Complementary and lifestyle approaches for managing asthma in adults and adolescents

Read first

- Initial asthma treatment for adults and adolescents after diagnosis
- Educating adults and adolescents to manage their asthma

Recommendation

Encourage healthy eating for all patients with asthma.

Explain that that some healthy eating habits may also help with lung health:

- eating plenty of fruit and vegetables every day
- minimising intake of processed and take-away foods that are high in saturated fats.

Sources & rationale

Recommendation type: Consensus recommendation

Limited evidence from an Australian randomised controlled trial suggests that a diet rich in carotenoid antioxidants (5 servings of vegetables and 2 servings of fruit daily) is associated with a lower risk of exacerbations and higher lung function, compared with a low-antioxidant diet.[Wood 2012]

A high-fat diet may increase risk for poor asthma control by promoting inflammation, based on evidence from studies measuring inflammatory markers immediately after dietary challenge in adults with asthma: a meal high in saturated fats resulted in increased concentrations of sputum inflammatory markers and reduced efficacy of bronchodilator (salbutamol) 4 hours later, compared with a low-fat meal, while a meal high in trans fats resulted in higher concentrations of sputum inflammatory markers than a meal with no trans fats.[Wood 2011]

References

Wood LG, Garg ML, Smart JM, et al. Manipulating antioxidant intake in asthma: a randomized controlled trial. Am J Clin Nutr 2012; 96: 534-543.

Wood, L G, Garg, M L, Gibson, P G. A high-fat challenge increases airway inflammation and impairs bronchodilator recovery in asthma. J Allergy Clin Immunol 2011; 127: 1133-1140.

Resources

Australian dietary guidelines

Recommendation

Recommend regular physical activity to adults and adolescents with asthma for its general health benefits.

Advise patients that having asthma does not prevent them doing physical activity, including exercise training, and that physical activity training may also help with lung health.

Reassure patients that exercise-induced bronchoconstriction can be managed effectively and should not be a reason to avoid physical activity.

Sources & rationale

Recommendation type: Consensus recommendation

Supervised aerobic exercise training improves cardiorespiratory and functional fitness in adults with asthma.[Valkenborghs 2022] Aerobic exercise training may also improve symptom control[Hansen 2020, McLoughlin 2022] and lung function[Hansen 2020] in adults with asthma.

Swimming training is well-tolerated in adolescents with stable asthma, and improves lung function as well as cardiopulmonary fitness.[Beggs 2013] However, frequent exposure to trichloramines in indoor pool air is associated with exercise-induced bronchoconstriction in competitive swimmers.[Weiler 2016]

References

Beggs S, Foong YC, Le HC, et al. Swimming training for asthma in children and adolescents aged 18 years and under. Cochrane Database Syst Rev 2013; 4: CD009607.

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2024. [Revised May 2024]. Available from: www.ginasthma.org

Hansen ESH, Pitzner-Fabricius A, Toennesen LL, et al. Effect of aerobic exercise training on asthma in adults: a systematic review and meta-analysis. Eur Respir J 2020; 56: 2000146.

McLoughlin RF, Clark VL, Urroz PD, et al. Increasing physical activity in severe asthma: a systematic review and meta-analysis. Eur Respir J 2022; 60: 2200546.

Weiler JM, Brannan JD, Randolph CC, et al. Exercise-induced bronchoconstriction update–2016. J Allergy Clin Immunol 2016; 138: 1292-1295.e36.

Valkenborghs SR, Anderson SL, Scott HA, et al. Exercise training programs improve cardiorespiratory and functional fitness in adults with asthma: a systematic review and meta-analysis. J Cardiopulm Rehabil Prev 2022; 42: 423-433.

Notes

Provide advice about prevention of breakthrough exercise-induced bronchoconstriction with warm-up before exercise, and taking reliever before exercise (low-dose ICS-formoterol or SABA).

For adults or adolescents involved in competitive sport, check which asthma medicines are permitted in the sport before prescribing.

Consideration

Advise weight loss for people with asthma who are obese or overweight.

Support obese or overweight people with asthma to lose weight.

Advise patients that weight loss in obese or overweight people with asthma can improve asthma-related quality of life and may improve symptom control.

Sources & rationale

Recommendation type: Consensus recommendation

Obesity is a risk factor for exacerbations and poor response to ICS treatment in people with asthma.[Kaplan 2022]

Randomised controlled trials of weight loss in people with asthma have reported improvements in obesity biomarkers, asthma-related quality of life, and asthma symptom control.[Okoniewski 2019] However, weight loss interventions have not been clearly shown to improve lung function or asthma-related biomarkers, including markers of airway inflammation.[Okoniewski 2019]

Successful bariatric surgery in obese patients with asthma is associated with at least short-term reductions in severe asthma exacerbations and improvement in lung function.[Kaplan 2022] Studies evaluating glucagon-like peptide-1 receptor agonists in the management of obesity in people with asthma have reported reductions in exacerbation rates.[Kaplan 2022] Metformin has also been associated with reduction in asthma exacerbations, with further reductions with concomitant use of glucagon-like peptide-1 receptor agonists.[Lee 2025]

References

Kaplan AG, Kim JW. Asthma exacerbations and glucagon-like peptide-1 receptor agonists: a review of the current evidence. Pulm Ther 2022; 8: 343-358.

Lee B, Man KKC, Wong E, et al. Antidiabetic medication and asthma attacks. JAMA Intern Med 2025; 185: 16-25.

Okoniewski W, Lu KD, Forno E. Weight loss for children and adults with obesity and asthma. A systematic review of randomized controlled trials. Ann Am Thorac Soc 2019; 16: 613-625.

Consideration

Consider pulmonary rehabilitation for patients with persistent airflow limitation or coexisting asthma and COPD.

Where available, refer patients for pulmonary rehabilitation if they have limited exercise tolerance or dyspnoea due to persistent airflow limitation.

Sources & rationale

Recommendation type: Adapted from GINA

Pulmonary rehabilitation may improve functional exercise capacity and quality of life in adults with asthma.[Osadnik 2022]

Australian and New Zealand guidelines recommend pulmonary rehabilitation for patients with COPD to improve quality of life and exercise capacity and to reduce hospital admissions.[Alison 2017]

References

Alison JA, McKeough ZJ, Johnston K, et al. Australian and New Zealand pulmonary rehabilitation guidelines. Respirology 2017; 22: 800-819.

Osadnik CR, Gleeson C, McDonald VM, Holland AE. Pulmonary rehabilitation versus usual care for adults with asthma. Cochrane Database Syst Rev 2022; 8: CD013485.

Resources

Lung Foundation Australia's Pulmonary rehabilitation toolkit

RACGP Handbook of non-drug interventions. Pulmonary rehabilitation for COPD

Consideration

Consider vitamin D supplementation for patients with vitamin D deficiency.

Consider correction of vitamin D deficiency in the context of the patient's overall health.

Vitamin D supplements have not been proven to improve asthma control or prevent exacerbations.

Sources & rationale

Recommendation type: Consensus recommendation

Vitamin D deficiency is associated with increased risk of asthma exacerbations.[Jolliffe 2017]

Vitamin D supplementation has been proposed as an adjunctive treatment for patients with asthma with or without vitamin D deficiency. However, a 2023 Cochrane review reported that available evidence did not support a role for vitamin D supplementation or its hydroxylated metabolites to reduce risk of asthma exacerbations or improve asthma control. [Williamson 2023] Subgroup analyses found that the effect of vitamin D on risk of asthma exacerbation was not modified by baseline vitamin D status, vitamin D dose, frequency of dosing regimen, form of vitamin D given, or age group.[Williamson 2023] The investigators noted that the studies included few patients with baseline 25(OH)D concentrations < 25 nmol/L and few patients with severe asthma.[Williamson 2023]

An earlier systematic review and meta-analysis reported that vitamin D supplementation reduced the rate of asthma exacerbations requiring treatment with systemic corticosteroids in patients with 25-hydroxyvitamin D of less than 25 nmol/L before supplementation, but not in those with ≥25 nmol/L, and was well tolerated.[Jolliffe 2017]

Most studies assessing the effectiveness of vitamin D supplementation in patients with asthma have used cholecalciferol (vitamin D3). However, one randomised controlled trial in adults with asthma and vitamin D deficiency found that weekly oral supplementation with the vitamin D active metabolite calcifediol improved asthma control (assessed by the Asthma Control Test) and slightly reduced the rate of exacerbations and oral corticosteroid courses, compared with placebo. [Andújar-Espinosa 2020, Williamson 2023]

References

Andújar-Espinosa R, Salinero-González L, Illán-Gómez F, et al. Effect of vitamin D supplementation on asthma control in patients with vitamin D deficiency: the ACVID randomised clinical trial. Thorax 2021; 76: 126-133.

Jolliffe DA, Greenberg L, Hooper RL, et al. Vitamin D supplementation to prevent asthma exacerbations: a systematic review and meta-analysis of individual participant data [published correction appears in Lancet Respir Med. 2018; 6: e27.]. Lancet Respir Med 2017; 5 : 881-890.

Williamson A, Martineau AR, Sheikh A, et al. Vitamin D for the management of asthma. Cochrane Database Syst Rev. 2023; 2: CD011511.