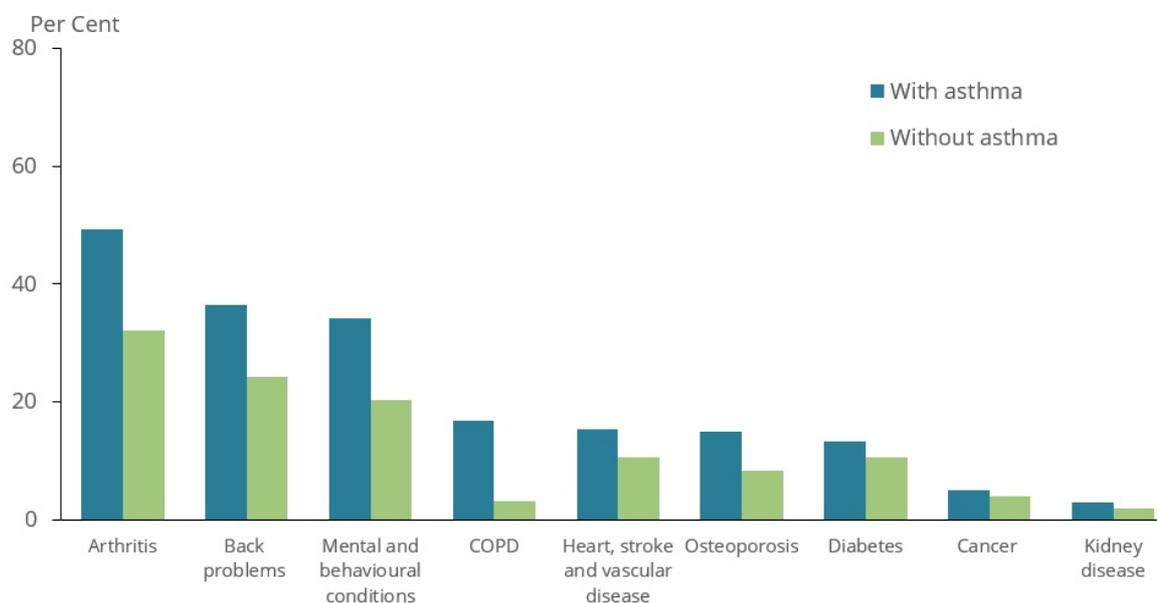
Source: ABS 2019 ([Data table](#)).

Types of comorbid chronic conditions in people with asthma

Among people aged 45 and over with asthma:

- 49% had arthritis (compared with 32% among people without asthma)
- 37% had back problems (compared with 24% among people without asthma)
- 34% had mental and behavioural conditions (compared with 20% among people without asthma)
- 17% had COPD (compared with 3.1% among people without asthma)
- 15% had heart, stroke and vascular disease (compared with 11% among people without asthma)
- 15% had osteoporosis (compared with 8.4% among people without asthma) (Figure 2).

Figure 2: Prevalence of other chronic conditions in people aged 45 and over, with and without asthma, 2017-18



Notes

1. Asthma here refers to people who self-reported that they were diagnosed by a doctor or nurse as having asthma (current and long-term).
2. Proportions may not add to 100% as a person may have more than one additional diagnosis.

Source: ABS 2019 ([Data table](#)).

Data notes

The National Health Survey (NHS) uses three factors to determine whether or not a person is counted as having a particular condition: whether the condition is current, whether it is long term and whether it was medically diagnosed. The combination of these factors required for a person to count as having the condition varies according to the nature of the condition. For example, some conditions, such as diabetes and HSVD, once diagnosed, are seen to be lifelong. Even if a person no longer reports symptoms, they still count as having the condition. While other conditions, such as depression, asthma, cancer or back problems, can be lifelong, episodic or in complete remission.

Most conditions do not need the respondent to have been diagnosed by a doctor or nurse. The respondent is counted if they said they have the condition. However, in cases where the respondent said they had diabetes or HSVD and that the condition was not current, they need to have received a diagnosis to be counted.

Table 1: Definitions used for chronic conditions

Condition	Current	Long term	Has the condition been diagnosed by a doctor or nurse?
Arthritis	current	long term	no diagnosis required
Asthma	current	long term	no diagnosis required
Back problems	current	long term	no diagnosis required
Cancer	current	long term	no diagnosis required
COPD	current	long term	no diagnosis required
Diabetes	current	long term	no diagnosis required
(2 combinations)	ever had	not long term	diagnosis required
Heart, stroke and vascular disease (HSVD)	current	long term	no diagnosis required

(2 combinations)	ever had	not long term	diagnosis required
Kidney disease	current	long term	no diagnosis required
Mental and behavioural conditions	current	long term	no diagnosis required
Osteoporosis	current	long term	no diagnosis required

Note: Please see the [2017-18 NHS User Guide](#) for more information on the definitions of the conditions.

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Risk factors associated with asthma

Asthma shares a number of risk factors with other chronic conditions, such as:

- Non-modifiable risk factors
 - genetic predisposition (Beasley et al. 2015)
- Modifiable risk factors
 - tobacco use (smoking or exposure to cigarette smoke)
 - exposure to environmental hazards (for example, exposure to air pollutants)
 - overweight/obesity
 - sedentary lifestyle (Beasley et al. 2015)
- Other risk factors
 - allergic rhinitis (Beasley et al. 2015).

Risk factors may increase the chance of developing asthma in the first place (either in childhood or as an adult), or may increase the chance that a person with asthma will develop additional health problems. Risk factors also vary according to the person's age, and according to the type of asthma that they have (AIHW 2019). Finding a factor that is associated with asthma, or poor health outcomes in asthma, does not necessarily mean that the risk factor caused these problems, or that they can be prevented.

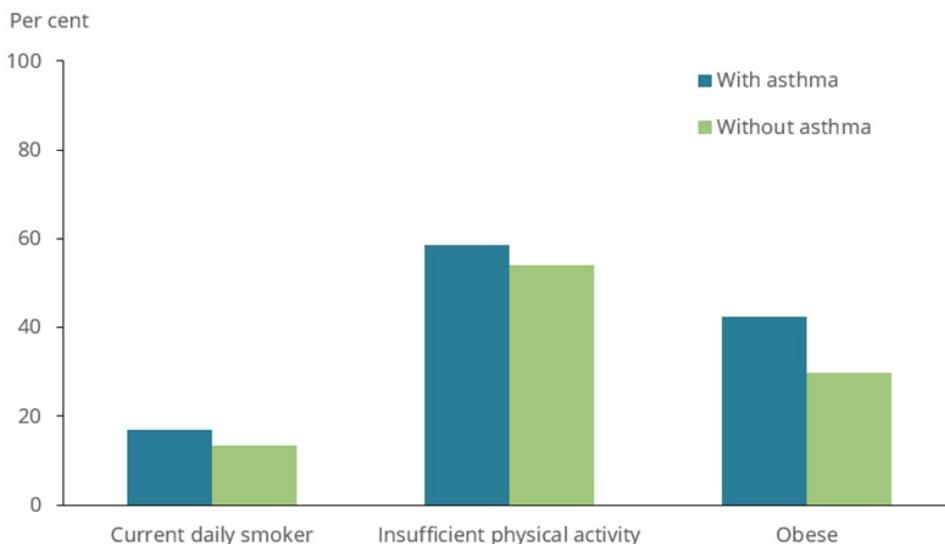
In people with asthma, risk factors associated with an increased risk of flare-ups include (Global Initiative for Asthma 2019):

- having frequent symptoms (e.g. more than 2 days/week)
- not taking preventer treatment regularly (medicines used every day in asthma control to minimise symptoms and reduce the likelihood of episodes or flare-ups. Inhaled corticosteroids are the most commonly used preventers) (National Asthma Council Australia 2019)
- frequent reliever inhaler use (medicines used for the rapid relief of asthma symptoms when they occur) (National Asthma Council Australia 2019)
- comorbidities (e.g. mental illness, obesity, chronic rhino sinusitis)
- major socioeconomic problems
- exposure to smoking; allergens; air pollution.

Common risk factors

Based on the 2017-18 National Health Survey (NHS), people with asthma were more likely to be current daily smokers, insufficiently physically active and/or obese, compared with those without asthma (see Figure 1). Risk factor definitions are included in [Box 1](#) (in the data notes section below). These risk factors are also common among other chronic conditions.

Figure 1: Prevalence of selected risk factors in people aged 18 and over, with and without asthma, 2017-18



Note: Obese is based on body mass index (BMI) for persons whose height and weight was measured and imputed. In 2017-18, 33.8% of respondents aged 18 years and over did not have a measured BMI. For these respondents, imputation was used to obtain BMI. For more information, see Appendix 2: Physical measurements in the 2017-18 National Health Survey (ABS 2018a).

Source: ABS 2019a ([Data table](#)).

Selected risk factors

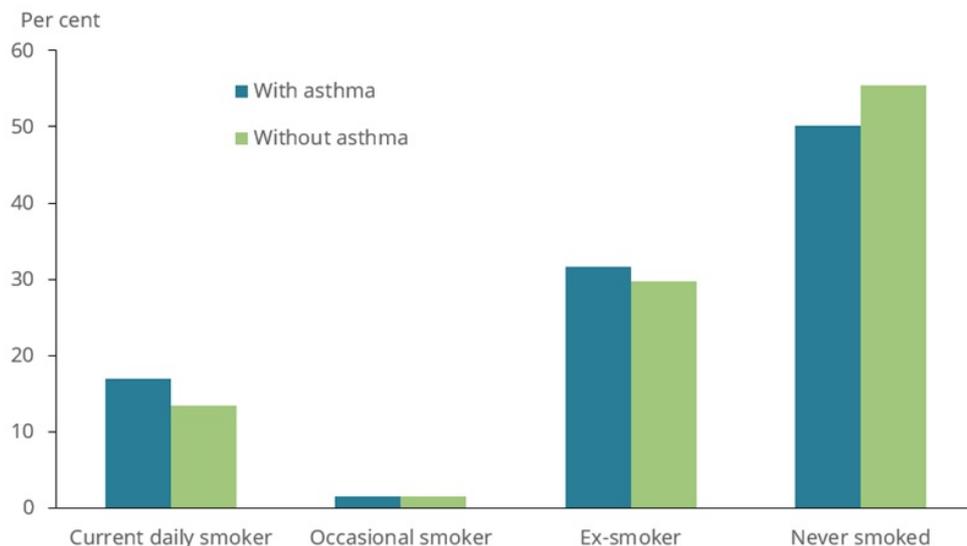
Smoker status

Compared with people without asthma, people with asthma were more likely to be current daily smokers (17% compared with 13% for people without asthma), and less likely to have never smoked (50% compared with 55% for people without asthma) (see Figure 2).

Tobacco use or exposure to environmental tobacco smoke are risk factors associated with the development of asthma. The interaction between exposure to tobacco smoke and development of asthma symptoms varies with age. Parental smoking during pregnancy or infancy is linked to asthma symptoms in children, and smoking by a parent or child/adolescent is linked to asthma symptoms in adolescence (Gilliland et al. 2006).

For people who already have asthma, smoking or exposure to environmental tobacco smoke can increase the risk of flare-ups and need for emergency care for asthma (Osborne et al. 2007). In people with asthma, smoking is also associated with a reduced effectiveness of inhaled corticosteroids (Lazarus et al. 2007; Tomlinson et al. 2005).

Figure 2: Smoker status of people aged 18 and over, with and without asthma, 2017-18



Source: ABS 2019a (Data table).

Physical activity

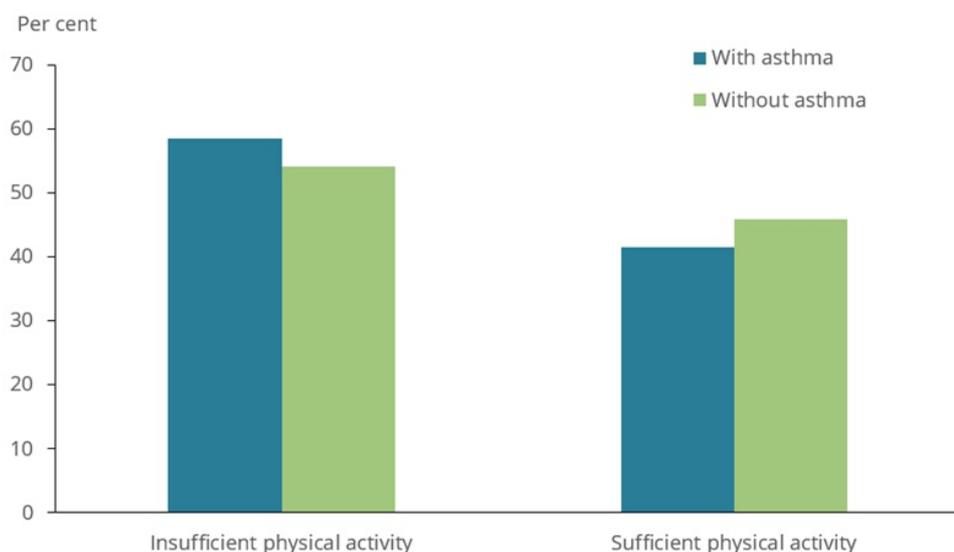
Sufficient physical activity (for example, regular exercise) is an important factor associated with positive health outcomes. Insufficient physical activity is a risk factor for several chronic conditions. It is also associated with overweight and obesity, and poorer health outcomes more generally. See [Box 1](#) for definitions of physical activity.

Evidence suggests that sedentary behaviour (as measured by television viewing) is associated with asthma symptoms in children (Mitchell et al. 2012). The association between physical activity and asthma symptoms may be complicated by the fact that, in some people who already have asthma, physical activity may trigger asthma symptoms, particularly if their asthma is poorly controlled.

Physical activity is generally recommended for adults and children with asthma as a way to manage the disease and improve quality of life (National Asthma Council Australia 2019).

Based on the 2017-18 NHS, people with asthma were slightly less likely than people without asthma to engage in sufficient physical activity (42% compared with 46% for people without asthma) (Figure 3).

Figure 3: Physical activity in people aged 18 and over, with and without asthma, 2017-18



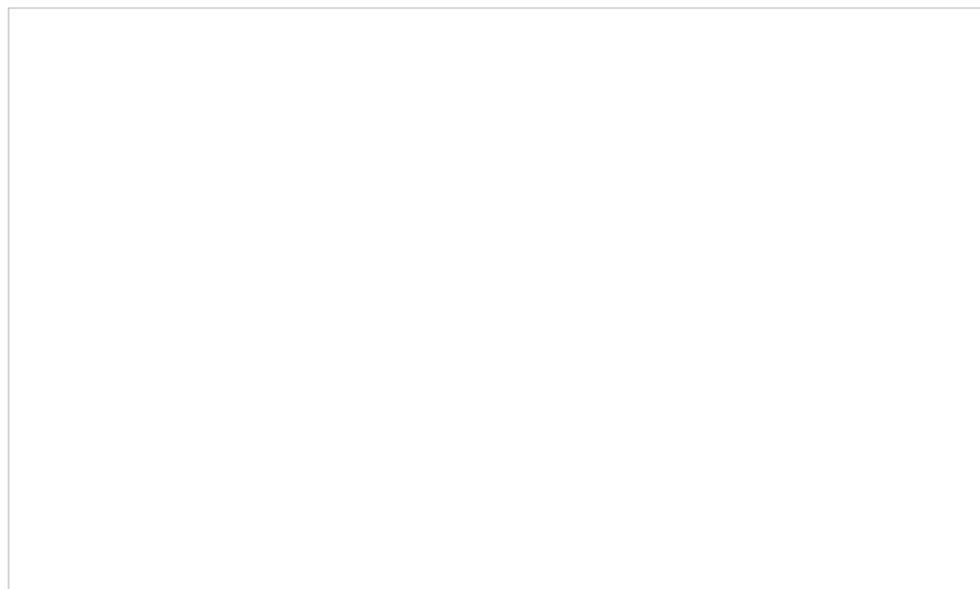
Source: ABS 2019a (Data table).

Body mass

People with asthma were 1.4 times as likely to be obese (by measured body mass index or BMI—see [Data notes](#)) as people without asthma (42% with asthma compared with 30% without asthma) (Figure 4).

Studies show there are associations between overweight and obesity, as measured by BMI, and asthma, especially in high income countries (Beasley et al. 2015). Additionally, people with asthma who are overweight or obese often experience complications in treatment. For people who are overweight or obese, weight loss has been shown to reduce treatment complications and improve symptoms (Adeniyi & Young 2012; Juel et al. 2012). There is evidence of an association between being obese and developing asthma; however, the causative mechanisms between body mass and asthma are not currently well understood (Ford 2005; Kim et al. 2014).

Figure 4: Proportion of people aged 18 and over, with and without asthma, by BMI, 2017-18



Note: Based on body mass index (BMI) for persons whose height and weight was measured and imputed. In 2017-18, 33.8% of respondents aged 18 years and over did not have a measured BMI. For these respondents, imputation was used to obtain BMI. For more information, see Appendix 2: Physical measurements in the 2017-18 National Health Survey (ABS 2018a).

Source: ABS 2019a (Data table).

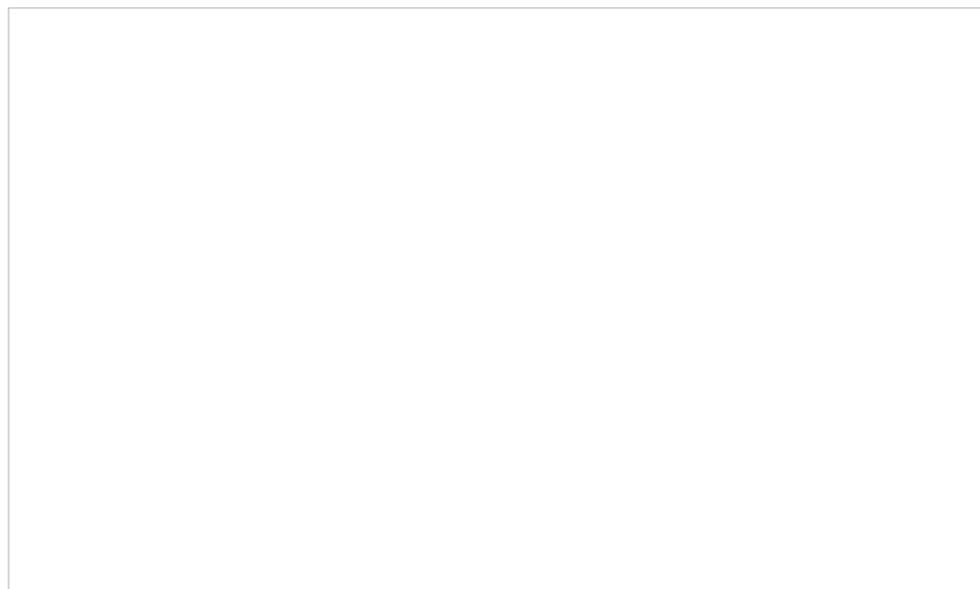
Age differences in risk factors in people with asthma

For people with asthma, the prevalence of risk factors varies by age.

The prevalence of smoking in people with asthma was higher in the earlier years of life. People aged 18-44 and 45-64 with asthma were more likely to be a current daily smoker (19% and 20%, respectively) compared with those aged 65 and over (7.6%) (Figure 5). Smoke free laws, tobacco price increases and greater exposure to mass media campaigns may contribute to lower smoking rates among older Australians (Wakefield et al. 2014). GPs play an important role in encouraging and supporting people to quit smoking, especially when they have health problems caused or exacerbated by smoking, which are more common with increasing age (Royal Australian College of General Practice 2014).

Among people with asthma, 50% of those aged 18-44 were insufficiently physically active, compared with 60% of those aged 45-64 and 76% of those aged 65 and over. Those aged 45-64 were less likely to be insufficiently physically active compared with those aged 65 and over. Among those with asthma aged 18-44, 35% were obese, compared with 48% of those aged 45-64 and 49% of those aged 65 and over (Figure 5).

Figure 5: Prevalence of selected risk factors in people aged 18 and over with asthma, by age group, 2017-18



Note: Obese is based on body mass index (BMI) for persons whose height and weight was measured and imputed. In 2017-18, 33.8% of respondents aged 18 years and over did not have a measured BMI. For these respondents, imputation was used to obtain BMI. For more information, see Appendix 2: Physical measurements in the 2017-18 National Health Survey (ABS 2018a).

Source: ABS 2019a ([Data table](#)).

Data notes

This analysis is based on people aged 18 and over. This age group was selected due to the available data about risk factors in the ABS National Health Survey (NHS) and to ensure consistency with other AIHW risk factor reports (AIHW 2013; AIHW 2015).

The risk factor data presented here were obtained at one point in time, based on self-reported data from the NHS (with the exception of BMI, which was measured). When interpreting self-reported data, it is important to recognise that it relies on respondents providing accurate information.

It is not possible to attribute cause and effect to self-reported (and measured) risk factors and asthma. Risk factors present at the time of the survey may or may not have contributed to the presence of asthma. Similarly, the presence of asthma may not be directly related to the number of risk factors a person has.

The risk factor definitions used in the ABS 2017-18 NHS are described below in Box 1.

Box 1: Definitions for risk factors in the National Health Survey

Smoker status

Refers to the frequency of smoking of tobacco, including manufactured (packet) cigarettes, roll-your-own cigarettes, cigars and pipes, but excluding chewing tobacco, electronic cigarettes (and similar) and smoking of non-tobacco products. Categorised as:

Current daily smoker	A respondent who reported at the time of interview that they regularly smoked one or more cigarettes, cigars or pipes per day.
Current smoker - Other (occasional)	A respondent who reported at the time of interview that they smoked cigarettes, cigars or pipes, less frequently than daily.
Ex-smoker	A respondent who reported that they did not currently smoke, but had regularly smoked daily, or had smoked at least 100 cigarettes, or smoked pipes, cigars, etc at least 20 times in their lifetime; and
Never smoked	A respondent who reported they had never regularly smoked daily, and had smoked less than 100 cigarettes in their lifetime and had smoked pipes, cigars, etc less than 20 times.

Source: ABS 2018b.

Physical activity

Australia's Physical Activity and Sedentary Behaviour Guidelines (the Guidelines) are a set of recommendations outlining the minimum levels of physical activity required for health benefits, as well as the maximum amount of time one should spend on sedentary behaviours to achieve optimal health outcomes (Department of Health 2019). Please see the [Physical activity topic page](#) for more information.

In 2017-18, the ABS National Health Survey collected information for the first time on physical activity at work. Therefore all results for adults include physical activity at work.

Based on the guidelines, insufficient physical activity is defined as:

- Adults aged 18-64 who did not complete 150 minutes of moderate to vigorous physical activity across 5 or more days in the last week
- Adults aged 65 and over who did not complete at least 30 minutes of physical activity per day on 5 or more days in the last week.

For the purpose of calculating activity time, vigorous activity time is multiplied by a factor of two.

Muscle strengthening activities are not included in this analysis.

Source: AIHW 2019b.

Body mass index

Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, normal weight, overweight and obesity. It is calculated from height and weight information, using the formula weight (kg) divided by the square of height (m). To produce a measure of the prevalence of underweight, normal weight, overweight or obesity in adults, BMI values are grouped according to the table below.

Category	Range
Underweight	Less than 18.50
Normal range	18.50 – 24.99
Overweight	25.00 – 29.99
Obese I	30.00 – 34.99
Obesity class II	35.00 – 39.99
Obesity class III	40.00 or more

In 2017–18, 33.8% of respondents aged 18 years and over did not have a measured BMI. For these respondents, imputation was used to obtain BMI (ABS 2019b).

Sources: ABS 2018b; ABS 2019b.

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Data

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Data

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