Diagnosing asthma in adults and adolescents

Read first

- Definition of asthma

Take a history, including symptom triggers and allergies.

Ask about:

- current symptoms (wheeze, breathlessness, chest tightness, cough)
- pattern of symptoms (daytime and night-time, changes over weeks or years)
- what provokes symptoms (e.g. exercise, viral infections, cold dry air, foods, medicines, allergens)
- home and work environment
- history of smoking/vaping (including cannabis) and exposure to smoke
- history of allergies (including atopic dermatitis or allergic rhinitis)
- family history of asthma and allergies.

Sources & rationale

Recommendation type: Consensus recommendation

A history of fluctuating respiratory symptoms (e.g. wheeze, breathlessness, chest tightness, cough) is essential to the diagnosis of asthma. However, history alone is not adequate to confirm the diagnosis of asthma; the diagnosis also requires demonstration of variable expiratory airflow limitation.

Wheeze and dyspnoea are the symptoms most reliably associated with asthma.

Exercise-induced symptoms that worsen after stopping the activity strongly suggest asthma. Breathlessness due to other conditions (e.g. deconditioning, cardiac failure, COPD, inducible laryngeal obstruction) is usually worst during exertion.

Symptom patterns that suggest asthma include recurrence or seasonality of symptoms, worsening of symptoms at night or in the early morning, symptoms triggered by exercise, cold air, viral infections, allergies, or medicines (e.g. aspirin or beta-blockers).

Asthma should also be suspected in a patient with a history of recurrent episodes of ‘bronchitis’ or prolonged coughing after respiratory tract infections.

A family history of asthma or allergies increases the probability that typical respiratory symptoms are due to asthma.

Resources

Reddel HK. Common conditions that mimic asthma. Med J Aust. 2022; 216: 337-340.

Recommendation

Perform a physical examination, including chest auscultation and inspection of upper respiratory tract.

Check for signs that suggest a comorbid or an alternative diagnosis, such as allergic rhinitis, rhinosinusitis, nasal polyps, heart murmurs, crackles or inspiratory wheeze.

Sources & rationale

Recommendation type: Consensus recommendation

The absence of detected abnormalities does not exclude a diagnosis of asthma. Physical examination is usually normal in an adult or adolescent with asthma.

Wheeze (if detected) does not confirm the diagnosis of asthma. Widespread wheeze on auscultation of the chest, when symptoms are present, suggests asthma but is nonspecific. Note: silent chest occurs in life-threatening asthma exacerbation.

Inspect the upper airway for signs of allergic rhinitis (e.g. swollen turbinates, transverse nasal crease, reduced nasal airflow, mouth breathing, darkness and swelling under eyes caused by sinus congestion).

Resources

Reddel HK. Common conditions that mimic asthma. Med J Aust. 2022; 216: 337-340.

Recommendation

Perform or arrange spirometry, including a bronchodilator responsiveness test.

If spirometry is not available within the practice, refer to an accredited respiratory function laboratory and request spirometry and FeNO in the same session.

Do not delay treatment, if indicated.

Bronchodilator responsiveness (whether respiratory airflow limitation is 'reversible') should be tested by measuring FEV_1 before, and 10–15 minutes after, administration of a rapid-acting bronchodilator (e.g. salbutamol), with at least three spirometry manoeuvres each time.

Sources & rationale

Recommendation type: Recommendation adapted from GINA

Lung function testing is essential to distinguish asthma from other conditions including eosinophilic bronchitis, allergic rhinitis, inducible laryngeal obstruction and COPD.

Spirometry, when correctly performed, is the most accurate and reliable test for assessing lung function in a patient with suspected asthma.

Reduced ratio of FEV_1 to FVC indicates expiratory airflow limitation. Decreased FEV_1 alone is a nonspecific finding and does not confirm asthma.

Normal spirometry does not exclude asthma, especially when patient is asymptomatic.

A positive bronchodilator response (increase ≥12% and ≥ 200 mL from pre-bronchodilator FEV_1) confirms the diagnosis of asthma if the clinical history and physical examination findings are consistent with asthma.

Resources

TSANZ's list of accredited respiratory function laboratories

National Asthma Council Australia's spirometry training and tools

Notes

If high-quality spirometry cannot be performed in a primary care practice, refer the patient to an accredited respiratory function laboratory.

When interpreting a bronchodilator responsiveness test, the greater the increase in FEV_1, the more likely the diagnosis of asthma. An increase from baseline >400 mL strongly supports the diagnosis of asthma.

A bronchodilator response that does not meet criteria for a positive test does not rule out asthma. If the post-bronchodilator increase in FEV_1 approaches, but does not reach, the criteria for positive response, this information must be interpreted alongside other findings.

Alternative criteria for positive bronchodilator responsiveness test are used in some respiratory function laboratories and guidelines, and may be incorporated into spirometer software.

Patients with longstanding asthma may develop persistent expiratory airflow limitation, defined as $FEV_1/FVC < 0.7$ or < lower limit of normal.[Rutting 2022] Among this group, approximately two-thirds have a negative bronchodilator response on spirometry.[Rutting 2022]

More information: **Lung function tests**

Recommendation

If spirometry is performed in an accredited respiratory laboratory, request a FeNO test in the same session.

Sources & rationale

Recommendation type: Consensus recommendation

FeNO is elevated in the presence of active type-2 inflammation of the airway associated with asthma.

FeNO ≥40 ppb supports the diagnosis of asthma in a patient with spirometry indicating expiratory airflow limitation and signs and symptoms strongly suggesting asthma. In adults, a FeNO level ≥ 40 ppb in adults has a reported sensitivity of 0.61 and specificity of 0.82 and for the diagnosis of asthma [Louis 2022]

Normal FeNO does not rule out asthma.[Louis 2022, Karrasch 2017]

References

Karrasch S, Linde K, Rücker G, et al. Accuracy of FENO for diagnosing asthma: A systematic review. Thorax 2017; 72: 109–116.

Louis R, Satia I, Ojanguren I, et al. European Respiratory Society guidelines for the diagnosis of asthma in adults. Eur Respir J 2022; 60: 2101585.

Notes

More information on tests for airway inflammation

Recommendation

Make the diagnosis of asthma if all the following apply:

- The patient has a history of recurrent or persistent respiratory symptoms (e.g. wheeze, shortness of breath, chest tightness and/or cough) that vary in frequency and severity.
- Signs and symptoms are unlikely to be due to an alternative diagnosis.
- Variable expiratory airflow limitation and/or FeNO ≥ 40 ppb has been demonstrated.

Alert Expiratory airflow limitation or variability in expiratory airflow may not be detectable in some patients with asthma who are using anti-inflammatory treatment or in patients with asthma using bronchodilators at the time of testing.

Sources & rationale

Recommendation type: Adapted from GINA

In adults and adolescents with recent-onset respiratory symptoms (months to years), the diagnosis of asthma is confirmed by documenting both a history of typical symptoms and demonstration of excessive variability of expiratory airflow (including historical documentation).

Variable airflow can be demonstrated several ways, including:

- positive bronchodilator responsiveness test using spirometry (clinically significant increase in FEV_1 10–15 minutes after administration of bronchodilator, i.e. FEV_1 increase of ≥ 200 mL and ≥12% from pre-bronchodilator reading)
- positive bronchial provocation test conducted in a respiratory function laboratory
- clinically significant increase in pre-bronchodilator FEV_1 (≥ 200 mL and ≥12%) measured before and after 4 weeks of maintenance ICS treatment.

References

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

Rutting S, Thamrin C, Cross TJ, et al. Fixed airflow obstruction in asthma: a problem of the whole lung not of just the airways. Front Physiol 2022; 13: 898208.

Notes

Alternative criteria for bronchodilator response are used in some spirometry software and testing centres.[Stanojevic 2021]

Patients with longstanding asthma may develop persistent expiratory airflow limitation, defined as $FEV_1/FVC < 0.7$ or < lower limit of normal.[Rutting 2022] Among this group, approximately two-thirds have a negative bronchodilator response on spirometry.[Rutting 2022]

Recommendation

If the initial spirometry results do not confirm the diagnosis of asthma, but clinical findings still suggest asthma, consider further testing.

Consider:

- repeating spirometry with bronchodilator responsiveness test on another occasion
- referring the patient to an accredited respiratory laboratory for repeated spirometry and a FeNO test
- referring the patient to a specialist (e.g. respiratory physician) for diagnostic assessment.

Sources & rationale

Recommendation type: Recommendation adapted from GINA and ERS

Repeating spirometry within the practice (e.g. when the patient has symptoms or early in the morning)[GINA 2025] or referring to an accredited respiratory laboratory may provide more diagnostic information because spirometry results vary with the patient's clinical status at the time of testing and with the quality of spirometry.

FeNO is elevated in the presence of active type-2 inflammation of the airway associated with asthma. A high FeNO level supports the diagnosis of asthma in a patient with symptoms suggesting asthma.[Louis 2022] Normal FeNO does not rule out asthma.[Louis 2022]

References

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

Louis R, Satia I, Ojanguren I, et al. European Respiratory Society guidelines for the diagnosis of asthma in adults. Eur Respir J 2022; 60: 2101585.

Rutting S, Thamrin C, Cross TJ, et al. Fixed airflow obstruction in asthma: a problem of the whole lung not of just the airways. Front Physiol 2022; 13: 898208.

Notes

More information on **tests for airway inflammation**

More information on **lung function testing**

Recommendation

If the results of spirometry and FeNO are not diagnostic, but asthma still suspected, consider referral to an accredited respiratory laboratory for bronchial provocation testing.

Alert Bronchial provocation testing is contraindicated in patients with FEV1 < 60% on spirometry.

Alert Bronchial provocation testing is contraindicated during pregnancy.

Sources & rationale

Recommendation type: Consensus recommendation

Bronchial provocation (challenge) tests for airway hyperresponsiveness are not required for asthma diagnosis, but can be considered if the bronchodilator responsiveness test is negative on initial spirometry.

If pre-bronchodilator lung function is normal, bronchial provocation testing is unlikely to detect significant airway hyperresponsiveness.

More information: Lung function tests

Resources

TSANZ's list of accredited respiratory function laboratories

Notes

Bronchial provocation (challenge test) involves measuring lung function before and after a standardised challenge calculated to provoke bronchoconstriction in a controlled, closely monitored test.

Bronchial provocation tests are performed only in accredited respiratory function laboratories.

Types of bronchial provocations tests include methacholine challenge, mannitol challenge, exercise challenge, and eucapnic voluntary hyperventilation. Optimal selection depends on the patient's age and on the provisional and differential diagnoses

based on the clinical findings and results of other investigations.

If the patient is using bronchodilator medication, check the respiratory laboratory's requirements for withholding bronchodilators before the test.

Standard withholding times are:

- ≥ 4 hours for salbutamol or terbutaline
- ≥24 hours for formoterol or salmeterol
- ≥36 hours for indacaterol, olodaterol, or vilanterol
- 36–48 hours for aclidinium, glycopyrronium, tiotropium, or umeclidinium.

Bronchial provocation testing is not possible in a patient who cannot perform spirometry.

More information on lung function testing

Recommendation

Consider specialist referral if the diagnosis remains uncertain.

Sources & rationale

Recommendation type: Consensus recommendation

Consideration

If a delay to spirometry is unavoidable, consider measuring diurnal variation in peak expiratory flow to confirm variable expiratory airflow limitation.

Instruct the patient to keep a PEF diary for 2–4 weeks: every morning on waking and every afternoon at approximately 4 pm, the patient takes three PEF readings and records the highest of three. Use the data to calculate mean daily variation.

Sources & rationale

Recommendation type: Adapted from GINA

The best method for testing lung function in a patient with suspected asthma is spirometry performed by a trained operator with suitable equipment, with bronchodilator responsiveness testing. However, if spirometry is not accessible within a few weeks or days (according to clinical urgency), consider PEF measurement in preference to no lung function test.

References

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org

Resources

Asthma + Lung UK's Peak flow variability calculator

Notes

Mean diurnal variability is calculated as follows: [GINA 2025]

1. Calculate each day's score: ([day's highest – day's lowest] / mean of day's highest and lowest) x 100

2. Add up each daily score over the monitoring period and calculate the mean.

Daily variation >10% supports the diagnosis of asthma.

An online calculator using the daily amplitude percent mean method is available from Asthma + Lung UK.

Consideration

Lung function testing can be delayed if immediate treatment is indicated due to clinical urgency.

Sources & rationale

Recommendation type: Consensus recommendation

Consideration

If a patient without a known diagnosis of asthma presents with acute respiratory symptoms suggesting asthma, manage as acute asthma and arrange follow-up investigation after resolution of acute symptoms.

Sources & rationale

Recommendation type: Adapted from GINA

References

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

Notes

Information on managing acute asthma in adults and adolescents in primary care and in emergency departments

Consideration

If symptoms appear to be triggered by exposure to airborne irritants or sensitisers in the workplace, refer immediately for specialist assessment.

If immediate referral is not possible, arrange spirometry with bronchodilator responsiveness testing, and bronchial provocation testing if indicated.

Sources & rationale

Recommendation type: Adapted from TSANZ-NAC

New-onset asthma in an adult could be work-related asthma (work-exacerbated asthma or occupational asthma).

Investigation of suspected work-related asthma is complex. It involves systematically confirming the diagnosis of asthma, establishing the link between asthma symptoms and the workplace, and identifying the specific causal agent(s) through a detailed history, further investigations (e.g. serial PEF measurement, skin prick tests, bronchial provocation testing) and sometimes worksite visits.[Hoy 2020]

For patients with occupational asthma, prompt diagnosis and identification of causal exposures is critical to avoid rapid and potentially irreversible decline in lung function.[Hoy 2020]

References

Hoy R, Burdon J, Chen L, et al. Work-related asthma: A position paper from the Thoracic Society of Australia and New Zealand and the National Asthma Council Australia. Respirology 2020; 25: 1183-1192.

Resources

National Asthma Council Australia's Work-related asthma. An update for primary care health professionals

National Asthma Council Australia and TSANZ's position paper on work-related asthma

OASYS free software for diagnosis of occupational asthma using serial peak flow records

Notes

Work-related asthma includes occupational asthma and work-exacerbated asthma.

Occupational asthma is new-onset asthma (or recurrence of asthma after a period of remission) due to exposures to irritants or sensitisers in the workplace. Sensitiser-induced occupational asthma is far more common than irritant-induced occupational asthma.[Hoy 2020]

More information on work-related asthma

Consideration

Consider the possibility of aspirin-exacerbated respiratory disease in patients with a history of breathing difficulty after taking aspirin or NSAIDs.

Consider referring to a respiratory physician or allergist/clinical immunologist.

Sources & rationale

Recommendation type: Consensus recommendation

Aspirin-exacerbated respiratory disease is a distinct condition resulting in adult-onset asthma.[Rajan 2015] It is present in approximately 7% of people with asthma and approximately 15% of people with severe asthma.[Rajan 2015]

Aspirin-exacerbated respiratory disease typically progresses from nasal congestion and anosmia to chronic rhinosinusitis with nasal polyps, then asthma and hypersensitivity to aspirin and NSAIDs.[Szczeklik 2000]

Within minutes to hours of ingesting aspirin or NSAIDs, people with aspirin-exacerbated respiratory disease can develop dyspnoea and other reactions that can include angioedema and anaphylactoid shock.[Szczeklik 2000]

A presumptive diagnosis of aspirin-exacerbated respiratory disease is based on a history of reactions to aspirin or nonselective NSAIDs, with a higher degree of certainty in patients with chronic rhinosinusitis and nasal polyps.[Kennedy 2016] Aspirin challenge, performed in a specialist clinic with cardiopulmonary resuscitation capabilities, provides a definitive diagnosis.[GINA 2025]

References

Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention, 2025. Available from: www.ginasthma.org

Kennedy JL, Stoner AN, Borish L. Aspirin-exacerbated respiratory disease: Prevalence, diagnosis, treatment, and considerations for the future. Am J Rhinol Allergy 2016; 30: 407-413.

Rajan JP, Wineinger NE, Stevenson DD, White AA. Prevalence of aspirin-exacerbated respiratory disease among asthmatic patients: A meta-analysis of the literature. J Allergy Clin Immunol 2015; 135: 676-81.

Szczeklik A, Nizankowska E, Duplaga M. Natural history of aspirin-induced asthma. AIANE Investigators. European Network on Aspirin-Induced Asthma. Eur Respir J 2000; 16: 432-436.

Consideration

Do not arrange bronchial provocation testing for a patient who is pregnant.

Sources & rationale

Recommendation type: Adapted from GINA

Bronchial provocation testing is contraindicated during pregnancy.[GINA 2025]

References

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

Notes

More information on asthma in pregnancy

Consideration

If an adolescent's parent or carer is present, arrange to see the patient alone for part of the consultation to enable confidential discussion of sensitive issues like smoking and vaping.

Sources & rationale

Recommendation type: Consensus recommendation

An estimated 10% of Australian adolescents aged 14–17 years smoke or vape, and some parents are not aware of their child's use of vapes.[Egger 2024a, Egger 2024b]

References

Egger S, David M, Watts C, et al. The association between vaping and subsequent initiation of cigarette smoking in young Australians from age 12 to 17 years: a retrospective cohort analysis using cross-sectional recall data from 5114 adolescents. Aust N Z J Public Health 2024; 48: 100173.

Egger S, Watts C, Dessaix A, et al. Parent's awareness of, and influence on, their 14-17-year-old child's vaping and smoking behaviours; an analysis of 3242 parent-child pairs in Australia. Addict Behav 2024; 150: 107931.

Royal Australasian College of Physicians. Routine adolescent and young adult psychosocial and health assessment. Position statement 2021. Sydney; RACP: 2021.

Resources

RACP's position statement on psychosocial and health assessment for adolescents and young adults

Notes

More information on smoking and vaping

Consideration

Consider the possibility of adult-onset asthma in adults of any age with dyspnoea, wheeze or cough, even older people without a history of asthma.

Use age-adjusted spirometry and FeNO reference values.

Sources & rationale

Recommendation type: Consensus recommendation

New cases of adult-onset asthma can occur at any age.[Gibson 2010]

Older adults with late-onset asthma may have typical signs and symptoms, or may present with cough as the only symptom.[Dunn 2018]

FEV_1/FVC ratio decreases with aging, so age-adjusted reference values should be used to avoid overdiagnosis of airflow limitation.[Dunn 2018]

FeNO values in healthy individuals decrease from young adulthood and are markedly low in healthy older adults than young adults.[Högman 2024]

References

Dunn RM, Busse PJ, Wechsler ME. Asthma in the elderly and late-onset adult asthma. Allergy 2018; 73 : 284-294.

Gibson PG, McDonald VM, Marks GB. Asthma in older adults. Lancet 2010; 376: 803-813.

Högman M, Bowerman C, Chavez L, et al. ERS technical standard: Global Lung Function Initiative reference values for exhaled nitric oxide fraction (FENO50). Eur Respir J 2024; 63: 2300370.

Notes

Some older adults may not experience dyspnoea, even with significant airflow limitation.

Differential diagnosis includes other chronic diseases common in older patients (e.g. heart failure).[Dunn 2018]

Table: Differential diagnosis in adults and adolescents

Table

Differential diagnosis in adults and adolescents

Alternative or comorbid condition	Suggestive features
Inducible laryngeal obstruction	Dry cough or breathing difficulty triggered by strong smells, irritants or exercise Symptoms worse when talking on the phone Symptoms associated with throat tightness or voice change Breathlessness worst at peak exercise. Inspiratory wheezing (stridor) – strongly suggests a laryngeal or upper airway abnormality
Rhinosinusitis	Cough co-occurring with symptoms of rhinosinusitis
Chronic upper airway cough syndrome	Dry cough is dominant symptom Throat-clearing Dysphonia 'Scratchy' throat Triggered by talking, laughing, strong odours or smoke May be associated with chronic rhinosinusitis or gastroesophageal reflux
ACE inhibitor-related cough	Cough is dominant symptom
COPD	Onset of dyspnoea/cough/ wheeze at age >40 years History of smoking or exposure to smoke/dust History of recurrent chest infections Persistent breathlessness Family history of emphysema
Bronchiectasis	Productive cough in a patient with a history of recurrent infections
Large airway stenosis	Breathlessness or wheeze
Pulmonary fibrosis	Breathlessness or dry cough Fine crackles heard during inspiration on auscultation
Lung cancer	Persistent cough despite treatment Haemoptysis Chest pain Weight loss
Poor cardiopulmonary fitness	Breathlessness on exertion
Heart disease	Chest tightness on exertion Dyspnoea on exertion or when lying flat Basal crepitations
Pulmonary embolism	Sudden-onset dyspnoea
Dysfunctional breathing	Breathlessness with dizziness, light-headedness, or tingling fingers
Panic attacks	Breathlessness or chest tightness at rest or on minor exertion, accompanied by anxiety
Gastro-oesophageal reflux disease	Cough or chest tightness in patient with symptomatic reflux
Recurrent respiratory infections	As clinically typical

Additional information

ACE: angiotensin-converting enzyme; COPD: chronic obstructive pulmonary disease

Consideration

In older adults, consider the possibility of persistent airflow limitation.

For older adults with asthma-like symptoms, consider past history as well as current symptoms when interpreting findings, and do not rule out asthma immediately when bronchodilator responsiveness test is negative or symptoms are not typical.

Consider the possibility of COPD as an alternative diagnosis, and the possibility of both COPD and asthma as coexisting diagnoses.

Sources & rationale

Recommendation type: Adapted from GINA

In patients aged 60 years and over with new-onset respiratory signs/symptoms, consider a past diagnosis of asthma or historical symptoms to distinguish asthma (or coexisting asthma and COPD) from COPD.

Patients with longstanding asthma may develop persistent expiratory airflow limitation, defined as $FEV_1/FVC < 0.7$ or < lower limit of normal.[Rutting 2022] Among this group, approximately two-thirds have a negative bronchodilator response on spirometry [Rutting 2022] (sometimes called fixed airway limitation). These findings, which are mainly due to airway remodelling,[Rutting 2022] are also features of COPD.

People with features of both asthma and COPD must be distinguished from those with COPD, because ICS treatment is routinely indicated in those with asthma (in addition to bronchodilator therapy with LABA and/or LAMA).[GINA 2024] Patients with a past history of asthma or past diagnosis of asthma are at significantly greater risk of hospitalisation or death if they are treated with long-acting bronchodilators alone, than if they also receive ICS.[Gershon 2014, Kendzerska 2019, Suissa 2018]

References

Gershon AS, Campitelli MA, Croxford R, et al. Combination long-acting β-agonists and inhaled corticosteroids compared with long-acting β-agonists alone in older adults with chronic obstructive pulmonary disease. JAMA 2014; 312: 1114-1121.

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

Kendzerska T, Aaron SD, To T, et al. Effectiveness and safety of inhaled corticosteroids in older individuals with chronic obstructive pulmonary disease and/or asthma. A population study. Ann Am Thorac Soc 2019; 16: 1252-1262.

Rutting S, Thamrin C, Cross TJ, et al. Fixed airflow obstruction in asthma: a problem of the whole lung not of just the airways. Front Physiol 2022; 13: 898208.

Suissa S, Ernst P. Observational studies of inhaled corticosteroid effectiveness in COPD: Lessons learned. Chest 2018; 154: 257-265.

Resources

Lung Foundation Australia's The COPD-X Plan: Australian and New Zealand guidelines for the management of chronic obstructive pulmonary disease 2024

Notes

More information on COPD and asthma

Consideration

In older adults, consider common extrapulmonary causes such as heart failure.

Sources & rationale

Recommendation type: consensus

Heart failure is a common cause of persistent dyspnoea in older patients.[Reddel 2022]

The possibility of heart failure should be considered in patients with a history of cardiovascular disease (e.g. hypertension, valvular disease or ischaemic heart disease).[Reddel 2022]

ACE inhibitor-induced cough should also be considered.

References

Reddel HK. Common conditions that mimic asthma. Med J Aust 2022; 216: 337-340.

Resources

Reddel HK. Common conditions that mimic asthma. Med J Aust 2022; 216: 337-340.

Consideration

Consider the possibility of other chronic lung disease (e.g. bronchiectasis, chronic suppurative lung disease) or pneumonia as an alternative or coexisting diagnosis in Aboriginal adults with respiratory symptoms in remote regions.

Sources & rationale

Consensus recommendation

Historically, the prevalence of bronchiectasis has been disproportionately high in remote Aboriginal communities, particularly in Central Australia, but has been underdiagnosed.[Chang 2003, Chang 2008] High-resolution computed tomography of the chest is necessary to diagnose bronchiectasis in adults.[Chang 2008] In Aboriginal and Torres Strait Islander adults, it may be difficult to distinguish between asthma, COPD and bronchiectasis.[O'Grady 2010] Bronchiectasis is associated with relatively rapid decline in lung function.[Chang 2008]

References

Chang AB, Masel JP, Boyce NC, et al. Non-CF bronchiectasis: clinical and HRCT evaluation. Pediatr Pulmonol 2003; 35: 477-83.

Chang AB, Grimwood K, Maguire G, et al. Management of bronchiectasis and chronic suppurative lung disease in indigenous children and adults from rural and remote Australian communities. Med J Aust 2008a; 189: 386-93.

O'Grady KF, Revell A, Maguire G, et al. Lung health services for Aboriginal and Torres Strait Islander Peoples in Queensland. Queensland Health, Brisbane, 2010.

Resources

TSANZ's position statement Cough in children and adults: diagnosis, assessment and management (2024)

Notes

Chronic suppurative lung disease is defined as a clinical syndrome of respiratory symptoms and signs due to chronic endobronchial suppuration, including continuous, wet or productive cough > 8 weeks, with or without other features (e.g. exertional dyspnoea, symptoms of reactive airway disease, recurrent chest infections, growth failure, clubbing, hyperinflation or chest wall deformity).[Chang 2010]

Bronchiectasis is diagnosed in patients with both chronic suppurative lung disease and the presence of radiological features on a chest high-resolution computed tomography scan.[Chang 2010]

Consideration

Refer athletes with suspected new-onset asthma for specialist assessment.

If possible, refer competing athletes to a sports medicine expert or specialist with expertise in the investigation and management of asthma and exercise-induced bronchoconstriction in competitive athletes, to ensure that all investigations and treatments comply with requirements of sports governing bodies.

Do not rely on history alone to diagnose or exclude exercise-induced bronchoconstriction.

Sources & rationale

Recommendation type: Consensus recommendation

Asthma is common among elite sportspeople.[Hostrup 2024]

Exercise-induced bronchoconstriction can occur in athletes with or without asthma.[Greiwe 2020]

For some sports or levels of competition, governing bodies stipulate a specific testing protocol to demonstrate asthma before the athlete is permitted to use certain medicines.

References

Greiwe J, Cooke A, Nanda A, et al. Work Group Report: Perspectives in diagnosis and management of exercise-induced bronchoconstriction in athletes. J Allergy Clin Immunol Pract 2020; 8: 2542-2555.

Hostrup M, Hansen ESH, Rasmussen SM, Jessen S, Backer V. Asthma and exercise-induced bronchoconstriction in athletes: Diagnosis, treatment, and anti-doping challenges. Scand J Med Sci Sports 2024; 34:e14358.

Resources

Sport Integrity Australia's information on asthma medication in sport

World Anti-Doping Agency guidelines for physicians on therapeutic use exemption for asthma

Notes

More information on exercise and asthma

Consideration

If recent blood test results are available, consider the patient's blood eosinophil count in conjunction with other findings.

Sources & rationale

Recommendation type: Consensus recommendation

Blood eosinophil count is not recommended as a primary diagnostic test for asthma.[ERS 2022]

Although an elevated blood eosinophil count is not necessary for the diagnosis of asthma, this finding may reflect airway inflammation. A high blood eosinophil count supports the diagnosis of asthma in a patient with acute symptoms consistent with asthma.

However, there is a risk of false positives and false negatives when fixed cut-points are used for blood eosinophils because people without asthma may have raised counts, and blood eosinophil count may be normal in a patient with asthma.[Blakey 2025]

References

Blakey JD, Ramakrishnan S. Using an eosinophil count to diagnose asthma: music to your EARS? Respirology 2025; 30: 280-282.

Louis R, Satia I, Ojanguren I, et al. European Respiratory Society guidelines for the diagnosis of asthma in adults. Eur Respir J 2022; 60: 2101585.

Notes

More information on tests for airway inflammation

Consideration

Consider allergy tests if symptoms appear to be triggered by allergy.

Arrange skin-prick testing or allergen-specific blood immunoglobulin E assay for common aeroallergens, as guided by the history.

Sources & rationale

Recommendation type: Consensus recommendation

Allergic asthma generally accounts for less than 50% of cases of new-onset asthma in adults.[Pakkasela 2020]

Allergic sensitisation is not necessary for the diagnosis of asthma. Allergy testing does not rule asthma in or out. However, identifying clinically relevant airborne allergic triggers is useful to guide management.

Either spin-prick testing or allergen-specific IgE antibody testing can be used to identify clinically relevant aeroallergens. [ASCIA 2024, ASCIA 2020]

References

ASCIA. Laboratory investigation for allergic diseases. Australasian Society of Clinical Immunology and Allergy, 2020.

ASCIA. Skin prick testing guide for diagnosis of allergic diseases. Australasian Society of Clinical Immunology and Allergy, 2024.

Pakkasela J, Ilmarinen P, Honkamäki J, et al. Age-specific incidence of allergic and non-allergic asthma. BMC Pulm Med 2020; 20: 9.

Resources

ASCIA's Laboratory investigation for allergic diseases (2020)

ASCIA's Skin prick testing guide for diagnosis of allergic diseases (2025)

Notes

More information on allergies and asthma

Practice point

Advise patients that there is no single conclusive test for asthma, and that more than one test may be needed to confirm or exclude asthma.

Specific populations and clinical settings

Practice point

When cough is the predominant symptom, consider non-respiratory conditions and follow Australian cough guidelines.

Resources

TSANZ's position statement Cough in children and adults: diagnosis, assessment and management (2024)
https://www.mja.com.au/journal/2024/220/1/cough-children-and-adults-diagnosis-assessment-and-management-cicada-summary

Reddel HK. Common conditions that mimic asthma. Med J Aust. 2022; 216: 337-340.
https://www.mja.com.au/journal/2022/216/7/common-conditions-mimic-asthma

Practice point

For adolescents who report exercise-related respiratory symptoms, consider investigations or referral to distinguish exercise-induced bronchoconstriction from poor cardiopulmonary fitness, vocal cord dysfunction, hyperventilation, dysfunctional breathing, and anxiety.

Practice point

For adolescents, consider immediate specialist referral when initial assessment does not provide a definitive

diagnosis of asthma.

Lung function testing

Practice point

Spirometry should be performed by a trained operator using a calibrated or self-calibrating spirometer. Follow infection control guidelines to avoid transmission of respiratory infections.

Resources

National Asthma Council Australia's spirometry training and tools
https://www.nationalasthma.org.au/health-professionals/spirometry-training-and-tools

TSANZ's list of accredited respiratory function laboratories
https://thoracic.org.au/lab-accreditation-program/list-of-accredited-respiratory-labs/

Practice point

When spirometry is performed as a diagnostic test, inhaled bronchodilators should be withheld before the test. Standard withholding times are:

- **≥ 4 hours for salbutamol or terbutaline**
- **≥24 hours for formoterol or salmeterol**
- **≥36 hours for indacaterol, olodaterol, or vilanterol**
- **36–48 hours for aclidinium, glycopyrronium, tiotropium, or umeclidinium.**

Resources

National Asthma Council Australia's spirometry training and tools

https://www.nationalasthma.org.au/health-professionals/spirometry-training-and-tools

Practice point

If the patient is already using a bronchodilator, make sure they are informed of the required withholding period for bronchodilators, and understand what to do if they have symptoms during that time.

If the patient experiences symptoms during the withholding period they should follow their action plan. If reliever is necessary to manage symptoms, the test should be postponed

Practice point

When referring a patient to an accredited respiratory laboratory for spirometry in the investigation of suspected asthma, request a FeNO test at the same time.

Practice point

If referring a patient to a respiratory laboratory for FeNO testing and spirometry (with bronchodilator responsiveness test), consider also requesting bronchial provocation to be performed if both spirometry and FeNO are normal. In this event, the patient would need to attend a separate testing session.

Practice point

Longer withholding periods apply for bronchial provocation than spirometry. If referring a patient directly to a respiratory function laboratory for bronchial challenge testing, make sure the patient receives instructions about withholding bronchodilators before the test.

Alert Bronchial provocation testing is contraindicated in patients with FEV1 < 60% on spirometry.

Alert Bronchial provocation testing is contraindicated during pregnancy.

Alert Bronchial provocation testing is not possible in patients unable to perform spirometry.

Other investigations

Practice point

Imaging (e.g. chest X-ray and/or high-resolution computed tomography) is not required to diagnose asthma, but may be indicated to exclude alternative diagnoses or identify comorbid conditions.

Making the diagnosis

Practice point

Consider all clinical findings and test results together when judging the probability that respiratory symptoms and signs are due to asthma.