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Asthma in adults and adolescents

A quick reference guide for primary care health professionals

National Asthma Council | Australian Asthma Handbook

Based on Australian Asthma Handbook V3.0 (2025)

National Asthma Council | Australian Asthma Handbook

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About this guide

This guide is a summary of key recommendations and information on asthma in adults and adolescents from the National Asthma Council's Australian Asthma Handbook.

For detailed guidance on asthma care, visit asthmahandbook.org.au.

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Abbreviations

ACE	Angiotensin-converting enzyme
COPD	Chronic obstructive pulmonary disease
DPI	Dry powder inhaler
ED	Emergency department
FEV_1	Forced expiratory volume in one second
FVC	Forced vital capacity
ICS	Inhaled corticosteroid
ICU	Intensive care unit
LABA	Long-acting $beta_2$ agonist
LAMA	Long-acting muscarinic antagonist
OCS	Oral corticosteroids
PBS	Pharmaceutical Benefits Scheme
pMDI	Pressurised metered-dose inhaler
SABA	Short-acting $beta_2$ agonist
SpO_2	Oxygen saturation measured by pulse oximetry
TGA	Therapeutic Goods Administration

Key recommendations

The diagnosis of asthma requires both a history of typical respiratory symptoms, and documented evidence of excessive variability in expiratory airflow measured by spirometry and/or airway inflammation measured by fractional exhaled nitric oxide (FeNO).

Inhaled corticosteroid (ICS) treatment is essential. Recommended options include:

- budesonide-formoterol taken as needed to manage symptoms (least intensive treatment level, suitable for patients with infrequent symptoms)
- ICS-formoterol (budesonide-formoterol or beclometasone-formoterol) taken every day as maintenance treatment, with extra doses taken as needed to manage symptoms.

Alternative options are daily maintenance treatment with ICS, or ICS plus long-acting beta$_2$ agonist (LABA), with a short-acting beta$_2$ agonist (SABA) taken as needed.

No adult or adolescent should manage their asthma solely with as-needed salbutamol or terbutaline.

When good symptom control cannot be achieved, or exacerbations persist, despite optimised ICS-containing treatment with correct inhaler technique and good adherence, prompt specialist assessment is recommended to facilitate targeted intensive treatment such as monoclonal antibody therapy.

Visit asthmahandbook.org.au for comprehensive guidance on asthma management.

Introduction

Asthma is a chronic inflammatory lung condition, clinically defined as the combination of variable respiratory symptoms (e.g. wheeze, breathlessness, chest tightness, cough) and variable airflow limitation. Acute asthma can be life-threatening.

'Asthma' is a diagnostic label for a group of lung diseases with various disease mechanisms. Asthma phenotypes include allergic asthma, non-allergic asthma, aspirin-exacerbated respiratory disease, asthma with obesity, adult-onset asthma, cough-predominant asthma, and asthma with persistent airflow limitation. Asthma symptoms can be triggered by exercise, respiratory infections, airborne allergens (e.g. grass pollen, pets, house dust mite, moulds), airborne irritants, and some medicines.

Asthma affects one in 9 Australians. It results in an estimated 55,000 emergency department presentations and 25,500 hospitalisations per year. Several hundred asthma-related deaths are recorded each year (478 in 2024, the latest available data), of which almost half (45%) are in women aged over 75 years.[1]

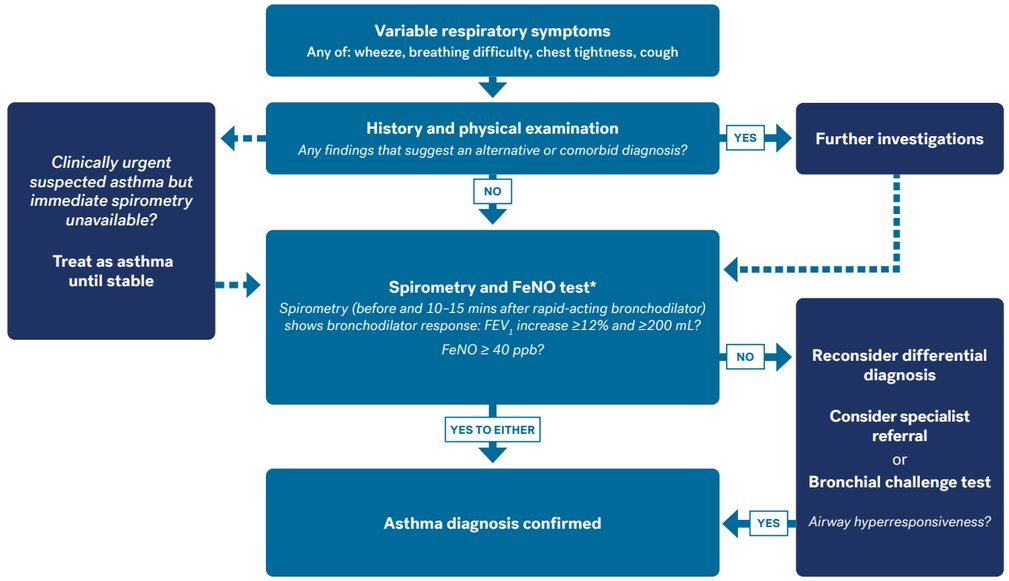
The aims of asthma management are to achieve good symptom control and to minimise the risk of future asthma exacerbations. Treatment (page 9) is based on ICS, either taken as needed in combination with formoterol, or taken as a regular maintenance treatment, alone or in combination with a long acting beta$_2$ agonist (LABA). An individualised written asthma action plan should be prepared for every patient to help them manage their asthma effectively.

1. Data source: Australian Bureau of Statistics (2025) Asthma Mortality 2024. https://www.nationalasthma.org.au/living-with-asthma/resources/health-professionals/infographics/asthma-mortality-statistics-2024

Diagnosis

The diagnosis of asthma in adults and adolescents is based on a history of typical symptoms (wheeze, breathlessness, chest tightness, cough) that vary over time in frequency and severity, and documented excessive variability in expiratory airflow measured by spirometry, and/or evidence of airway inflammation measured by FeNO (Figure 1).

Figure 1. Diagnosis of asthma in adults and adolescents



FeNO: fractional exhaled nitric oxide; FEV$_1$: forced expiratory volume in one second

**If available when spirometry conducted in an accredited respiratory laboratory*

History and physical examination

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), and family history of asthma and allergies.

Perform a physical examination, including chest auscultation and inspection of upper respiratory tract. Check for features that suggest a comorbid or an alternative diagnosis (Table 1), such as allergic rhinitis, rhinosinusitis, nasal polyps, heart murmurs, crackles or inspiratory wheeze.

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Table 1. Differential diagnosis of asthma in adults and adolescents

Alternative or comorbid condition	Suggestive features
Respiratory conditions	
Bronchiectasis	Productive cough in a patient with a history of recurrent infections
Chronic cough and laryngeal hypersensitivity	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
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
Inducible laryngeal obstruction	Breathing difficulty triggered by strong smells, irritants or exercise Symptoms associated with throat tightness or voice change May be associated with chronic dry cough Breathlessness may be worst at peak exercise Inspiratory wheezing (stridor) – strongly suggests a laryngeal or upper airway abnormality
Large airway stenosis	Breathlessness or wheeze
Pulmonary fibrosis	Breathlessness on exertion or dry cough Fine crackles heard during inspiration on auscultation
Rhinosinusitis	Cough co-occurring with symptoms of rhinosinusitis

Table 1. Differential diagnosis of asthma in adults and adolescents (cont.)

Alternative or comorbid condition	Suggestive features
Respiratory conditions	
Other conditions affecting the respiratory system	
ACE inhibitor-related cough	Cough is dominant symptom
Dysfunctional breathing	Breathlessness, often with an irregular pattern May be associated with hyperventilation, leading to dizziness, light-headedness, or tingling fingers
Gastro-oesophageal reflux disease	Cough or chest tightness in patient with symptomatic reflux
Heart disease	Chest tightness on exertion Dyspnoea on exertion or when lying flat Basal crepitations
Infection (recurrent respiratory infections)	As clinically typical
Lung cancer	Persistent cough despite treatment Haemoptysis Chest pain Weight loss
Panic attacks	Breathlessness or chest tightness at rest or on minor exertion, accompanied by anxiety
Poor cardiopulmonary fitness	Breathlessness on exertion
Pulmonary embolism	Sudden-onset dyspnoea History of recent surgery or immobility

ACE: angiotensin-converting enzyme

Tests for lung function and airway inflammation

Perform or arrange spirometry, including a bronchodilator responsiveness test. Bronchodilator responsiveness (whether respiratory airflow limitation is 'reversible') is tested by measuring forced expiratory volume in one second (FEV_1) before, and 10–15 minutes after, administration of a rapid-acting bronchodilator (e.g. salbutamol), with at least 3 spirometry manoeuvres each time.

If spirometry is not available within the practice, refer to an accredited respiratory function laboratory and request both spirometry and FeNO testing. Do not delay treatment, if indicated.

If initial spirometry does not confirm the diagnosis of asthma, but clinical findings still suggest asthma, consider further testing. If the diagnosis is not confirmed by spirometry and FeNO testing, consider referral to an accredited respiratory laboratory for bronchial provocation testing (contraindicated during pregnancy).

Interpretation of tests

Reduced ratio of FEV_1 to forced vital capacity (FVC) on spirometry indicates expiratory airflow limitation.

Decreased FEV_1 alone is a nonspecific finding and does not confirm asthma.

The absence of abnormal findings on 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.

Bronchodilator responsiveness testing alone does not distinguish asthma from chronic obstructive pulmonary disease.

FeNO ≥ 40 ppb supports the diagnosis of asthma in a patient with signs and symptoms suggesting asthma.

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.

Referral for specialist diagnostic assessment

Offer referral to a respiratory physician if:

- the diagnosis is unclear
- recent-onset respiratory symptoms appear to be triggered by exposure to airborne irritants or sensitisers in the workplace.

Notes on spirometry

When spirometry is performed as a diagnostic test, inhaled bronchodilators should be withheld before the test: ≥ 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.

Spirometry should be performed by a trained operator using a calibrated or self-calibrating spirometer. The National Asthma Council provides spirometry resources to support spirometry in primary care at nationalasthma.org.au/health-professionals/spirometry-training-and-tools.

⚠ Follow infection control guidelines to avoid transmission of respiratory infections.

Treatment

Asthma treatment in adults and adolescents is based on inhaled medication: ICS to reduce airway inflammation and prevent exacerbations (with other inhaled medicines, as indicated), and rapid-acting bronchodilators to manage symptoms.

There are 2 approaches to ICS treatment (Figure 2):

Recommended: a single inhaler containing a combination of ICS and formoterol, taken as needed to relieve symptoms, with or without daily maintenance doses.

Alternative approach: an inhaler containing either ICS alone or ICS in combination with a LABA, taken as daily maintenance treatment, with a separate short-acting $beta_2$ agonist (SABA) inhaler used as needed for symptom relief.

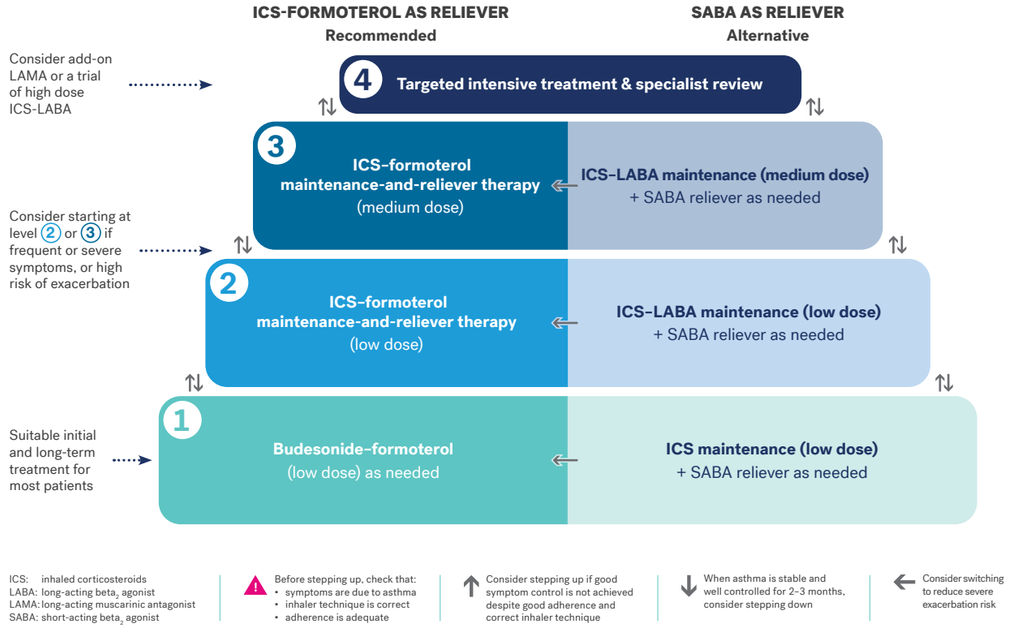
Rapid-acting bronchodilators for relief of symptoms can be administered in either of two ways:

Recommended: using an inhaler containing a combination of ICS and formoterol

Alternative approach: using an inhaler containing a SABA.

Treatment regimens with ICS-formoterol as the reliever are recommended because they reduce the risk of severe exacerbations requiring oral corticosteroids, compared with regimens using as-needed SABA for symptom relief. See reference tables (from page 17) for options approved by the Therapeutic Goods Administration (TGA).

Figure 2. Asthma treatment levels for adults and adolescents



Starting treatment after diagnosis

The recommended initial treatment for most patients is anti-inflammatory reliever (AIR)-only therapy* with low-dose budesonide-formoterol, taken as needed when symptoms occur (see reference table on page 17). This regimen markedly reduces the risk of severe exacerbations requiring oral corticosteroids, compared with as-needed SABA.

Do not manage asthma with SABA monotherapy. It is inadequate asthma treatment for adults and adolescents, even those with infrequent symptoms.

Start treatment with a regimen that includes maintenance ICS treatment if the patient has frequent symptoms, a previous severe asthma exacerbation, or other known risk factors for severe exacerbations (Table 2 and Figure 2).

Arrange follow-up within 2–3 months of starting asthma treatment to reassess asthma control, adherence and inhaler technique.

Table 2. Checklist for risk factors in adults and adolescents

Factors associated with increased risk of exacerbations

- Poor asthma symptom control
- Any asthma exacerbation during the previous 12 months
- High SABA use (3 or more salbutamol canisters in a year, i.e. average of 1.6 actuations per day/ 11 actuations per week)
- Other concurrent chronic lung disease
- Poor lung function (even if few symptoms)
- Difficulty perceiving airflow limitation or the severity of exacerbations
- Eosinophilic airway inflammation (blood eosinophil count ≥ 300/microlitres despite maintenance treatment with medium-dose ICS)
- Exposure to cigarette smoke/vapes, smoke from fires
- Socioeconomic disadvantage
- Mental illness

Factors associated with increased risk of life-threatening asthma

- History of severe exacerbation (intubation/ ICU admission due to asthma [ever], 2 or more hospitalisations for asthma in past year, 3 or more ED visits for asthma in the past year, or hospitalisation or ED visit for asthma in the past month)
- History of sudden-onset acute asthma
- History of delayed presentation to acute care during moderate–severe exacerbation
- High SABA use (particularly if 12 or more salbutamol canisters in a year, i.e. average 6.6 actuations per day)
- Comorbid cardiovascular disease
- Sensitivity and exposure to an unavoidable allergen (e.g. mould)
- Lack of written asthma action plan
- Social isolation
- Socioeconomic disadvantage
- Mental illness

Factors associated with thunderstorm asthma

- Springtime allergic rhinitis or confirmed ryegrass pollen allergy (if exposed to high grass pollen levels during spring and early summer)

Factors associated with accelerated decline in lung function

- Chronic hypersecretion of mucus
- Severe asthma exacerbation when not taking ICS
- Poor lung function
- Eosinophilic airway inflammation (blood eosinophil count ≥ 300/microlitres despite maintenance treatment with medium-dose ICS)
- Exposure to cigarette smoke
- Occupational asthma

Factors associated with adverse effects of treatment

- Long-term high-dose ICS
- Frequent use of OCS

ED: emergency department; ICS: inhaled corticosteroids; ICU: intensive care unit; SABA: short-acting beta$_2$ agonist; OCS: oral corticosteroids

** nationalasthma.org.au/living-with-asthma/resources/health-professionals/information-paper/anti-inflammatory-reliever-is-the-recommended-starting-treatment-for-asthma*

Adjusting treatment

Adjust treatment to maintain good control of asthma symptoms (Table 3) and prevent exacerbations, while minimising side-effects. Before stepping up treatment, check for poor adherence, incorrect inhaler technique, and exposure to triggers, and consider other conditions that may be causing or contributing to symptoms (e.g. allergic rhinitis or rhinosinusitis, de-conditioning, obesity, heart disease, or inducible laryngeal obstruction).

Maintenance-and-reliever therapy (MART)† is recommended for patients who require maintenance treatment to control asthma symptoms. The patient takes ICS-formoterol (budesonide-formoterol or beclometasone-formoterol) twice daily, plus extra doses as needed for relief of symptoms (see reference table on page 17). This approach reduces the risk of severe exacerbations requiring systemic corticosteroid treatment, compared with the same or higher dose of ICS or ICS-LABA plus SABA as needed for symptom relief.

For patients already using maintenance ICS-LABA, with SABA as needed for symptom relief, consider switching to MART rather than stepping up to a higher ICS-LABA dose.

At levels 2–3, if good asthma symptom control has been maintained for 2–3 months and the patient has a low risk of exacerbations, consider reducing treatment intensity by one level and reviewing in 4–8 weeks. Do not withdraw ICS completely – the least intensive appropriate treatment for adults and adolescents with asthma is low-dose budesonide-formoterol taken as needed.

Table 3. Classification of recent asthma symptom control in adults and adolescents

Good control	Poor control
All of these over past 4 weeks:	Any of these over past 4 weeks:
Daytime symptoms ≤ 2 days per week	Daytime symptoms > 2 days per week
No limitation of activities	Any limitation of activities
No symptoms during night or on waking	Any symptoms during night or on waking
Reliever use ≤ 2 days per week*	Reliever use > 2 days per week*

**Do not include short-acting beta$_2$ agonist (salbutamol or terbutaline) taken prophylactically before exercise. Do not include reliever use for patients using an anti-inflammatory reliever (budesonide-formoterol or beclometasone-formoterol).*

† nationalasthma.org.au/living-with-asthma/resources/health-professionals/information-paper/maintenance-and-reliever-therapy-for-asthma

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Inhaler choice and technique

Choose a type of inhaler that the individual can use correctly. When more than one treatment option is suitable, the patient should be involved in choosing the right inhaler, considering ease of use and environmental impact. Advise patients taking ICS via a pressurised metered-dose inhaler (pMDI) to use a spacer.

Train the patient to use their inhaler by physically demonstrating using a placebo inhaler and providing a list of correct steps for the specific inhaler type.* Inhaler technique must be assessed regularly, along with adherence to maintenance treatment, if indicated.

Managing worsening asthma symptoms

Instruct patients to use their reliever as often as needed when symptoms are worsening (symptoms more frequent, recurring after reliever use, or not promptly relieved). Prescribe a short course of oral corticosteroid if symptoms repeatedly recur within 4 hours after using reliever, or do not resolve quickly after using reliever (see also *Managing acute asthma emergencies in primary care*, below).

Self-management

Develop an individualised written asthma action plan for every adult or adolescent with asthma.

A written asthma action plan should include:

- the person's usual asthma and allergy medicines
- clear instructions on how to adjust medication when symptoms are worsening, including how to increase the reliever dose, and when and how to start a course of oral corticosteroids
- when and how to get medical care, including during an emergency
- the name of the person preparing the plan
- the date.

Difficult-to-treat and severe asthma

If a patient's asthma is not well controlled by medium-dose ICS-LABA (medium-dose MART or maintenance medium-dose ICS-LABA plus SABA as needed), investigate the cause before stepping up treatment or assuming that the patient has severe asthma. Consider poor adherence, incorrect inhaler technique, exposure to triggers, poor self-management, SABA overuse, and comorbid or alternative diagnoses.

If asthma is not well controlled on medium-dose ICS despite correct inhaler technique and adequate adherence, refer to an accredited respiratory laboratory for spirometry and FeNO test, assess blood eosinophil level, and arrange specialist referral.

If referral is not immediately available, consider a short (3–6 months) treatment trial with either of:

- high-dose ICS-LABA
- ICS-LABA-LAMA with a medium or high ICS dose.

Avoid long-term treatment with high-dose ICS unless unavoidable to prevent severe exacerbations. Systemic adverse effects of high-dose ICS include reduced bone mineral density, cataracts, and diabetes.

Monoclonal antibody therapy† is the first-choice treatment for patients with severe allergic or eosinophilic asthma that does not respond adequately to treatment with ICS and LABAs. Some monoclonal antibody therapies can only be prescribed by a specialist or in consultation with a specialist, and all are reimbursed by the Pharmaceutical Benefits Scheme (PBS) only for patients under specialist care.

** nationalasthma.org.au/living-with-asthma/resources/health-professionals/charts/inhaler-technique-checklists*

† nationalasthma.org.au/living-with-asthma/resources/health-professionals/information-paper/monoclonal-antibody-therapy-for-severe-asthma

Managing acute asthma emergencies in primary care

Manage acute asthma with high doses of salbutamol and with supplemental oxygen, if indicated. Arrange transfer to acute care if acute asthma is severe or fails to respond promptly to treatment.

Rapidly assess the severity of the acute asthma episode by observation and pulse oximetry while starting bronchodilator treatment and supplemental oxygen (Table 4). If there are signs of severe or life-threatening acute asthma, call an ambulance.[2]

Give salbutamol (100 microg per actuation) via pMDI and spacer, using the tidal breathing method. If the use of a nebuliser is unavoidable, use a 5 mg nebule for a severe exacerbation, or 2 x 5 mg nebules for a life-threatening exacerbation. Follow infection control protocols for aerosol-generating procedures if using a nebuliser for a patient with a viral respiratory tract infection.

Tidal breathing method:

1. Connect spacer to pMDI and tell patient to seal lips firmly around spacer mouthpiece.
2. Shake the inhaler well.
3. Release one actuation of salbutamol into the spacer.
4. Tell the patient to breathe in and out for four breaths while keeping lips sealed around mouthpiece.

Repeat process until all required actuations delivered, shaking inhaler again before each actuation then releasing one actuation into the spacer at a time before patient inhales.

If the person cannot seal their lips tightly around the spacer mouthpiece, use a tightly fitting adult mask connected to the spacer mouthpiece.

If the patient cannot breathe through a spacer using either the mouthpiece or a mask, use a nebuliser with mask.

The tidal breathing technique should only be used while the patient is too breathless to use the standard single-breath technique. Once breathing improves, consider switching to single-breath technique.

2. Manage anaphylaxis or unresponsiveness/respiratory peri-arrest with adrenaline: intramuscular adrenaline 0.01 mg/kg (up to 0.5 mg per dose). If anaphylaxis is suspected, give adrenaline before salbutamol.

If oxygen saturation < 92%, start oxygen supplementation and titrate saturation to target 92–96%. Avoid over-oxygenation, because this increases the risk of hypercapnoea. Use a lower oxygen target range (88%–92%) for patients at increased risk of hypercapnoea (e.g. those with chronic obstructive pulmonary disease, obesity, obesity hypoventilation syndrome, bronchiectasis, cystic fibrosis, neuromuscular disease, or chest wall deformities such as severe kyphoscoliosis).

If dyspnoea/increased work of breathing is not relieved within 5 minutes, repeat bronchodilator dose, and arrange transfer to emergency department.

Complete the assessment when feasible after starting salbutamol and oxygen (if required): Perform a physical examination including vital signs, auscultation, and continue monitoring pulse oximetry (Table 5).

Complete a brief history, including:

- reliever taken for this episode before presentation (dose, number of doses, time of last dose)
- whether oral corticosteroid started (e.g. following instructions in asthma action plan)
- current asthma medicines (regular and as-needed, including type of devices used)
- assessment of adherence to preventer (if prescribed)
- what triggered this episode, if known (e.g. allergies, immediate hypersensitivity, medicines, respiratory infections)
- presence of coexisting heart or lung disease, including chronic obstructive pulmonary disease
- smoking status and exposure to environmental smoke/vaping.

Start systemic corticosteroids (unless contraindicated), regardless of severity at initial assessment:

Adults: prednisone/prednisolone 37.5–50 mg orally, then repeat each morning on second and subsequent days (total 5–10 days).

Adolescents: prednisone/prednisolone 1 mg/kg (maximum 50 mg) orally once daily for 3–5 days.

After respiratory distress or increased work of breathing has resolved and symptoms have stabilised, observe the patient or arrange observation for at least 4 hours. After symptoms have resolved, arrange follow-up within 3–5 days and a comprehensive asthma review 2 weeks later, and provide an interim asthma action plan. Checkup at day 3–5 aims to check whether symptoms have resolved and assess adherence to oral corticosteroids (if prescribed) and ICS.

Comprehensive asthma review after an acute asthma exacerbation

Identify what triggered the acute asthma episode and assess other risk factors.

Review the person's written asthma action plan.

Review the person's reliever use and give instructions to use reliever only as needed.

Review the treatment regimen and prescribe or adjust inhaled corticosteroid-containing preventer, if indicated (e.g. switch from a regimen with SABA reliever to MART).

Check inhaler technique and correct it, if necessary.

Assess whether the person has other risk factors for asthma exacerbations.

Offer specialist review if the person has had more than one emergency visit to health services for acute asthma within the previous 12 months or multiple courses of systemic corticosteroids.

Table 4. Immediate treatment of acute asthma in adults and adolescents in primary care

	Mild–moderately severe	Severe	Life-threatening
Assessment	All of: Can walk, speak whole sentences in one breath SpO_2 (room air) > 94%	Any of: Unable to complete sentences in one breath due to breathlessness Use of accessory muscles of neck or intercostal muscles/ tracheal tug/subcostal recession during inspiration Obvious respiratory distress SpO_2 (room air) ≤ 94%	Any of: Reduced consciousness/ collapse, exhaustion Cyanosis Poor respiratory effort SpO_2 (room air) < 92% Poor respiratory effort, soft/ absent breath sounds
Triage	Manage in place	Arrange transfer to acute care	
Immediate treatment	Give salbutamol 4–12 actuations (100 microg per actuation) via pMDI and spacer (tidal breathing method)	Give salbutamol 12 actuations (100 microg per actuation) via pMDI and spacer (tidal breathing) If patient cannot use spacer, 5 mg salbutamol nebule via nebuliser (if available) Start oxygen supplementation if SpO_2 (room air) < 92%* Titrate to target SpO_2 92–96%	**Without nebuliser:** Give salbutamol 12 actuations (100 microg per actuation) via pMDI and spacer ± mask (tidal breathing) **With nebuliser:** Give salbutamol 2 x 5 mg nebules via continuous nebulisation driven by oxygen: SpO_2 target 92–96%*
Continued treatment	Repeat salbutamol 4–12 actuations every 20–30 minutes for the first hour, if needed (sooner if needed)	Repeat salbutamol 12 actuations at least every 20 minutes for first hour (3 doses)	Maintain SpO_2 to target 92–96%*

*SpO_2: oxygen saturation measured by pulse oximetry; *88–92% for patients at risk of hypercapnoea*

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Table 5. Secondary severity assessment in adults and adolescents in primary care

	Mild–moderate (all of):	**Severe** (any of):	**Life-threatening** (any of):
Consciousness	Alert	N/A	Drowsy or unconscious
Speech	Can finish a sentence in one breath	Can only speak a few words in one breath	Cannot speak
Posture	Can walk, sit up straight, lie flat	Unable to lie flat due to dyspnoea Sitting hunched forward	Collapsed or exhausted
Breathing	Respiratory distress is not severe	Paradoxical chest wall movement: inward movement on inspiration and outward movement on expiration (chest sucks in when person breathes in) or Use of accessory muscles of neck or intercostal muscles or 'tracheal tug' during inspiration or Subcostal recession ('abdominal breathing')	Severe respiratory distress or Poor respiratory effort
Skin colour	Normal	N/A	Cyanosis
Respiratory rate	< 25 breaths/min	≥ 25 breaths/min	Bradypnoea (indicates respiratory exhaustion)
Heart rate	< 110 beats/min	≥ 110 beats/min	Cardiac arrhythmia or Bradycardia (may occur just before respiratory arrest)
Chest auscultation	Wheeze or Normal lung sounds	N/A	Silent chest or Reduced air entry
Oxygen saturation	> 96%	92–96%	< 92% or Clinical cyanosis

N/A: Not applicable – may be the same as moderate and does not determine severity category

Reference tables

Low, medium and high ICS doses in adults and adolescents

Active ingredient	**Total daily dose (microg)**		
	Low	**Medium**	**High**
Beclometasone dipropionate (extra-fine particle)	100–200	250–400	> 400
Budesonide	200–400	500–800	> 800
Ciclesonide	80–160	240–320	> 320
Fluticasone furoate	–	100	200
Fluticasone propionate	100–200	250–500	> 500
Mometasone furoate in combination with indacaterol via capsule inhaler	62.5*	127.5*	260*
Mometasone furoate in combination with indacaterol and glycopyrronium via capsule inhaler	–	68*	136*

ICS: inhaled corticosteroid

The table shows options for low, medium and high doses of each available inhaled corticosteroid (with or without LABA and LAMA) – it does not indicate dose equivalence.

**Doses of mometasone furoate are shown as delivered dose (not metered dose) in line with inhaler labels. For all other products in this table, the inhaler label and table show the metered dose.*

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Summary of asthma treatment approaches in adults

Regimen	Suitable medications	
Anti-inflammatory reliever-only therapy ICS–formoterol (single inhaler taken as needed, no maintenance treatment)	Budesonide–formoterol 200/6 microg via **DPI**: 1 inhalation as needed for symptom relief Budesonide–formoterol 100/3 microg via **pMDI**: 2 inhalations as needed for symptom relief	
Maintenance-and-reliever therapy ICS-formoterol (single inhaler used for regular daily maintenance plus extra doses as needed for symptoms)	**Low dose (low daily maintenance dose + low reliever doses)** Beclometasone–formoterol 100/6 microg via **pMDI**: daily maintenance dose (1 inhalation twice daily) plus 1 inhalation as needed for symptom relief Budesonide–formoterol 100/3 microg via **pMDI**: daily maintenance dose (4 inhalations per day) plus 2 inhalations as needed for symptom relief Budesonide–formoterol 200/6 microg via **DPI**: daily maintenance dose (2 inhalations per day) plus 1 inhalation as needed for symptom relief Budesonide–formoterol 100/6 microg via **DPI**: daily maintenance dose (2 inhalations per day) plus 1 inhalation as needed for symptom relief	
	Medium dose (medium daily maintenance dose + low reliever doses) Budesonide–formoterol 100/3 microg via **pMDI**: daily maintenance dose (4 inhalations twice daily) plus 2 inhalations as needed for symptom relief Budesonide–formoterol 200/6 microg via **DPI**: daily maintenance dose (2 inhalations twice daily) plus 1 inhalation as needed for symptom relief	
Maintenance ICS (plus as-needed SABA)	Beclometasone dipropionate* Budesonide* Ciclesonide* Fluticasone furoate* Fluticasone propionate*	Plus SABA reliever: Salbutamol 100 microg via **pMDI**: 1–2 inhalations as needed for symptom relief ***or*** Terbutaline 500 microg via **DPI**: 1 inhalation as needed for symptom relief
Maintenance ICS–LABA (plus as-needed SABA)	Beclometasone–formoterol* Budesonide–formoterol* Fluticasone furoate–vilanterol* Fluticasone propionate–salmeterol* Fluticasone propionate–formoterol* Mometasone–indacaterol*	

DPI: dry powder inhaler; ICS: inhaled corticosteroid; LABA: long-acting beta$_2$ agonist; pMDI: pressurised metered-dose inhaler; SABA: short-acting beta$_2$ agonist

** Refer to approved product information for strengths and dosage*

☐ *Recommended regimens*

▒ *Alternative regimens*

Budesonide-formoterol combinations approved as anti-inflammatory relievers without maintenance treatment in adults and adolescents

Brand names	Type	Strength (microg)*	Dose (inhalations)	Maximum dose† (inhalations)	Age
Rilast Rapihaler *Symbicort Rapihaler*	pMDI	100/3	2	12 per occasion 16 per day 24 in one day temporarily	≥ 12 years
Bufomix Easyhaler	DPI	200/6	1	6 per occasion 8 per day 12 in one day temporarily	≥ 12 years
Rilast Turbuhaler *Symbicort Turbuhaler*	DPI	200/6			≥ 12 years
DuoResp Spiromax	DPI	200/6			≥ 18 years

*DPI: dry powder inhaler; pMDI: pressurised metered-dose inhaler; *Budesonide /formoterol per inhalation; † Maximum doses as stated in TGA-approved product information (daily maximum rarely needed in practice)*

TGA-approved indication: Anti-inflammatory reliever therapy is taken as needed for the relief of asthma symptoms when they occur, and as preventative treatment of symptoms in those circumstances recognised by the patient to precipitate an asthma attack. Patients should be advised to always have their anti-inflammatory reliever available for relief of symptoms. If the patient experiences a 3-day period of deteriorating symptoms after taking additional as needed inhalations, the patient should be reassessed for alternative explanations of persisting symptoms. Patient must not be on a concomitant single agent long-acting beta$_2$ agonist. (Check PBS restrictions before prescribing.)

Asthma in adults and adolescents – A quick reference guide for primary care health professionals

ICS-formoterol combinations approved for maintenance-and-reliever therapy in adults and adolescents

Active ingredients	Brand names (Type)	Strength (microg)*	Dose (inhalations) Maintenance	Reliever	Maximum‡	Age
Beclometasone dipropionate-formoterol	*Fostair* (pMDI)	100/6	1 twice daily	1	6 per occasion 8 per day	≥ 18 years
	Cipla Beclometasone/ Formoterol (pMDI)	100/6	1 twice daily	1	6 per occasion 8 per day	≥ 18 years
Budesonide-formoterol	*Rilast Rapihaler* *Symbicort Rapihaler* (pMDI)	100/3	2 twice daily (may increase to 4 twice daily)	2	12 per occasion 16 per day 24 in one day temporarily	≥ 12 years
	Symbicort Turbuhaler (DPI)	100/6	2 per day in 1 dose or 2 divided doses	1	6 per occasion 8 per day 12 in one day temporarily	≥ 12 years
	Bufomix Easyhaler (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	≥ 12 years
	Rilast Turbuhaler *Symbicort Turbuhaler* (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	≥ 12 years
	DuoResp Spiromax (DPI)	200/6	2 per day in 1 dose or 2 divided doses (may increase to 2 twice daily)	1	6 per occasion 8 per day 12 in one day temporarily	≥ 18 years

DPI: dry powder inhaler; ICS: inhaled corticosteroid; pMDI: pressurised metered-dose inhaler;

** Inhaled corticosteroid/formoterol per inhalation; ‡ Maximum doses as stated in TGA-approved product information (daily maximum rarely needed in practice)*

Products approved by the TGA for use in maintenance-and-reliever therapy. The patient uses the same inhaler as their regular daily maintenance treatment, and also takes extra doses as anti-inflammatory reliever as needed to manage symptoms. Other combinations of an inhaled corticosteroid and a long-acting beta$_2$ agonist cannot be used this way.

Asthma resources for health professionals

The National Asthma Council Australia is the national authority on asthma knowledge, leading the improvement of asthma care and management in Australia.

We drive best practice with our evidence-based asthma guidelines, the Australian Asthma Handbook, practice tools and resources and our renowned education program.

Access our workshops and RACGP, ACRRM and CPD certified education program:

Education and training at nationalasthma.org.au/health-professionals/education-training.

We regularly publish information papers and consumer fact sheets on topical issues on asthma.

Our range of tools and resources to support asthma management are available at nationalasthma.org.au/health-professionals and include:

- Asthma action plan templates
- Information papers
- Medication and device charts
- Patient fact sheets
- Video demonstrations of correct inhaler technique

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