Clinical topics

# Managing asthma with comorbidity

Common comorbid conditions that may affect asthma control or management include allergic rhinitis, chronic rhinosinusitis, gastro-oesophageal reflux disease, mental illness (e.g. depression, anxiety and panic disorders), obesity, obstructive sleep apnoea, and COPD.

The prevalence of comorbidities is high among people with severe asthma.

Information on allergic rhinitis

Information on chronic obstructive pulmonary disease

# Chronic rhinosinusitis

## Key points

For patients with asthma and chronic rhinosinusitis, consider referral to a respiratory physician, allergist or clinical immunologist if good symptom control of both conditions is not achieved.

For patients with asthma and chronic rhinosinusitis with nasal polyposis, refer for specialist assessment and management.

Chronic rhinosinusitis commonly co-occurs with asthma, aspirin-exacerbated respiratory disease, and allergies.[Bachert 2021] It is classified as chronic rhinosinusitis without nasal polyposis and chronic rhinosinusitis with nasal polyposis.

Chronic rhinosinusitis, particularly chronic rhinosinusitis with nasal polyposis, is associated with severe asthma.[GINA 2025]

Uncontrolled severe chronic rhinosinusitis with nasal polyposis is a debilitating condition, even in the absence of comorbidity.[Bachert 2021, ASCIA 2021]

Diagnosis is based on symptoms, endoscopic examination and imaging.[ASCIA 2021]

Chronic rhinosinusitis is managed with medicated and nonmedicated nasal saline irrigations, intranasal corticosteroid sprays, oral antibiotics, oral corticosteroid treatment, endoscopic sinus surgery, and monoclonal antibody therapies.[ASCIA 2021, Gill 2023]

Endoscopic sinus surgery for chronic rhinosinusitis has been reported to improve asthma control immediately after the procedure, but there is conflicting evidence on whether benefits persist beyond 1 year.[Gill 2023]

Dupilumab, mepolizumab and omalizumab are TGA-approved as add-on treatment of both chronic rhinosinusitis with nasal polyposis and severe asthma with type 2 inflammation (subject to age restrictions and clinical criteria).[Australian PI dupilumab, mepolizumab, omalizumab]

## References


ASCIA. Chronic rhinosinusitis with nasal polyps (CRSwNP). Position paper. Australasian Society of Allergy and Clinical Immunology, 2021. Available at: **https://www.allergy.org.au/hp/papers/crswnp**

**Australian product information – Dupixent (dupilumab) solution for injection**. [Revised 5 July 2024] Therapeutic Goods Administration (**www.ebs.tga.gov.au**)

**Australian product information. Nucala (mepolizumab) powder for injection and solution for injection**. [Revised 14 January 2022] Therapeutic Goods Administration (**www.ebs.tga.gov.au**)

**Australian product information – Xolair (omalizumab) solution for injection and powder for solution for injection**. [Revised 4 September 2024] Therapeutic Goods Administration (**www.ebs.tga.gov.au**)

Bachert C, Han JK, Wagenmann M, et al. EUFOREA expert board meeting on uncontrolled severe chronic rhinosinusitis with nasal polyps (CRSwNP) and biologics: Definitions and management [published correction appears in J Allergy Clin Immunol 2021; 147: 1981-1982.] J Allergy Clin Immunol 2021; 147: 29-36.

Gill AS, Alt JA, Detwiller KY, et al. Management paradigms for chronic rhinosinusitis in individuals with asthma: An evidence-based review with recommendations. Int Forum Allergy Rhinol 2023; 13: 1758-1782.

Global Initiative for Asthma (GINA). Global strategy for asthma management and prevention, 2025. Available from: www.ginasthma.org

## Resources

ASCIA's position paper on chronic rhinosinusitis with nasal polyps (CRSwNP) (2021)

# Gastro-oesophageal reflux disease

## Key points

For adults and children with asthma, manage reflux symptoms and gastro-oesophageal reflux disease according to current age-appropriate guidelines for reflux disease, but do not advise patients that drug treatments for reflux will improve asthma control.

Consider referral for specialist assessment for patients with asthma who have uncontrolled gastro-oesophageal reflux disease.

## Association between gastro-oesophageal reflux disease and asthma

There is a weak association between the presence of gastro-oesophageal reflux disease and the risk of asthma exacerbations in people with asthma.[Mallah 2022] Gastro-oesophageal reflux disease is associated with frequent asthma exacerbations and with exacerbations requiring systemic corticosteroid therapy in children and adults.[Mallah 2022]

In adults with asthma and a diagnosis of gastro-oesophageal reflux disease, treatment with a proton pump inhibitor (esomeprazole, lansoprazole, omeprazole, pantoprazole or rabeprazole) produces a small increase in lung function and improves quality of life, but may not improve asthma symptoms.[Chan 2011]

Limited evidence from randomised controlled clinical trials suggests that proton pump inhibitor treatment (lansoprazole, omeprazole) does not improve asthma in children with gastro-oesophageal reflux disease.[Stordal 2005, Holbrook 2012]

Proton pump inhibitors are unlikely to achieve clinically significant improvements in asthma control in patients with asymptomatic gastro-oesophageal reflux.[Chan 2011, Holbrook 2012]

### References


Mallah N, Turner JM, González-Barcala FJ, et al. Gastroesophageal reflux disease and asthma exacerbation: A systematic review and meta-analysis. Pediatr Allergy Immunol 2022; 33: e13655.

Chan WW, Chiou E, Obstein KL, et al. The efficacy of proton pump inhibitors for the treatment of asthma in adults: a meta-analysis. Arch Intern Med 2011; 171: 620-629.

Stordal K, Johannesdottir GB, Bentsen BS, et al. Acid suppression does not change respiratory symptoms in children with asthma and gastro-oesophageal reflux disease. Arch Dis Child 2005; 90: 956-60.

Holbrook JT, Wise RA, Gold BD, et al. Lansoprazole for children with poorly controlled asthma: a randomized controlled trial. JAMA 2012; 307: 373-81.

## Resources

Keung C, Hebbard G. The management of gastro-oesophageal reflux disease. Aust Prescr 2016; 39: 6-10.

# Mental illness

## Key points

In patients with moderate-to-severe asthma or asthma that is difficult to control, screen for depression, panic disorder and anxiety disorder, and offer comprehensive assessment, treatment or referral as appropriate.

Consider hyperventilation due to panic disorder as an alternative or coexisting diagnosis when investigating asthma-like symptoms.

Consider potential effects of oral corticosteroids on mental health when prescribing, monitoring treatment response or when assessing adherence during flare-ups.

## Links between mental illness and asthma

Anxiety, depression and panic disorders are more common among people with asthma than in the general population.[Boulet 2009, Van Lieshout 2012]

Psychological factors may trigger asthma symptoms and affect patients' asthma symptom perception, but also may influence medication compliance.[Boulet 2009]

Anxiety, depression and personality disorders have been thought to be risk factors for near-fatal asthma, but the association is unclear.[Boulet 2009] High levels of asthma-related fear and panic can exacerbate asthma symptoms.[Parry 2012] However, anxiety and hyperventilation attacks can also be mistaken for asthma.[Weinberger 2007]

Data from a cohort study of patients with asthma attending a specialist asthma clinic suggest that comorbid generalised anxiety disorder is associated with worse asthma morbidity (poorer overall asthma control, increased bronchodilator use, and worse asthma quality of life) than patients with asthma overall.[Lavoie 2011] Several studies have reported an association between stress (socioeconomic status, interpersonal conflicts, emotional distress, terrorism) and asthma exacerbations.[Theoharides 2012]

Psychological factors may influence adherence to the treatment regimen.[Boulet 2009] The experience of euphoria or dysphoria during oral corticosteroid therapy may influence a person's adherence to their written asthma action plan and could lead to delays in seeking medical care during exacerbations.

Patients with severe asthma experience significant emotional distress due to the long-term symptoms, treatment and limitations imposed by the condition.[Foster 2017]

### References

Boulet LP. Influence of comorbid conditions on asthma. Eur Respir J. 2009; 33: 897-906.

Foster JM, McDonald VM, Guo M, et al. “I have lost in every facet of my life”: the hidden burden of severe asthma. Eur Respir J 2017; 50: 1700765.

Lavoie KL, Boudreau M, Plourde A, et al. Association between generalized anxiety disorder and asthma morbidity. Psychosom Med 2011; 73: 504-513.

Parry GD, Cooper CL, Moore JM, et al. Cognitive behavioural intervention for adults with anxiety complications of asthma: prospective randomised trial. Respir Med 2012; 106: 802-10.

Theoharides TC, Enakuaa S, Sismanopoulos N, et al. Contribution of stress to asthma worsening through mast cell activation. Ann Allergy Asthma Immunol 2012; 109: 14-19.

Van Lieshout RJ, Macqueen GM. Relations between asthma and psychological distress: an old idea revisited. Chem Immunol Allergy 2012; 98: 1-13.

Weinberger M, Abu-Hasan M. Pseudo-asthma: when cough, wheezing, and dyspnea are not asthma. Pediatrics 2007; 120: 855-864.

# Obstructive sleep apnoea

## Key points

Consider the possibility of coexisting obstructive sleep apnoea in people with asthma, particularly in those who are also obese. Offer referral for investigation as appropriate.

## Links between obstructive sleep apnoea and asthma

An estimated 8.3% of Australians have obstructive sleep apnoea.[Hamilton 2019] Obesity is a major risk factor for obstructive sleep apnoea.[Hamilton 2019]

Among people with asthma, an estimated 20–40% have obstructive sleep apnoea.[Tiotiu 2018]

The risk of obstructive sleep apnoea is higher in people with asthma and the risk of asthma is higher among people with obstructive sleep apnoea.[Althoff 2021]

Comorbid obstructive sleep apnoea is associated with increased rates of asthma exacerbations, including severe exacerbations, and with lower quality of life and asthma control.[Tiotiu 2021, Wang 2016]

The severity of obstructive sleep apnoea may be correlated with rate of severe asthma exacerbations.[Wang 2016]

## Management of obstructive sleep apnoea

In patients with asthma, continuous positive-air-pressure (CPAP) treatment for obstructive sleep apnoea improves asthma-related quality of life,[Althoff 2021] and may improve asthma symptom control.[Davies 2018]

A minimum of 4 hours' use per night is adequate, though maximal efficacy is achieved with 6 hours' use per night.[Hynes 2024]

## References


Althoff MD, Ghincea A, Wood LG, et al. Asthma and three colinear comorbidities: obesity, OSA, and GERD. J Allergy Clin Immunol Pract 2021; 9: 3877-3884.

Davies SE, Bishopp A, Wharton S, et al. Does Continuous Positive Airway Pressure (CPAP) treatment of obstructive sleep apnoea (OSA) improve asthma-related clinical outcomes in patients with co-existing conditions?- A systematic review. Respir Med 2018; 143: 18-30.

Hamilton GS, Chai-Coetzer CL. Update on the assessment and investigation of adult obstructive sleep apnoea. Aust J Gen Pract 2019; 48: 176-181.

Hynes D, Mansfield D. Diagnosis and management of obstructive sleep apnoea in adults. Aust Prescr 2024; 47: 52-56.

Tiotiu A, Plavec D, Novakova S, et al. Current opinions for the management of asthma associated with ear, nose and throat comorbidities. Eur Respir Rev 2018; 27: 180056.

Wang Y, Liu K, Hu K, et al. Impact of obstructive sleep apnea on severe asthma exacerbations. Sleep Med 2016; 26: 1-5.


## Resources

National Asthma Council Australia's **Sleep and asthma information for health professionals**

Hynes D, Mansfield D. **Diagnosis and management of obstructive sleep apnoea in adults**. Aust Prescr 2024; 47: 52-56.

# Obesity

## Key points

Obesity is associated with increased risk of exacerbations and poor response to ICS in people with asthma.

Weight loss in obese patients is associated with improved asthma symptom control.

Consider the possibility of coexisting obstructive sleep apnoea in people with asthma, particularly in those who are also obese. Offer referral for investigation as appropriate.

For adults with obstructive sleep apnoea or children with sleep-disordered breathing, offer specialist referral.

## Links between asthma and obesity

People with asthma are approximately one and a half times more likely to be obese than those without asthma.[McLoughlin 2021] Conversely, the incidence of asthma is 50% higher in overweight or obese adults than non-overweight adults, and is 20% higher in overweight children and doubled in obese children, compared with non-overweight children.[McLoughlin 2021]

The mechanisms for the association between asthma and obesity are not fully understood, and may include systemic inflammation, abnormal immune-modulation, increased mechanical load on the lungs, microbiome changes, genetic predisposition, and hormonal effects.[McLoughlin 2021]

## Clinical phenotypes of asthma with obesity

Obesity-related asthma is a complex, multifactorial phenotype that likely has several underlying mechanisms and sub-phenotypes [Reyes-Angel 2022] Overall, obesity in asthma is associated with prominent respiratory symptoms, higher risk of exacerbations, and little eosinophilic inflammation and poor response to ICS treatment.[Scott 2023, Kaplan 2022, Althoff 2021]

**Asthma with obesity in adults:** Obesity in adults with asthma is associated with increase wheezing and dyspnoea, reduced therapeutic response ICS, reduced asthma-related quality of life, increased risk of hospitalisation, and reduced lung function and lung volumes, lower exercise capacity.[McLoughlin 2021] There is conflicting evidence for the effects of obesity on airway hyperresponsiveness in adults.[McLoughlin 2021]

**Asthma with obesity in children:** In Australia the prevalence of overweight and obesity among children with asthma is higher than the rate of childhood obesity in the general population.[McLoughlin 2021] Obesity is associated with poorer asthma-related quality of life, worse asthma symptoms and reduced therapeutic response to ICS, poorer asthma symptom control and increased risk of exacerbations, compared to healthy-weight children with asthma. Among children hospitalised for asthma, obesity is associated with a higher risk of mechanical ventilation and with longer hospital stays.[McLoughlin 2021] There is conflicting evidence for the effects of obesity on airway hyperresponsiveness in children.[McLoughlin 2021]

Reduction in $FEV_1$/FVC among obese children with asthma can be more pronounced than in adults.[McLoughlin 2021] Unlike in adults, obese children with asthma usually have normal total lung capacity, vital capacity, forced vital capacity and $FEV_1$.[McLoughlin 2021]

# Effects of weight loss and weight-loss medicines on asthma

Overall, 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]

**Clinical trials of weight loss in adults with asthma:** 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]

**Clinical trials of anti-diabetes medicines in adults:** In patients with diabetes and asthma, metformin has been associated with reduction in asthma exacerbations, with further reductions with concomitant use of metformin and glucagon-like peptide-1 receptor agonists, unrelated to weight loss.[Lee 2025]

**Clinical trials of weight loss in children with asthma:** Few clinical trials have evaluated weight loss interventions in children with asthma, and clinical trials are generally smaller than those in adults.[Reyes-Angel 2022, McLoughlin 2021] Weight-loss interventions trialled in children include dietary changes, multifactorial interventions with exercise sessions and nutritional counselling, and multifactorial interventions with a cognitive-behavioural therapy component.[Okoniewski 2019] Available evidence suggests that weight loss in obese children with asthma is associated with improvements in asthma-related quality of life and asthma control.[Okoniewski 2019] Improvements in lung function have not been demonstrated.[Okoniewski 2019]

## References


Althoff MD, Ghincea A, Wood LG, et al. Asthma and three colinear comorbidities: obesity, OSA, and GERD. J Allergy Clin Immunol Pract 2021; 9: 3877-3884.

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.

McLoughlin RF, Berthon BS, Wood LG. Weight loss in obese children with asthma – is it important? Paediatr Respir Rev 2021; 37: 10-14.

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.

Reyes-Angel J, Kaviany P, Rastogi D, et al. Obesity-related asthma in children and adolescents. Lancet Child Adolesc Health 2022; 6: 713-724.

Scott HA, Ng SH, McLoughlin RF, et al. Effect of obesity on airway and systemic inflammation in adults with asthma: a systematic review and meta-analysis. Thorax 2023; 78: 957-965.

## Other comorbid conditions

# Key points

Consider the possibility of inducible laryngeal obstruction as an alternative or coexisting diagnosis in adults and children with asthma.

For older patients, consider whether the presence of other common comorbid conditions (e.g. obesity, gastro-oesophageal reflux disease, obstructive sleep apnoea syndrome, osteoporosis, hypertension, cardiovascular disease) or their treatments may affect asthma control, increase the potential for drug–interactions, or affect the person's ability to self-manage their asthma.

### Resources

European Respiratory Society and European Laryngological Society **statement on inducible laryngeal obstruction**

Centre of Excellence in Severe Asthma's **inducible laryngeal obstruction summary chart**

# Chronic obstructive pulmonary disease

See **chronic obstructive pulmonary disease**