

Asthma

& Healthy Living



An information paper for health professionals



FOR HEALTH PROFESSIONALS

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Contents

- 3 Asthma, health promotion and preventive care
- 3 Smoking and asthma
- 5 Nutrition and asthma
- 6 Physical activity and asthma
- 8 Obesity and asthma
- 9 Immunisation and asthma
- 10 Mental health and asthma
- 11 Pregnancy and asthma
- 13 References and further information



Key recommendations

Advise all patients with asthma not to smoke and to avoid tobacco smoke.

Explain that smoking or breathing other people's smoke damages the lungs, prevents asthma medicines working properly, makes asthma harder to control, and increases a person's chance of needing urgent medical care for their asthma.

Encourage healthy eating from the five food groups,* including plenty of fruit, vegetables and fish, and minimising intake of saturated fats. Suspected food allergies or intolerances should be diagnosed by appropriately qualified health professionals. Do not routinely recommend dietary restrictions such as low-salt diets or avoidance of dairy foods or food additives as strategies for managing asthma.

Encourage all patients with asthma to be physically active for health benefits, and reassure them that exercise-induced bronchoconstriction can be managed effectively and should not be a reason to avoid physical activity.

Recommend structured exercise training for adults and children with asthma as part of comprehensive asthma management, for its benefit on quality of life.

Recommend weight loss for obese people with asthma and encourage them by explaining that even 5-10% weight loss may help improve their asthma.

Advise adults with asthma to keep their influenza and pneumococcal vaccinations up to date.

Screen patients with asthma for depression and anxiety.

Offer advice about healthy pregnancy to all women of reproductive age who have current asthma or a history of asthma. Explain that:

- untreated asthma, poorly controlled asthma or asthma exacerbations (flare-ups) during pregnancy put mothers and babies at risk, so it is especially important to maintain good asthma control during pregnancy
- inhaled corticosteroids have a good safety profile for pregnant women and can be taken during pregnancy

*Refer to the NHMRC. *Australian dietary guidelines*. 2013

Asthma, health promotion and preventive care

This information paper provides an overview of special considerations for patients with asthma when implementing routine health promotion and preventive healthcare activities in primary care, as recommended in national guidelines.¹ This includes pregnancy care, immunisation, chronic disease prevention and psychosocial care. It focuses on relevant interactions between asthma and the 'SNAP' (smoking, nutrition, alcohol, physical activity) behavioural risk factors for chronic disease.²

For all patients with asthma, healthy living also involves taking preventer medicine if indicated, self-monitoring or parental monitoring of asthma control, following an individualised written asthma action plan, and avoiding relevant triggers (e.g. cat allergens if sensitised, irritant fumes, workplace triggers) if possible.

This guidance is part of comprehensive asthma care, which includes assessment and monitoring, pharmacological treatment, self-management education, training in correct inhalation technique, assessment of adherence, and management of comorbid conditions that may affect asthma.

Smoking and asthma

Recommendations

Advise all patients with asthma not to smoke and to avoid tobacco smoke.

Explain that smoking or breathing other people's smoke (secondhand smoke) damages the lungs, prevents asthma medicines working properly, makes asthma harder to control, and increases a person's chance of needing urgent medical care for their asthma.

Advise women and their partners not to smoke during pregnancy or breastfeeding, and advise parents to ensure babies and children are not exposed to secondhand tobacco smoke (or to toxins from tobacco smoke that remain in clothing and hair).

Ask all patients whether they smoke. For those who smoke, offer help to quit.

Review asthma control more often in people who smoke or are exposed to tobacco smoke.

After a person with asthma quits smoking, review preventer dose requirements and step down if possible.

Effects of smoking on lung health

Smokers with asthma show changes in airway epithelium, which are associated with increased asthma symptoms, such as shortness of breath and mucus production.³ Exposure to cigarette smoke in people with asthma alters the inflammatory disease mechanism, so that it becomes more like that seen in people with chronic obstructive pulmonary disease (COPD).⁴

Smoking reduces lung function in people with or without asthma. In those with asthma, smoking accelerates decline in lung function over a lifetime (Figure 1).⁵⁻⁷ However, treatment with inhaled corticosteroids helps prevent lung function decline in smokers with asthma.⁵

Prenatal exposure to tobacco smoke, and exposure during infancy, increases the risk of wheezing during early childhood.⁸ Children with asthma whose mothers smoked during pregnancy benefit less from treatment with inhaled corticosteroids, and show less improvement in airway hyperresponsiveness over time, than those with asthma but no intrauterine exposure to smoke.⁹

Smoking home-grown or illegally produced loose tobacco ('chop-chop') is likely to be at least as harmful as smoking branded cigarettes.¹⁰ Patients need to understand that breathing *any* smoke (including cannabis, wood fires or bush fires) will damage their lungs.

Effects of smoking on asthma control and medicines

Smoking reduces the probability of achieving good asthma control.¹¹ Among adults with asthma, exposure to cigarette smoke (smoking, or regular exposure to environmental tobacco smoke within the previous 12 months) has been associated with a significantly increased risk of needing acute asthma care within the next 2–3 years.¹²

Smoking reduces response to inhaled corticosteroids and oral corticosteroids in people with asthma.^{13–17} People who smoke may need higher doses of inhaled corticosteroids to receive the same benefits (improvement in lung function and reduction in exacerbations) as non-smokers.¹⁷

Therapeutic response to montelukast appears to be unchanged by smoking.¹³ Therefore, montelukast may be useful in smokers with mild asthma.^{4, 18} (Note: montelukast is not reimbursed by the Pharmaceutical Benefits Scheme for people aged 15 years and over.)

Key message for patients: Smoking stops your asthma puffers working

Benefits of quitting

Evidence from cohort studies suggests that smoking cessation can reverse the effects of smoking on the airways of people with asthma. Epithelial characteristics in ex-smokers with asthma are similar to those in people with asthma who have never smoked.³

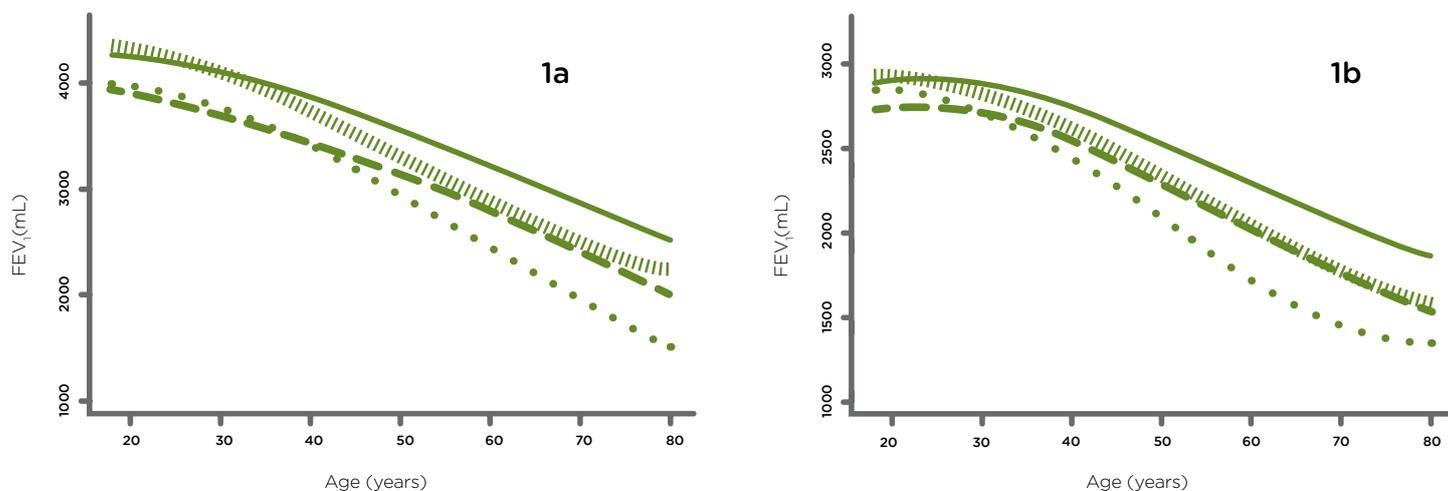
Within 6 weeks of quitting smoking, people with asthma show improvement in lung function and a reduction in airway inflammation, compared with people with asthma who continue to smoke, based on evidence from a nonrandomised comparative cohort study.¹⁴

Offering *all* smokers assistance to quit is more effective than advising all to quit, while offering assistance only to those who express interest in quitting.¹⁹ People with asthma may find it very difficult to quit, even compared with other smokers,^{18, 20} so they may need extra support and encouragement from health professionals.

Pharmacotherapy doubles a person's chance of quitting, best results occur when pharmacotherapy is used in combination with counselling and support. Prescribe nicotine-replacement therapy to all who need it (except where contraindicated) and explain that it can be safer than smoking. Potential drug–drug interactions should be considered when prescribing smoking cessation medicines, and in patients taking any other medicines. Bupropion toxicity may be increased when taken concomitantly with aminophylline or corticosteroids.

For more information about smoking cessation, refer to the Royal Australian College of General Practitioners' Supporting smoking cessation: a guide for health professionals.²¹

Figure 1. Lung function decline in smokers and non-smokers with or without asthma



Mean forced expiratory volume in one second (FEV₁), corrected for baseline height, weight and age, in men (Figure 1a) and women (Figure 1b) aged 18–80 years.

Source⁷: Reprinted with permission of the American Thoracic Society. Copyright © 2013 American Thoracic Society. Official journal of the American Thoracic Society.

- People who do not have asthma and do not smoke
- - - People with asthma who do not smoke
- People without asthma who smoke
- People with asthma who smoke

Nutrition and asthma

Recommendations

For all patients with asthma, encourage healthy eating from the five food groups, including plenty of fruit, vegetables and fish, and minimising intake of saturated fats.

Suspected food allergies or intolerances should be diagnosed by appropriately qualified health professionals. Do not routinely recommend dietary restrictions such as low-salt diets, or avoiding dairy foods or food additives, as strategies for managing asthma.

Correct any misconceptions patients may have about dietary asthma triggers.

Dietary choices to help control asthma

A diet high in antioxidants (5 servings of vegetables and 2 servings of fruit every day) may help reduce the risk of asthma exacerbations and improve lung function, compared with a low-antioxidant diet (up to 2 servings of vegetables and 1 serving of fruit daily).²²

In contrast, a meal high in dietary fats may worsen asthma control. A meal high in dietary fats leads to an increased concentration of sputum inflammatory markers and reduced efficacy of bronchodilator (salbutamol) 4 hours later, compared with a low-fat meal in adults with asthma.²³ A meal high in trans fats leads to a higher concentration of sputum inflammatory markers than a meal with no trans fats.²³

Neither fish oil supplements nor low-sodium diets appear to improve asthma control,²⁴ but there is limited evidence that each may help control exercise-induced bronchoconstriction.²⁵

Current evidence does not show that tartrazine (the most common food additive) worsens asthma, or that avoiding tartrazine improves asthma for most people without known sensitivity to tartrazine.²⁶

Eliminating dairy foods does not improve asthma control.²⁵

Key message for patients:
Healthy eating might help your asthma

Dietary effects on risk of developing asthma

In observational studies, various dietary patterns have been shown to be associated with increased asthma risk.

For example:

- Western-style diets (low in fruit and vegetables and high in fatty foods, processed foods and take-aways) have been shown to increase asthma risk in children.²⁷⁻³⁰
- High-fat and low-fibre diets have been associated with worse airway inflammation and lower lung function in people with asthma.³¹
- A 'Mediterranean' diet (high in fish, fruits and vegetables) has been associated with reduced risk of wheeze and asthma in childhood.³²
- High soft drink consumption has been associated with asthma and COPD in an Australian population survey.³³
- Children who reported eating fruit more than once a day had higher lung function than children who reported never eating fruit in a UK cross-sectional study.³⁴ Over a 7-year period, adults who had the greatest reduction in their fresh fruit intake had a decline in lung function in a UK prospective longitudinal cohort study.³⁵

Further research is needed to determine if these associations are due to causal links between food choices and asthma risk, and randomised controlled trials are needed to show whether changes in eating patterns can improve asthma or reduce the risk of developing asthma.

Obesity and asthma

Recommendations

Recommend weight loss for obese people with asthma and encourage them by explaining that even 5–10% weight loss may help improve their asthma.

Support them to lose weight by following current national guidelines for weight loss.

Offer referral to a health professional with expertise in weight management, such as an accredited practising dietitian, if possible.

Obesity is defined as body mass index (BMI) of 30kg/m² or higher, and overweight as BMI of 25 or more.

Obese people have a higher rate of asthma than non-obese people,⁴⁹ probably due to mechanical, inflammatory and genetic/developmental factors.⁴⁹

In obese adults with asthma, weight loss has been shown to improve asthma, regardless of the method used to achieve weight loss.⁵⁰ Benefits include improvements in airway hyperresponsiveness, lung function, asthma symptoms, asthma control, and medication needs.^{49, 51}

In an Australian clinical trial comparing a dietary intervention, an exercise intervention, and a combination of these for obese adults with asthma, asthma control improved in the diet and combination groups.⁵² Regardless of the method of weight loss, 5–10% weight loss was associated with a clinically important improvement in asthma control in 58% of patients, and improvement in quality of life in 83% of patients.⁵²

Significant improvements in lung function and respiratory symptoms have also been reported in severely obese women with asthma who lost weight after bariatric surgery.⁵³

Weight loss usually improves both obstructive sleep apnoea and asthma.⁴⁹ The causal links and interrelationship between these two conditions are complex.⁴⁹

Gastro-oesophageal reflux disease is also common among obese and overweight people and may affect asthma symptoms. However, the effectiveness of gastro-oesophageal reflux disease treatment for improving asthma control varies between studies.⁴⁹

Key message for patients:

Losing just a bit of weight could make you feel better and breathe more easily

For more information about managing obesity, refer to National Health and Medical Research Council Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children in Australia (available at: nhmrc.gov.au).



Immunisation and asthma

Recommendations

Advise adults with asthma to keep their influenza and pneumococcal vaccinations up to date.

Influenza and pneumococcal infections contribute to acute exacerbations of asthma in people with asthma.⁵⁴ People with obstructive airways disease, including asthma and COPD have a higher risk of invasive pneumococcal disease.⁵⁴

The Australian Immunisation Handbook⁵⁵ recommends influenza vaccination for people aged 6 months and over with asthma, and pneumococcal vaccination for people aged 10 years and over with chronic lung disease (in addition to other indications).

Influenza vaccination reduces the risk of influenza, and pneumococcal vaccination reduces the risk of pneumococcal pneumonia. However, the extent to which influenza vaccination and pneumococcal vaccination protect against asthma exacerbations due to respiratory tract infections is uncertain.^{54, 56, 57}

To be effective, influenza vaccination must be given every year before the influenza season.

There is no significant increase in asthma exacerbations immediately after vaccination with inactivated influenza vaccination.⁵⁶

Key message for patients: *Keep up your flu shots*

The current Australian Immunisation Handbook is available from the Australian Government Department of Health and Ageing website (health.gov.au).



Mental health and asthma

Recommendations

Screen patients with asthma for depression and anxiety.

Ensure that patients with asthma and a mental illness receive effective psychiatric treatment.

Provide or arrange asthma self-management education for all patients with asthma.

Effects of asthma on mental health

Anxiety, depression and panic disorders are more common among people with asthma than in the general population.⁴⁹ Depression and anxiety disorders are common in severe asthma and may be either a consequence of, or a contributor to, this condition.⁴⁹

Prospective cohort studies suggest that people with asthma have an increased risk of developing psychological distress,⁵⁸ and are approximately 1.5–1.7 times more likely to develop depressive disorders, anxiety disorders or alcohol use disorders, than people without asthma.⁵⁹ Population studies have also shown a higher prevalence of major depressive episodes among adolescents with asthma than adolescents without asthma.⁶⁰

Population studies suggest higher rates of behaviour problems in children with asthma than the general population.⁶¹ Several studies have consistently shown an association between asthma and attention-deficit hyperactivity disorder in children and adolescents.⁶²

Data from a prospective birth cohort suggest that there is a positive correlation between the risk of mental health problems and asthma severity in children and adolescents.⁶³ Children and adolescents with poorly controlled asthma may benefit from mental health screening.

Effect of mental health status on asthma

Anxiety, depression and personality disorders have been thought to be risk factors for near-fatal asthma, but the association is unclear.⁶⁴ Psychological factors may trigger asthma symptoms.⁴⁹ High levels of asthma-related fear and panic can exacerbate asthma symptoms.⁶⁵ However, anxiety and hyperventilation attacks can also be mistaken for asthma.⁶⁶

Data from a cohort study of patients with asthma attending a specialist asthma clinic suggest that patients with generalised anxiety disorder have worse asthma morbidity (overall asthma control, increased bronchodilator use, and worse asthma-related quality of life) than patients with asthma overall.⁶⁷ Several studies have reported an association between stress (socioeconomic status, interpersonal conflicts, emotional

distress, terrorism) and asthma exacerbations.⁶⁸

The mechanism is not yet understood, but may involve circulating adrenaline levels, altered sensitivity to corticosteroids, or mast cell activation.⁶⁸

Psychological factors affect patients' perception of asthma symptoms, and also may influence adherence to the treatment regimen.⁴⁹

Effect of mental health treatments on asthma

Few randomised controlled clinical trials have assessed the effects of psychiatric treatment on asthma. In a placebo-controlled antidepressant trial, improvement in depression was associated with improvement in asthma control, irrespective of treatment received.⁶⁹

A randomised controlled trial demonstrated that a brief cognitive behavioural intervention reduced asthma-specific fear immediately after treatment and at 6 months follow up in highly anxious patients with asthma, but did not measure asthma outcomes.⁶⁵

Aerobic training has been associated with improvement in anxiety and depression in people with asthma.³⁸

Effect of asthma self-management on mental health

Asthma self-management education and asthma monitoring, whether consisting of written information and frequent follow-up or more intensive coaching, has been associated with improvement in quality of life, particularly among patients with depressive symptoms.⁷⁰

Screening

There is a range of validated screening tools that can be used to identify symptoms of mental illness, including depression and anxiety. For adults, asking two simple screening questions in primary care can help identify those who need further investigation for depression: 'Over the past 2 weeks, have you felt down, depressed or hopeless?' and 'Over the past 2 weeks, have you felt little interest or pleasure in doing things?'.¹

*For a list of screening and assessment tools appropriate for adolescents and young adults, refer to beyondblue's Clinical practice guidelines: Depression in adolescents and young adults.*⁷¹

Key message for patients:
If your asthma is getting you down, tell your doctor

Pregnancy and asthma

Recommendations

Offer advice about healthy pregnancy to all women of reproductive age who have current asthma or a history of asthma. Explain that:

- untreated asthma, poorly controlled asthma or asthma exacerbations (flare-ups) during pregnancy put mothers and babies at risk, so it is especially important to maintain good asthma control during pregnancy
- inhaled corticosteroids have a good safety profile for pregnant women and can be taken during pregnancy (check pregnancy safety codes in Therapeutic Goods Administration-approved product information).

In addition to standard prenatal care and advice, advise any woman with current asthma or a history of asthma who intends to conceive that she and her partner should quit smoking, and she should avoid exposure to cigarette smoke. Consider short-term nicotine replacement therapy before she becomes pregnant.

For a woman with asthma who is planning a pregnancy:

- consider replacing her current preventer with a preventer rated category A for pregnancy (e.g. inhaled budesonide). If her asthma is well controlled on combination inhaled corticosteroid/long-acting beta₂ agonist, advise her to continue.
- measure baseline spirometry and assess current asthma control.
- provide (or update) her individualised written asthma action plan.

During pregnancy, manage asthma as for other adults: maintain best possible asthma control, avoid asthma exacerbations, use preventers regularly as indicated, and step up the regimen as necessary to maintain control.

Arrange regular review of asthma every 4 weeks during pregnancy. Assess asthma control at each review using the same validated asthma assessment tool such as Asthma Score (also called the Asthma Control Test) or Asthma Control Questionnaire (qoltech.co.uk).

Intervene earlier during asthma exacerbations to minimise risk to the foetus. When preparing a written asthma action plan for a pregnant woman, consider specifying a lower threshold for getting medical help (e.g. advise her to see a doctor rather than self-manage when asthma symptoms are slightly worse than usual, or needing reliever more often than usual).

During severe exacerbations or acute asthma, give oral corticosteroids if indicated, just as for non-pregnant adults.

Untreated asthma, poorly controlled asthma or exacerbations during pregnancy put mothers and babies at risk. Women with asthma have a higher risk of pre-eclampsia⁷² and preterm delivery,⁷² and their babies have a higher risk of low birthweight^{72, 73} and of being small for gestational age,⁷² compared with women who do not have asthma. Severe asthma exacerbations during pregnancy increase the risk of low birth weight, compared with the babies of women with asthma who do not have any exacerbations during pregnancy.⁷⁴

However, management of asthma during pregnancy by a health professional reduces the risk of preterm labour and of preterm delivery.⁷² Inhaled corticosteroid treatment may reduce the risk of asthma exacerbations during pregnancy,⁷³ and inhaled corticosteroids generally have good safety profiles in pregnant women.^{75, 76} Budesonide has a category A rating for use in pregnancy, while other inhaled corticosteroids are rated B3 (refer to Therapeutic Goods Administration-approved product information).

Although treatment with oral corticosteroids for asthma exacerbations has been associated with low birth weight⁷⁴ and preterm delivery⁷⁴ compared with no oral corticosteroid use, it is uncertain whether the harm is due to the treatment itself or to the acute exacerbations. Prednisolone has a category A rating for use in pregnancy.

If asthma treatment is stepped up during pregnancy, it may not be feasible to step down (e.g. reduce the inhaled corticosteroid dose or cease long-acting beta₂ agonist) during the pregnancy, because this is usually accomplished over several months while monitoring asthma control.

Key message for patients: *If you can't breathe, neither can your baby*

For more information on the management of asthma in pregnant women, and information on stepping up and stepping down treatment in adults, refer to the Asthma Management Handbook (available at: nationalasthma.org.au).

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Further Information

Visit the National Asthma Council Australia website at: nationalasthma.org.au

Commonwealth Government's anti-smoking campaign site: quitnow.gov.au

Quitline: 13 78 48 (13 QUIT)

Dietitians Association of Australia: daa.asn.au

Heart Foundation: heartfoundation.org.au

beyondblue info line 1300 224 636 and website: beyondblue.org.au

A matching patient resource is also available via the National Asthma Council Australia website.

Although all care has been taken, this information paper is only a general guide; it is not a substitute for assessment of appropriate courses of treatment on a case-by-case basis. The National Asthma Council Australia expressly disclaims all responsibility (including negligence) for any loss, damage or personal injury resulting from reliance on the information contained.

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