Government of **Western Australia**
Department of **Health**

Enhanced Access Community Pharmacy Pilot

Improved Asthma Symptom Control Program

Clinical practice protocol

Eligibility for the program

Eligibility for participation in the Improved Asthma Symptom Control Program (the program) must be assessed at each consultation, as eligibility may change due to changes in health status or demographic factors (i.e. patients who were previously eligible may become ineligible and patients who were ineligible may become eligible).

Refer the patient to their usual healthcare provider (or emergency services, if required) with a comprehensive clinical handover if the patient is, or becomes, ineligible for management under the program. Ineligibility for treatment as part of a pilot service does not preclude a patient from accessing services provided as part of usual pharmacy care.

The information and content in this clinical practice guideline do not constitute medical advice, diagnosis, or treatment recommendations for individual patients. Pharmacists must exercise professional discretion and judgement consistent with their qualifications and legislative authority. This guideline does not override the responsibility of the pharmacist to undertake clinical assessments and to make decisions appropriate to the circumstances of the individual and the relevant standards of care, in consultation with the patient and/or their parent/caregiver. This clinical practice guideline may only be used by pharmacists who have been approved by the Department of Health to participate in the Enhanced Access Community Pharmacy Pilot (EACPP) and are authorised to prescribe under the *Medicines and Poisons Regulations 2016* (WA). This document alone does not provide an authorisation for a pharmacist to prescribe.

Contents

How to use this document

The purpose of the program is to provide an accessible, community-based healthcare service program to identify and improve symptom management for patients with asthma.

This clinical protocol details how patients in the program should be managed, including referral to other health services and medical practitioners, pharmacological and non-pharmacological interventions, and protocol-based/structured prescribing of medicines for the management of asthma.

Overview of the Improved Asthma Symptom Control Program

Patient history

There are 2 entry points for enrolment in the program:

Entry Point 1:

Patients with possible but no previous diagnosis of asthma, who do not meet any ineligibility criteria, may be enrolled in the program and commence management (with non-pharmacological measures and pharmacotherapy to Level 1 or 2 only, if indicated) with concurrent referral to an appropriate healthcare provider for further review and collaborative care. Further program participation is not permitted until spirometry has been performed and collaborative management with a medical practitioner has been established.

Entry Point 2:

Patients with an existing diagnosis of asthma, who do not meet any ineligibility criteria, may be enrolled in the program and commence ongoing monitoring and management (with non-pharmacological measures and pharmacotherapy, if indicated). An update must be provided to the patient's usual healthcare provider following each occasion of care. See Conduct (or refer for) spirometry testing for spirometry requirements.

The Guideline overview provides an overview of the program, which includes:

- identification and program eligibility for patients with asthma symptoms, or an existing diagnosis of asthma
- structured assessment
- management of asthma, including development and use of an Asthma Action Plan
- ongoing monitoring of symptoms with referral to appropriate healthcare providers for collaborative management as required.

When a patient enters the program:

- provide an overview of the program (see The Guideline overview), including the aims, expected outcomes, and what the program may involve (which will vary between patients), including:
  - timeframes for management of the condition, such as the number of appointments and testing required, and the costs involved
  - how the patient's medicines may be managed and how medicine costs may differ when prescribed by a pharmacist
  - other interventions that may be recommended e.g. smoking cessation and weight management
  - that the patient may leave the program, including by opting out or becoming ineligible, at any time, and may be referred to an appropriate healthcare provider.
- Document informed consent from the patient for participation, as per the Pilot Handbook.

Patients who are ineligible for the program

- Are aged < 16 years or > 65 years (does not preclude a patient from accessing usual pharmacy care)
- Are planning a pregnancy or are pregnant
- Are experiencing respiratory distress (e.g. unable to complete a sentence in one breath)
- During/after exercise experience chest tightness or discomfort (without other symptoms of asthma) - consider possibility of a cardiovascular condition/event
- Have a suspected respiratory bacterial infection that requires antibiotic therapy:
  - the patient may continue to be managed in the program (if otherwise appropriate) following concurrent referral to a medical practitioner for review for antibiotic therapy
- Have Chronic Obstructive Pulmonary Disease (COPD)
- Have a previous diagnosis of severe asthma or restrictive lung disease (e.g. pulmonary fibrosis, interstitial lung disease, asbestosis, silicosis, sarcoidosis), have clinical features or symptoms suggestive of a respiratory condition other than asthma
- Are on maintenance oral corticosteroid (OCS) therapy for asthma
- Are actively receiving or have previously received within the past 12 months (without required follow-up appointments), specialist treatment for asthma or another respiratory condition (unless they have a written referral from their treating specialist or general practitioner to participate in the program)
- Have type 1 diabetes
- Have poorly controlled type 2 diabetes
- Have heart failure, pulmonary hypertension, or Cor pulmonale
- Are involved in competitive sport and subject to anti-doping policies
- Have a suspected or confirmed food allergy associated with anaphylaxis or respiratory symptoms
- Have a history of anaphylaxis
- Have any alarm signs and symptoms including haemoptysis, chest pain, unexplained weight loss or gain, night sweats, fever, signs of bronchiectasis, recurrent pneumonia, orthopnoea, or oedema (prompt medical review is required)
- Have a history of severe asthma exacerbation/s requiring (for asthma):
  - intubation/intensive care unit (ICU) admission (ever)
  - hospitalisation or emergency department (ED) visit in the past month
  - ≥ 2 ED visits in the past year
  - any hospitalisations in the past year
- Have a history of sudden-onset acute asthma
- Have suspected occupational asthma
- Have Exercise-Induced-Bronchoconstriction (EIB) without any other evidence of asthma
- Have poor asthma symptom control, despite current treatment consistent with 'recommended' Level 3 pharmacotherapy as per the Australian Asthma Handbook (i.e. medium dose Inhaled corticosteroid (ICS)-formoterol maintenance-and-reliever therapy) and require treatment consistent with Level 4
- Are using treatment consistent or equivalent with Level 4 pharmacotherapy as per the Australian Asthma Handbook
- Have contraindications to spirometry (that will not resolve with time) and who do not have an existing diagnosis of asthma
- Have spirometry results that:
  - are difficult to interpret or are unexpected for asthma
  - indicate alarm symptoms or findings
  - do not demonstrate reversible airflow limitation or expiratory airflow limitation
  - show abnormal restrictive or mixed ventilatory patterns
- Have a forced expiratory volume in 1 second (FEV1) of < 60 per cent predicted.

Treat (if clinically appropriate) and concurrently refer

Provide treatment (if clinically appropriate and concurrently refer) the patient to an appropriate healthcare provider for further review if they:

- have well controlled type 2 diabetes
- have chronic rhinosinusitis or obstructive sleep apnoea (OSA)
- require ≥12 short-acting beta2 agonist (SABA) canisters in a year or equivalent over 3 months
- have suspected or confirmed aspirin (or non-steroidal anti-inflammatory drug (NSAID)) -exacerbated respiratory disease.

Other referral criteria

Once a patient enters the Improved Asthma Symptom Control Program their eligibility and need for referral may change due to changes in health status, symptoms, or demographic factors.

Always ensure the patient is reassessed for eligibility at each consultation. Further referral criteria are included in Indications for review by an appropriate healthcare provider.

Guideline overview

Patient eligibility for the program

- Patient aged 16 to 65 years
- Confirm the patient does not meet any ineligibility criteria (refer to page 4)

Provide program overview, gain consent and enrol in program

Refer when

Refer the patient to their usual healthcare provider with a comprehensive clinical handover:

- the patient is aged below 16 or above 65 years (does not preclude a patient from accessing usual pharmacy care)
- if they are, or become, ineligible for the program.

Patient history and assessment

Take a detailed patient history

Including:

- patient characteristics
- symptoms (current and history)
- medical history (consider contraindications to spirometry and conditions that impact asthma management/control)
- lifestyle/social/family history
- review previous lung function test results (if available)
- most recent asthma action plan (if applicable)

Conduct physical examination

- including chest auscultation

Interpret spirometry (if applicable)

- Consider results in context of patient history and physical examination.
- Spirometry findings consistent with variable expiratory limitation include:
  - positive bronchodilator responsiveness test: clinically significant FEV1 increase of ≥ 200 mL and ≥ 12 per cent from baseline pre-bronchodilator result (10 to 15 minutes after bronchodilator), or
  - in those not already using ICS: clinically significant increase in pre-bronchodilator FEV1 (≥ 200 mL and ≥ 12 per cent) measured before and after 4 weeks of maintenance inhaled corticosteroid (ICS) (or ICS-long acting beta2 agonist (LABA)) treatment

Assess symptom control

Refer when

Refer the patient to their usual healthcare provider with a comprehensive clinical handover if spirometry results:

- do not demonstrate reversible airflow limitation or expiratory airflow limitation
- suggest abnormal restrictive or mixed ventilatory patterns
- are inconsistent with asthma (or difficult to interpret).

Commence collaborative care

Guideline overview

Develop and implement management plan

Non-pharmacological measures

- Trigger avoidance, including immunisation status
- Smoking and/or vaping cessation
- Weight management
- Diet and nutrition
- Physical activity
- Pulmonary rehabilitation (if applicable)

Pharmacotherapy

- Initial and/or maintenance management of asthma:
  - treatment Levels 1 to 3 as per 2025 Australian Asthma Handbook[1]
- Inhaler considerations
- Adjusting pharmacotherapy
- Management of asthma exacerbations and acute asthma

Confirm management is appropriate

Communicate agreed management plan

- Including provision of a written Asthma Action Plan (as appropriate) customised to the patient

Collaborative care

Ongoing management and monitoring

Clinical review

- Within 2 to 3 months of commencement of management/and or initiation of new pharmacotherapy (including after step up of treatment)
- Within 1 to 2 months after a step down of treatment
- At least once a year if stable
- After any asthma exacerbation, including when oral corticosteroids (OCS) are self-initiated (review by a medical practitioner must occur first)

Refer when

Refer the patient to their usual healthcare provider with a comprehensive clinical handover if:

- symptoms are not controlled with treatment consistent with 'recommended' Level 3 pharmacotherapy and they require treatment consistent with Level 4.

The patient's eligibility for the program may change at any point. Refer the patient to their usual healthcare provider with a comprehensive clinical handover should the patient become ineligible for management under the program or choose to exit the program.

Key points

- Asthma is a chronic inflammatory lung condition defined by the combination of variable airflow limitation and a history of respiratory symptoms (e.g. wheeze, cough, chest tightness, breathlessness/shortness of breath) that vary over time and in intensity[1,2]. These defining features may be undetectable in patients that are managed appropriately[1].
- The prevalence of asthma among Aboriginal and/or Torres Strait Islander people (approximately 16 per cent) is higher when compared to the total Australian population (11 per cent)[3].
- The fundamental causes of asthma are not well understood. Strong risk factors include genetic predisposition, and environmental exposure to airborne particles and inhaled substances that may cause airway irritation or allergic reactions (e.g. viral respiratory infections, indoor and outdoor allergens, tobacco smoke and pollution)[1,3].
- Investigate asthma in patients with the following symptoms (that may vary over time in frequency and severity)[1]:
  - breathing difficulty (breathlessness, shortness of breath (dyspnoea))
  - wheeze
  - cough
  - chest tightness.
- There is no single conclusive test for asthma. Diagnosis is based on patient history, physical examination, and spirometry[1]. A diagnosis of asthma can be made if all the following apply[1]:
  - the patient has a history of recurrent or persistent respiratory symptoms that vary in frequency and severity (e.g. wheeze, breathing difficulty, chest tightness, and/or cough)
  - the patient's signs and symptoms are unlikely to be due to an alternative diagnosis
  - variable expiratory airflow limitation is demonstrated (and/or elevated fractional exhaled nitric oxide (FeNO) if testing is available).
- An asthma exacerbation is defined as worsening asthma symptoms and lung function, when compared with the patient's previous state (i.e. symptoms and lung function outside the patient's usual range of day-to-day variation)[1]. The term 'exacerbation' can be used to describe a range of clinical presentations, from worsening asthma symptoms that the patient may be able to self-manage at home, to severe or life-threatening acute asthma requiring emergency department care. Exacerbations are usually gradual in onset however some are rapid or sudden in onset[1].
- The term 'acute asthma' refers to clinically significant bronchoconstriction and breathing difficulty caused by asthma. Acute asthma is included within the range of clinical presentations covered by the term 'asthma exacerbation' (being typically equivalent to a moderate or severe exacerbation) and has its own severity classification system (mild-moderate, severe, or life-threatening)[1].
- Exercise-induced bronchoconstriction (EIB) results from a temporary narrowing of the lower airways after exercise and is common in asthma. Signs and symptoms of EIB include cough, wheeze, chest tightness, shortness of breath, and excessive mucus production. These typically peak after, not during, exercise (typically within 15 minutes of stopping high-intensity aerobic activity)[1]. Patients with EIB but without any other evidence of asthma should be referred to a medical practitioner for management.
- **As-needed SABA alone (without ICS) should never be prescribed or recommended to manage asthma. ICS-containing medicines are indicated for all adults and adolescents with asthma[1].**
- COPD and asthma may coexist, and many adult patients show features of both conditions[2]. Patients presenting with symptoms of both should be referred onto a medical practitioner for ongoing management.
- Some comorbidities, such as allergic rhinitis, chronic rhinosinusitis, COPD, and obstructive sleep apnoea (OSA) may affect asthma control or management (see Appendix 2[1,2] and Eligibility).

Program eligibility

Program eligibility

Program eligibility

Confirm eligibility to participate in the program (see Eligibility).

Consider program eligibility at every consultation, as eligibility may change at any time.

Refer the patient to their usual healthcare provider with a comprehensive clinical handover if the patient is, or becomes, ineligible for management under the program.

Patient history and assessment

Patient history

Patient history

Obtain sufficient information to assess the patient's condition, and the safety and appropriateness of any recommendations and medicines for the patient including but not limited to:

- age
- ethnic or cultural background, including Aboriginal and/or Torres Strait Islander status
- lactation status
- previous and current medical conditions including systemic and/or chronic conditions:
  - refer to Appendix 2 for conditions that can impact asthma control and/or complicate treatment
  - consider contraindications to spirometry (see Conduct (or refer for) spirometry testing)
- previous diagnosis of asthma:
  - date of diagnosis, last medical review, previous lung function test results
  - current (or most recently prescribed) treatment
  - previous use of oral corticosteroids (OCS)
  - frequency of rapid-acting bronchodilator use (i.e. SABA or ICS-formoterol)
  - most recent Asthma Action Plan
- history of acute asthma and asthma exacerbations, including hospitalisations and ED visits for asthma (including available summaries on My Health Record)
- personal and/or family history of asthma or allergies (including atopic dermatitis or allergic rhinitis)
- specialist care for any respiratory condition
- previous and current respiratory symptoms (refer to Appendix 1 and Appendix 3), considering:
  - onset and severity
  - pattern (frequency, time of day, any changes over time)
  - impact on daily activities including sleep and exercise
  - triggers, aggravating and precipitating factors (refer to Appendix 4)
  - relieving factors e.g. rapid-acting bronchodilator use
- alarm signs and symptoms that require further investigation e.g. haemoptysis, chest pain, unexplained weight loss or gain, night sweats, fever, signs of bronchiectasis, recurrent pneumonia, orthopnoea, or oedema (see Eligibility)
- all current and recently ceased treatments (including prescribed medicines, vitamins, herbs, other supplements, and over-the-counter medicines)
- drug and non-drug allergies, and adverse drug reactions
- smoking status and history (consider tobacco, cannabis, vaping, passive smoking, or other exposure to smoke)
- home and work environment
- diet/nutrition status and weight
- levels of physical activity
- recreational or illicit drug use and alcohol use
- vaccination status (particularly COVID, influenza, respiratory syncytial virus (RSV), pneumococcal, and pertussis).

Co-existing asthma and COPD

Patients with confirmed or suspected COPD are excluded from this program. However, COPD and asthma may coexist, and many adult patients show features of both conditions[1]. Patients with a history of asthma are at increased risk of developing COPD[4].

COPD, or co-existing asthma and COPD, should be considered in patients with risk factors for COPD (e.g. smoking history, exposure to indoor air pollution, family history) and with features suggestive of COPD (even if they have never smoked)[1].

A clear distinction between COPD and asthma can be difficult when features of both conditions are present, and further investigations may be required[1]. If COPD is suspected, the patient should be referred to a medical practitioner for further management. Clinical features that can aid in differentiation between asthma and COPD, or indicate possible co-existing asthma and COPD, are shown in Appendix 3.

Reminder

Pharmacists can access a range of clinical information in a patient's My Health Record, including details about current and past medication history, allergies, and current medical conditions.

Physical examination

Perform a physical examination (including chest auscultation and an inspection of the upper respiratory tract) to check for signs that suggest a comorbid or an alternative diagnosis[1].

A patient's physical examination is often normal in asthma, and this does not necessarily exclude a diagnosis of asthma[1,2]. Do not rule out asthma without conducting spirometry[1].

When conducting the physical examination[1,2]:

- perform chest auscultation, considering:
  - wheeze (if detected) does not confirm the diagnosis of asthma
    - widespread expiratory wheeze when symptoms are present is suggestive of asthma but is not specific
    - wheeze may be absent in asthma (even during severe exacerbations) or only heard during forced expiration
    - wheeze may also be present in patients with COPD, respiratory infection, obesity, or other conditions
    - inspiratory wheeze is not a feature of asthma
  - presence of heart murmurs
  - crackles are not a feature of asthma (presence suggests another diagnosis, possibly co-existing with asthma)
- look for signs of allergic rhinitis, nasal polyps, or rhinosinusitis in the upper respiratory tract
- look for signs of atopic dermatitis.

Conduct (or refer for) spirometry testing

While other methods of lung function testing can be used to assist in the identification and management of asthma, spirometry is considered the most established lung function test for confirming variable expiratory airflow limitation in the diagnosis of asthma, and for measuring lung function when assessing asthma control[1].

Lung function tests can have significant false positive/negative results however, and spirometry alone is not a definitive diagnostic tool[1,7]. Normal spirometry does not exclude asthma, especially when the patient is asymptomatic[1]. Results should be considered with other factors including respiratory symptoms and physical examination[1].

Spirometry is required for a patient with suspected asthma, who has not been previously diagnosed, to confirm variable expiratory airflow limitation[1].

Spirometry is also recommended for a patient with an existing diagnosis of asthma[1,2]:

- at initial presentation to establish baseline performance (if the patient has recently been diagnosed and has had spirometry - do not repeat)
- if variable respiratory symptoms are reported, but there is no available documented variable airflow limitation
- if they have poor symptom control or have been experiencing exacerbations

- after 3 to 6 months of using ICS containing treatment to establish a personal best for future comparison
- as part of routine periodic review (approximately every 2 years) to assess risk of exacerbations and decline in lung function (even if good symptom control is reported).

Pharmacists may conduct spirometry in the community pharmacy setting in accordance with National Asthma Council Australia Spirometry Handbook for Primary Care[6] (the Spirometry Handbook), if they have been appropriately trained and have the appropriate equipment detailed in the Spirometry Handbook. Pharmacists must ensure there are quality assurance and audit processes in place if they are conducting spirometry testing. Alternatively, refer to an appropriate healthcare provider that performs lung function testing. Ensure the patient is aware of the importance of spirometry testing to encourage follow through with the recommended referral.

Do not delay asthma treatment if clinically indicated while awaiting spirometry[1].

Considerations for providing asthma treatment while awaiting spirometry:

- If the patient does not have a prior diagnosis of asthma and asthma is suspected, therapy should be limited to Level 1 or Level 2 treatment only and spirometry performed within 3 months.
- An Asthma Action Plan should not be prepared if diagnosis has not been confirmed on spirometry, but education should be provided on asthma exacerbations and escalation.
- Oral corticosteroids should not be supplied as part of an Asthma Action Plan before spirometry is performed that supports a diagnosis of asthma, and should only be prescribed as per the criteria in 'Patient self-management of asthma exacerbations and acute asthma'.

If the patient presents with acute respiratory symptoms that suggest an asthma exacerbation without a previous diagnosis (Entry Point 1), the patient must be referred to their usual healthcare provider (or emergency services, if required) before they can enter the program. Standard pharmacy care may be provided. If the patient has a previous diagnosis of asthma these should be managed as Management and treatment and investigations (including spirometry) performed after resolution of acute symptoms[1].

Spirometry is generally safe, however as it involves maximal effort, patients may experience effects such as bronchospasm, transient breathlessness, cough, syncope or chest pain[6]. Discontinue spirometry if the patient experiences pain during testing[7].

The Spirometry Handbook outlines situations where spirometry is contraindicated or not recommended at a specific point of time. This can be because of risk to the patient or an increased likelihood of inaccurate or unrepeatable results[6].

If there is any concern or doubt about the safety or suitability of performing spirometry, refer the patient to an appropriate healthcare provider for management[6].

Resources for conducting spirometry

- National Asthma Council Australia: Spirometry Handbook for Primary Care[6]
- Therapeutic Guidelines: Respiratory (Pulmonary Function Testing – Spirometry)[8]
- American Thoracic Society and European Respiratory Society Technical Statement: Standardization of Spirometry 2019 Update[7].
- The Thoracic Society of Australia and New Zealand: TSANZ Spirometry Suite of Documents for Australian Primary Care (SPC01-SPC03)
- Clinician Assist WA: Respiratory Function Testing Services.

Interpret spirometry testing

This guideline recommends interpreting spirometry testing in accordance with the current online version of the Therapeutic Guidelines: Respiratory (Pulmonary function testing – Spirometry)[8] and the National Asthma Council Australia Spirometry Handbook for Primary Care[6]. See Appendix 5 for more information on spirometry results that correlate with a diagnosis of asthma and key considerations. Any uncertainty on interpretation should be referred to a medical practitioner for review.

Pharmacists should also be aware of alternative spirometry reference criteria such as those available in the TSANZ Technical Standards for Spirometry in Australian Primary Care. These should not be used as reference ranges in the program.

Assess symptom control

Assess and document symptom control throughout the program at every review[1]. Asthma symptom control can be assessed using the Australian Asthma Handbook – Classification of recent asthma symptom control in adults and adolescents or a validated questionnaire[1]. See Appendix 6 for more information.

Develop and implement a management plan

The overall goals of asthma management include minimising symptoms (and their impact on daily activities, e.g. exercise, sleep), preventing or minimising asthma exacerbations and acute asthma, achieving and maintaining healthy lung function, improving quality of life, and minimising asthma deaths, ED visits, and burden of disease[1,9]:

Optimal management of asthma involves a multidisciplinary and collaborative team-based approach (and as such communication and clinical handover with other care providers is essential), and includes[1]:

- identification of management goals collaboratively with the patient
- avoidance of triggers and minimisation of risk factors
- education and counselling to enable self-management
- non-pharmacological measures and pharmacotherapy
- management of exacerbations
- regular symptom monitoring and review.

See the Australian Asthma Handbook - Overview of asthma management in adults and adolescents[1].

Asthma action plan and lifestyle prescription

Each patient within the program with a confirmed diagnosis of asthma on spirometry should have the following developed, consistent with the Therapeutic Guidelines[10], Australian Medicines Handbook[9] and Australian Asthma Handbook[1]:

- an individualised written Asthma Action Plan (or their existing plan updated), using a validated template, such as the National Asthma Council Australia Asthma Action Plan[11]:
  - see Australian Asthma Handbook – Educating adults and adolescents to manage their asthma for a guide to writing an asthma action plan[1]
  - oral corticosteroids should only be included if the patient meets the criteria. See 'Patient self-management of asthma exacerbations and acute asthma'
- an accompanying individualised lifestyle prescription detailing non-pharmacological measures (see Appendix 7).

Non-pharmacological measures

Provide all patients with information about non-pharmacological measures, regardless of whether pharmacotherapy is prescribed.

Note, self-monitoring of lung function using peak expiratory flow is unnecessary, but some patients may prefer this approach. When incorporated into the Asthma Action Plan for suitable adult patients, a fall in peak flow from the patient's personal best can prompt treatment adjustment[1].

Trigger avoidance

Advise patients on the importance of avoiding triggers and other environmental risk factors, including airborne and environmental irritants (e.g. occupational factors, pollution, tobacco smoke, other smoke), medications associated with asthma exacerbations (e.g. NSAIDs for patients with aspirin-exacerbated respiratory disease), and known dietary triggers or allergens, see the Australian Asthma Handbook – Asthma triggers[1].

Do not routinely advise allergen avoidance or reduction measures as a strategy to reduce asthma symptoms or exacerbations[1]. Allergen avoidance should only be considered if the patient has a proven sensitivity to the allergen, and the allergen is a clinically significant asthma trigger. Additionally, strategies should only be recommended if they are likely to be effective and feasible to implement[1]. Avoidance is essential, however, for patients with confirmed sensitiser-induced occupational asthma[1].

Provide patients at risk of thunderstorm asthma with advice on avoidance strategies for high-risk periods, see the Australian Asthma Handbook - Thunderstorm asthma[1].

Vaccination

Advise patients on the importance of immunisation against respiratory infections (e.g. RSV, influenza, pneumococcal, pertussis, and COVID-19) according to the Australian Technical Advisory Group on Immunisation (ATAGI) and WA Immunisation Schedule recommendations[1,12,13].

Smoking and vaping cessation

Smoking and vaping cessation is an important and beneficial measure to prevent or limit lung damage and asthma exacerbations[1]. Detailed guidance for pharmacists supporting smoking cessation is contained in the Smoking Cessation - Clinical Practice Guideline, and supporting vaping cessation is contained in the WA Department of Health - Smoking and vaping cessation resources[14].

Weight management

For patients with obesity, there is evidence that weight loss may assist in the control of asthma symptoms[2]. Detailed guidance for pharmacists supporting weight management is contained in the Management for Overweight and Obesity - Clinical Practice Guideline.

Diet and nutrition

Advise patients that some healthy eating habits may also benefit lung health. These habits include eating the recommended daily servings of fruit and vegetables and minimising the intake of foods high in saturated fats (e.g. processed and take-away foods)[1]. Nutritional recommendations and advice should be sourced from the Australian dietary guidelines[1,15].

Physical activity

Regular physical activity may improve lung health, asthma symptoms and management, and has general health benefits[1]. Advise patients that asthma does not prevent physical activity, and that EIB can be managed effectively. Provide advice about EIB prevention strategies and management, see the Australian Asthma Handbook – Exercise and asthma[1]. Encourage patients with asthma to undertake physical activity in line with recommendations for their age group in the Physical activity and exercise guidelines for all Australians[1,16].

Pulmonary rehabilitation

Pulmonary rehabilitation may improve exercise capacity and quality of life, and should be considered for asthma patients with persistent airflow limitation. See the Lung Foundation Australia - Pulmonary Rehabilitation For Health Professionals for more information[17].

Complementary medicine

At present, there is limited evidence to support the use of complementary medicines for the management of asthma[18]. Patients who choose to use complementary medicines for asthma should be advised that these should be used in conjunction with prescribed asthma treatment and their usual medications, not in place of these. Consider possible interactions with prescribed medicines[1].

Pharmacotherapy

Pharmacotherapy for the program involves the following components, where appropriate:

- initial management of asthma
- maintenance management of asthma (including adjusting pharmacotherapy as needed)
- management and treatment of asthma exacerbations.

See Overview of the Improved Asthma Symptom Control Program for entry points to the program.

Where pharmacotherapy is prescribed, the patient's prescription(s) (including repeats) should provide enough medicine for the period until the patient's next scheduled review.

Patients entering the program with an existing medicine regimen

Ask for the patient's most recent Asthma Action Plan (if they have one) and consider whether the most recently prescribed treatment is:

- appropriate for the patient's symptoms (considering recent asthma symptom control (see Assess symptom control) and medical history)
- optimised for the patient, including inhaler technique and adherence.

Pharmacists may modify or adjust existing asthma pharmacotherapy (see Adjusting pharmacotherapy), including if the[1]:

- patient's response is inadequate (after regular and correct use of existing maintenance inhaler therapy for 3 months)
  - inadequate response defined as:
    - presence of any residual symptoms (e.g. Asthma Control Questionnaire-5 (ACQ5) score ≥1.0 and/or Asthma Control Test (ACT) score <20)
    - any exacerbation on existing asthma pharmacotherapy (requires referral to a medical practitioner)
    - symptoms/SABA use more than twice per week
- patient has had good asthma control for 3 months and stepping down pharmacotherapy is otherwise appropriate. See Stepping down pharmacotherapy
- patient is experiencing intolerable or unmanageable adverse effects
- patient is unable to use the prescribed device correctly after appropriate training.

When considering modification or adjustment to medicines prescribed, consider if the medicine is also used for the treatment of another condition. In this case, therapy should not be adjusted without direct communication with the original prescriber.

When modifying pharmacotherapy that has been prescribed by another healthcare provider, attempt to make changes in collaboration with the original prescriber or the patient's usual healthcare provider (whichever is most appropriate). At a minimum, an update of pharmacotherapy modifications must be provided, including a rationale for required changes.

Pharmacotherapy for initial and/or maintenance management of asthma

Medicines prescribed for initial and/or maintenance management of asthma must be in accordance with the current online version of the Therapeutic Guidelines: Respiratory (Maintenance management of asthma in adults and adolescents)[10].

Combination products can be prescribed if appropriate, however they must only include medicines able to be prescribed under the program.

> Consider the pharmacotherapy recommendations in the current online version of the Australian Asthma Handbook[1] in conjunction with the Therapeutic Guidelines[10]. If the Australian Asthma Handbook and Therapeutic Guidelines differ, refer to the Australian Asthma Handbook when making clinical decisions.

See the Australian Asthma Handbook – Treatment levels for adults and adolescents for an overview of the asthma treatment levels for adults and adolescents[1].

See the Australian Asthma Handbook – Initial asthma treatment for adults and adolescents after diagnosis, and the Australian Asthma Handbook – Adjusting treatment for adults and adolescents for recommendations for the initial and/or maintenance management of asthma[1].

Key considerations

- ICS containing medicines are indicated for all adults and adolescents with asthma[1].
- SABA used alone as needed (without ICS containing treatment) should not be recommended or used for the management of asthma, even if symptoms are infrequent[1]. As-needed low-dose budesonide-formoterol ('recommended' Level 1 treatment) is the least intensive treatment option appropriate for adults and adolescents with asthma[1].
- Long acting beta2 agonists (LABAs) should never be used without ICS in asthma[1].

- Montelukast no longer has a role in the routine management of asthma in adolescents and adults[1]. Pharmacists must not initiate montelukast under the program or prescribe continued maintenance treatment initiated by a specialist or GP. Patients should be referred to a medical practitioner for review of ongoing need and prescription before reentering the program. Counsel relevant patients on the risk of neuropsychiatric adverse effects with montelukast, see the Therapeutic Goods Administration Safety Update January 2025[19].
- The entry point to the treatment levels should be individualised to the patient. Consider medical and medication history, symptom frequency, history of severe exacerbations, and any known risk factors for severe exacerbations[1].
  - Most patients can commence and continue maintenance treatment with as-needed low-dose budesonide-formoterol ('recommended' Level 1 treatment).
  - Consider starting treatment with a regimen that includes maintenance ICS (at Level 2 or Level 3) if the patient has frequent or severe symptoms, has had a previous severe exacerbation, or is at high risk of exacerbations.
  - Patients should not commence an 'alternative pathway' of any level of treatment without consultation with a medical practitioner.
- Review treatment regularly and adjust if needed (see Adjusting pharmacotherapy)[1].
- For patients with a diagnosis of asthma who experience predictable EIB, recommend they use a dose of their rapid-acting bronchodilator 15 minutes before exercise commences (see the Australian Asthma Handbook – Exercise and asthma)[1].
- Advise all patients how to appropriately recognise and manage asthma exacerbations, including the role and potential risks of OCS, where appropriate, to prevent progression of worsening asthma to an acute exacerbation (see Patient self-management of asthma exacerbations and acute asthma)[1].
- Provide the patient with an up-to-date, personalised written Asthma Action Plan which details their pharmacotherapy (see Develop and implement a management plan).

- All adults and adolescents with asthma should be prescribed ICS[1].
- SABA alone (without ICS) used as needed should not be recommended or used for the management of asthma, even if symptoms are infrequent[1].
- Montelukast is associated with potential neuropsychiatric adverse events. Pharmacists must not initiate montelukast under the program and must not prescribe continued monteleukast therapy initiated by a specialist or GP. Patients prescribed montelukast must be counselled accordingly, see the Therapeutic Goods Administration Safety Update January 2025[19] and referred to their specialist provider or general practitioner.

Inhaler considerations

See the Australian Asthma Handbook – Selecting inhalers for adults and adolescents[1].

- The choice of medicine and inhaler device should consider patient preference and their ability to use the device correctly with appropriate training. Consider factors such as the inspiratory effort required, patient age, inspiratory effort capability, developmental stage, cognition and dexterity, and the environmental impact of the device (when in use and when disposed of)[1].
- Prescribe asthma medicines that are delivered via inhaler device, not nebulisation. Nebulisation is unnecessary, except in some cases of severe acute asthma[1].
- Recommend the use of a spacer device with pressurised metered dose inhalers. Consider if a face mask is required[1].
- Minimise the number of inhalers prescribed, and the different types of inhaler devices, where possible to avoid confusion. If the use of more than one inhaler device type is unavoidable, provide clear instructions for correct device use and handling, and any differences (i.e. inspiratory effort required, shaking, storage, cleaning, disposal)[1].
- Demonstrate the correct use of the prescribed inhaler device (may differ between brands) using a placebo inhaler. Provide an inhaler-specific checklist for the patient to follow[1].

- Review inhaler technique and adherence, including dispensing history, at every opportunity, even if the same inhaler or inhaler device has been used long-term[1,20].
- Further resources for consumers and health professionals are available in:
  - the National Asthma Council of Australia - Inhaler technique for people with asthma or COPD[20]
  - the National Asthma Council of Australia resources – Inhaler Technique Checklists[21].

Adjusting pharmacotherapy

Pharmacotherapy adjustments must be in accordance with the current online version of the Therapeutic Guidelines: Respiratory (Maintenance management of asthma in adults and adolescents – Summary of stepwise maintenance management of asthma in adults and adolescents)[10].

> Consider the recommendations in the current online version of the Australian Asthma Handbook[1] in conjunction with the Therapeutic Guidelines[10]. If the Australian Asthma Handbook and Therapeutic Guidelines differ, refer to the Australian Asthma Handbook when making clinical decisions.

See the Australian Asthma Handbook – Treatment levels for adults and adolescents for an overview of the asthma treatment levels for adults and adolescents and the Australian Asthma Handbook – Adjusting treatment for adults and adolescents for recommendations on adjusting treatment[1].

Key considerations

Adjust treatment (step up, step down, or switch from 'alternative' pharmacotherapy (i.e. with SABA as the rapid-acting bronchodilator) to 'recommended' treatment (with ICS-formoterol as the rapid-acting bronchodilator) where necessary and appropriate to maintain good symptom control, prevent exacerbations, and minimise side effects of treatment[1].

Consider switching patients prescribed 'alternative' pharmacotherapy to 'recommended' pharmacotherapy to reduce severe exacerbation risk, where possible in consultation with the patient's general practitioner/current healthcare provider[1].

Stepping up pharmacotherapy[1]:

Before stepping up pharmacotherapy:

- confirm that the patient remains eligible for the program (see Eligibility criteria)
- confirm that stepping up pharmacotherapy is appropriate for the presentation
- consider common causes of failure to achieve good symptom control or reduce exacerbations (e.g. poor adherence, incorrect inhaler technique, trigger exposure, or comorbid or alternative diagnoses).

If the patient is using the 'alternative' Level 2 or Level 3 treatment, consider switching to the corresponding 'recommended' Level treatment option before considering a dose increase.

> Refer patients to an appropriate healthcare provider for ongoing management if symptoms are not controlled or have worsened on 'recommended' Level 3 treatment.

Stepping down pharmacotherapy[1]:

Consider stepping down pharmacotherapy if the patient is prescribed treatment consistent with Level 2 or Level 3 treatment (by one treatment Level, with review in 4 to 8 weeks, then at 3 months), if:

- good asthma symptom control has been maintained for 3 months, and
- symptom control at Level 2 or Level 3 treatment was achieved in 1 to 2 months
- the patient has a low risk of exacerbations. See the Australian Asthma Handbook | Assessing and reviewing asthma in adults.

Stepping down should not be attempted if the person is exposed to triggers (e.g. relevant allergens, respiratory infections) or is travelling.

Do not withdraw ICS containing treatment completely, even if symptoms are infrequent and asthma is well controlled. 'Recommended' Level 1 pharmacotherapy is suitable for most patients with asthma long-term.

> Advise patients to step up treatment again if their condition worsens after stepping down, follow their Asthma Action Plan, and to see an appropriate healthcare provider for review.

Management and treatment of asthma exacerbations and acute asthma

Include the following information in the patient's Asthma Action Plan:

- how to recognise an asthma exacerbation and acute asthma, see the Australian Asthma Handbook - Definition and classification of asthma exacerbations[1]
- the signs and symptoms that indicate the need for emergency medical care, and how to manage these according to the National Asthma Council Australia's First Aid for Asthma chart[22], and the Therapeutic Guidelines: Respiratory (Acute asthma – First aid for acute asthma for patients and community members)[10].

Risk factors for life-threatening acute asthma include history of severe exacerbation/s, frequent SABA use, co-existing cardiovascular disease and adverse psychosocial or behavioural factors including socioeconomic disadvantage, psychiatric illness, and social isolation. See the Australian Asthma Handbook - Assessing and reviewing asthma in adults[1] for more information.

Patient self-management of asthma exacerbations and acute asthma

Include in the patient's Asthma Action Plan guidance on the appropriate self-management of asthma exacerbations and acute asthma (severe and life-threatening acute asthma must be managed in an acute care setting). This guidance should include rapid severity assessment and pharmacotherapy as per the Therapeutic Guidelines: Respiratory (Acute asthma) and Australian Asthma Handbook – Adjusting treatment for adults and adolescents and Australian Asthma Handbook – Managing acute asthma in adults and adolescents in primary care[1, 10].

Instruct patients to use their rapid-acting bronchodilator as often as needed when symptoms are worsening (i.e. symptoms are more frequent, are recurring after reliever use, or are not promptly relieved). Clearly detail the maximum dose that can be taken at one time and the maximum dose that can be taken in one 24-hour period as per the Australian Asthma Handbook - Medicines Guide[1].

Provide and dispense a single prescription for up to 5 days treatment of prednis(ol)one up to a maximum dose of 50mg per day with no repeats as part of the patient's written Asthma Action Plan to self-initiate if:

- symptoms do not improve with escalation of rapid-acting bronchodilator or ICS/formoterol as per Asthma Action Plan over 24 to 48hrs[1], and
- immediate review by a medical practitioner is unavailable.

> Pharmacist-initiated prednis(ol)one prescriptions can only be dispensed in line with an existing Asthma Action Plan for one single occasion in individuals who may come to serious harm due to difficulty accessing unscheduled healthcare (e.g. > 2hrs from healthcare facility). Subsequent prescriptions for stand-by prednis(ol)one can only be provided by a medical practitioner.

Advise the patient that prednis(ol)one should only be used if they experience a severe asthma exacerbation as per the above guidance, and not for any other purpose[1]

Prescribe and dispense only the number of tablets required for up to a 5-day course of prednis(ol)one. Do not issue repeats[1].

Patients who self-initiate prednis(ol)one must be followed by review by medical practitioner within 1 to 2 weeks.

Factors to consider in determining appropriateness of the prescription include patient age, access to a pharmacy, and ability to self-manage asthma[1].

If a prescription is not provided, provide detailed instructions for when these patients should seek medical review for their worsening asthma.

All patients using prednis(ol)one must also be provided with verbal and written materials about harm of OCS dose accumulation over time. See the Severe Asthma Toolkit : Oral Corticosteroid Stewardship and OCS Burden Infographic.

Instruct patients that they must arrange medical practitioner review as soon as possible after starting prednis(ol)one (including those with prescriptions from a general practitioner). At this review, the medical practitioner may choose to prescribe further OCS if clinically indicated[1].

Advise all patients to return to the pharmacist (or their chosen healthcare provider) for review of their Asthma Action Plan after an asthma exacerbation, even if it was mild and self-managed.

Advise patients to seek emergency care/ call an ambulance (even if they have self-initiated prednis(ol)one) if[1]:

- they have severe breathing difficulties
- their symptoms get worse very quickly
- their rapid-acting bronchodilator has little or no effect
- they have difficulty speaking sentences
- they experience blue lips or drowsiness
- they experience any other signs of severe or life-threatening acute asthma.

For more information, see the Australian Asthma Handbook – Definition and classification of asthma exacerbations and the Australian Asthma Handbook - Managing acute asthma in adults and adolescents in primary care[1].

Confirm management plan is appropriate

Consult the Therapeutic Guidelines[10], Australian Medicines Handbook[9], Australian Asthma Handbook[1] and other relevant references to confirm that management is appropriate, including for:

- suitability of inhaler device(s) selected
- contraindications and precautions
- drug interactions
- lactation status.

Communicate agreed management plan

Provide comprehensive advice (including supporting written information when required) to the patient regarding:

- individual product and medicine use (e.g. medication dosing and inhaler technique)
- how to manage adverse effects
- non-pharmacological measures
- how to self-manage their asthma (see Develop and implement a management plan)
- when to seek further care and/or treatment
- when to return for clinical review.

Provide the patient with a written Asthma Action Plan (or update an existing), customised to their management regimen, see the Australian Asthma Handbook - Asthma Action Plans and Develop and implement a management plan[1].

It is the pharmacist's responsibility to ensure the suitability and accuracy of any resources provided to patients (and caregivers if applicable) and compliance with all copyright conditions.

Collaborative care

Provide a copy of the patient's Asthma Action Plan to their usual healthcare provider (and any other relevant health professionals involved in the patient's care). The communication should also include (if appropriate):

- relevant medical history, results of any spirometry testing conducted, and level of symptom control
- changes to existing pharmacotherapy or new pharmacotherapy (including pharmacotherapy for asthma exacerbations)
- a summary of advice provided to the patient including recommendations for multidisciplinary care and referrals
- the next scheduled review appointment.

Ongoing management and monitoring

Clinical review and ongoing collaboration

All patients should undergo regular clinical review, as per the Australian Asthma Handbook[1] and outlined below.

Review the patient according to the following timeframes (shorter review periods may be clinically necessary):

- within 2 to 3 months of commencement of management and/or initiation of new pharmacotherapy (including when stepping up treatment) [1, 12]
- within 1 to 2 months after a step down of treatment[1]
- after 2 to 3 months of stable pharmacotherapy at treatment Levels 2 to 3 (see Adjusting pharmacotherapy)[1]
- at least once a year if stable[1].

Indications for review by an appropriate healthcare provider

- Advise the patient to be reviewed by an appropriate healthcare provider as soon as possible if[1]:
  - there is deterioration in their condition (i.e. signs of poor asthma control)
  - they are needing to use their rapid-acting bronchodilator > 2 times per week or use ≥3 canisters per year
  - their symptoms have not improved after changes to therapy and regular and correct inhaler use after 3 months and ACQ5 remains ≥ 1.0 or ACT< 20
  - they experience intolerable adverse effects with their treatment
  - they have difficulty using their inhaler device
  - any alarm signs or symptoms occur (see Eligibility criteria)
  - any comorbid conditions become uncontrolled, or any new conditions occur, that may complicate asthma management or control (see Appendix 2).

At each appointment (scheduled or unscheduled), thoroughly review[1]:

- the patient's ongoing eligibility for the program (see Eligibility criteria)
- symptom control and exacerbations
- patient history to reflect changes in the preceding period, including risk factors for exacerbations and lung function decline, triggers, comorbid conditions that may affect asthma management or control (see Appendix 2), and adherence to pharmacological and non-pharmacological treatments
- inhaler technique, including demonstration of appropriate inhaler technique and inspection of equipment to check for breakage or blockage
- potential adverse effects of pharmacotherapy and risk of these to the patient
- the patient's Asthma Action Plan (update the existing or create a new one, if required)
- consider whether pharmacotherapy needs to be adjusted and reinforce non-pharmacological measures
- if the patient has enough medicines and prescriptions until their next scheduled review
- referrals to the patient's multidisciplinary halthcare team.

For recommendations as to when spirometry should be repeated, see Conduct (or refer for) spirometry testing.

Provide an update to the patient's usual healthcare provider following each occasion of care, including when any changes are made to the patient's management plan. Proactive, planned and/or unplanned review may also occur with the patient's usual healthcare provider at any time while the patient is enrolled in the program.

Patients may continue to participate in the program providing:

- their condition remains eligible to be managed in the program
- they wish to remain in the program and
- they attend scheduled reviews.

Refer all patients (with their consent) who are no longer eligible or suitable for management within the program, or who do not wish to continue in the program, to an appropriate healthcare provider.

Pharmacist resources

- Clinician Assist WA:
  - Acute asthma in adults
  - Non-acute asthma in adults
  - Respiratory Function Testing Services
- Department of Health: Asthma Referral Access Criteria
- Respiratory Care WA:
  - Respiratory Hubs | Respiratory Care WA
  - Health Professional Hub | Respiratory Care WA
  - Respiratory-Care-WA-Telehealth-Poster

Patient resources

- Respiratory Care WA:
  - Information and Resources | Respiratory Care WA
  - Asthma Hotline – 1800 ASTHMA
- HealthyWA - Asthma
- HealthyWA - Asthma medications and inhaler devices
- Pulmonary Rehabilitation Factsheet - Lung Foundation Australia
- Home - Better Health Program

Appendix 1 – Clinical features to aid with identification of asthma

Clinical features to aid with identification of asthma in adolescents and adults[1]

Probability of asthma is increased:

- more than one symptom of asthma (e.g. dyspnoea, wheeze, cough, chest tightness)
- symptoms are:
  - worse at night or the early morning
  - obviously triggered by exercise, exposure to allergens or irritants, cold air, allergies, viral infections, or after taking certain medication (e.g. aspirin or beta-blockers)
  - recurrent or seasonal.
- personal and/or family history of asthma or allergies (e.g. atopic dermatitis, allergic rhinitis)
- widespread wheeze audible on chest auscultation
- rapid response to a rapid-acting bronchodilator
- lower than predicted FEV1 or peak expiratory flow (which is unexplained otherwise)
- raised blood IgE level or eosinophilia (which is unexplained otherwise).

Probability of asthma is decreased:

- cough is the only respiratory symptom
- chronic sputum production
- voice changes
- light-headedness, dizziness, peripheral tingling
- normal chest auscultation (over several visits) when symptomatic
- normal spirometry (over repeated tests) when symptomatic
- history of (or current) heavy smoking
- cardiovascular disease.

Appendix 2 – Conditions impacting on asthma control and/or management

Conditions that can impact on asthma control and/or complicate management [1,2,23]

- Allergic conditions, including food allergy and anaphylaxis
- Cardiovascular disease
- Chronic rhinosinusitis
- COPD
- Diabetes
- Dysfunctional breathing e.g. hyperventilation
- Hormonal changes
- Inducible laryngeal obstruction (voice disorders)
- Rhinitis (allergic and non-allergic).
- Smoking and nicotine dependence
- Gastro-oesophageal reflux disease
- Mental health e.g. depression, anxiety, panic disorders
- Nasal polyposis
- Obesity
- Obstructive sleep apnoea
- Respiratory infections (including COVID)
- Bronchiectasis
- Other respiratory conditions.

Appendix 3 – Differentiation between COPD and asthma

In an adult with chronic respiratory symptoms (dyspnoea, cough, chest tightness, wheeze)[1,2,4,24,25]			
	Suggestive of COPD if several of the following features:	**Highly suggestive of asthma if several of the following features:**	**Suggestive of co-existing asthma-COPD if features of both asthma and COPD:**
Onset	• after age of 40 years	• before age of 40 years	• may have started before or after age of 40 years
Airflow limitation	• persistent expiratory airflow limitation • with or without bronchodilator reversibility	• variable expiratory airflow limitation • persistent airflow limitation may be present	• persistent expiratory airflow limitation • with or without bronchodilator reversibility
Symptoms	• persistent dyspnoea (occurs on most days) which limits physical activity and may have been preceded by cough or sputum • are slowly progressive • have limited relief from bronchodilator	• vary over time and in intensity • are associated with certain triggers (e.g. laughter, exercise, allergens) • are worse at night or in the early morning • are recurrent or seasonal • improve with bronchodilators (minutes) or ICS (days to weeks), or may resolve spontaneously	• intermittent or episodic • any of the asthma features in the previous column (e.g. symptoms are associated with certain triggers, symptoms improve with bronchodilators/ICS or spontaneously)
Other	• family history of COPD • history of: - smoking or exposure to other noxious agents (e.g. smoke/ dust) - recurrent chest infections - respiratory illnesses (such as tuberculosis) • low birth weight • no past or current diagnosis of asthma	• personal or family history of allergies (e.g. allergic rhinitis, atopic dermatitis) • family history of asthma • current or childhood asthma diagnosis	• may have a history of: - smoking, or exposure to other noxious agents (e.g. smoke/ dust) - respiratory illnesses (such as tuberculosis) - low birth weight • current or childhood asthma diagnosis

Appendix 4 – Asthma triggers and irritants

Examples of asthma triggers and irritants [1, 3, 26]

- Viral respiratory infections (e.g. influenza, pneumococcal disease, pertussis, rhinovirus, RSV)
- Indoor or outdoor allergens (e.g. animals, cockroaches, dust mites, moulds, occupational allergens, pollen, grasses)
- Air pollution (indoor or outdoor)
- Chemical irritants, including occupational exposures
- Tobacco smoking, vaping, other types of smoking or exposure to second-hand smoke
- Other airborne irritants (e.g. smoke, fuel stoves, gas heaters, aerosols, strong odours (e.g. perfume, incense), home renovation materials, aerosols)
- Weather changes or natural events (e.g. thunderstorms, bushfires, cold/dry air, change in temperatures, extreme weather changes)
- Certain medications (e.g. aspirin, NSAIDs, beta-blockers, echinacea)
- Physical exercise (consider frequency and intensity required for trigger)
- Dietary (e.g. thermal effects (i.e. cold drinks), food chemicals or additives (if intolerant))
- Physiological and psychological states (e.g. extreme emotions, stress, laughter, pregnancy, hormonal changes).

Appendix 5 – Interpretation of spirometry

Interpretation of spirometry[1,2,6,27,28]

Spirometry is the most established lung function test that can be used in the diagnosis and assessment of asthma, see Conduct (or refer for) spirometry testing.

Excessive variability of expiratory airflow demonstrated through spirometry can confirm the diagnosis of asthma in a patient if the clinical history is consistent with asthma, and if signs and symptoms are unlikely to be due to an alternative diagnosis.

Spirometry findings that are consistent with variable expiratory limitation include a:

- positive bronchodilator responsiveness test (clinically significant FEV1 increase of ≥ 200 mL and ≥12 per cent from pre-bronchodilator FEV1):
  - FEV1 should be measured before and 10 to 15 minutes after, giving a rapid acting bronchodilator (e.g. 400 micrograms of inhaled salbutamol)
  - at least 3 acceptable spirometry manoeuvres should be performed each time (and the highest FEV1 recorded)
  - noting:
    - a large increase of FEV1 (e.g. ≥ 15 per cent and greater than 400 mL) increases confidence of asthma
    - a smaller difference may suggest asthma in some circumstances (e.g. an absolute increase ≥ 10 per cent of the individual's predicted FEV1 may suggest asthma in a patient with normal FEV1 and no evidence of expiratory airflow limitation (FEV1/forced vital capacity (FVC) >0.7))
- clinically significant increase in pre-bronchodilator FEV1 (≥ 200 mL and ≥ 12 per cent) measured before and after 4 weeks of maintenance ICS (or ICS-LABA) treatment (in those not already using ICS)
- positive bronchial provocation test (only performed in a respiratory function laboratory).

Notes:

- FEV1 below normal for the patient's sex, age, and height indicates abnormal lung function, however reduced FEV1 alone is nonspecific and does not confirm asthma.
- A reduced ratio of FEV1 to FVC indicates expiratory airflow limitation, however, does not confirm asthma.
- Consider further testing if initial spirometry results do not confirm the diagnosis of asthma, and the clinical picture suggests asthma.
- Repeat spirometry periodically in a patient with a confirmed diagnosis to monitor lung function. Pre-bronchodilator FEV1 should be monitored.
- Variable expiratory airflow limitation (or expiratory airflow limitation) may not be evident in a patient with asthma if they are using asthma treatment at the time of testing. When diagnosing asthma, bronchodilators should be withheld as appropriate before the test, see the Australian Asthma Handbook – Diagnosing asthma in adults and adolescents.
- Persistent expiratory airflow limitation (FEV1/FVC < 0.7 (or less than the lower limit of normal) post-bronchodilator) may develop in a patient with asthma long-term or with risk factors for COPD. Consider COPD or co-existing asthma and COPD. A negative bronchodilator response can occur in these patients, however a positive bronchodilator response does not necessarily rule out COPD.
- Reference values for lung function may need to be adjusted for ethnicity. The category GLI-2012 'other/mixed' in the GLI 2012 dataset should be used to analyse the spirometry results for Aboriginal and Torres Strait Islander people.

Resources for interpreting spirometry:

- Australian Asthma Handbook: Australian Asthma Handbook[1]
- National Asthma Council Australia: The Spirometry Handbook for primary care[6]
- Therapeutic Guidelines: Respiratory (Pulmonary function testing – Spirometry)[8]
- European Respiratory Society Global Lung Function Initiative calculator[27] and Global Lung Initiative (GLI) 2012 dataset[28].

Appendix 6 – Classification of asthma symptom control

Classification of asthma symptom control[1,29]	
Refer to the Australian Asthma Handbook - Assessing and reviewing asthma in adults and adolescents. A validated questionnaire such as the Asthma Control Test (ACT) can also be used to assess asthma symptom control, see the Australian Asthma Handbook - Questionnaire-based asthma assessment tools. Asthma symptom control is based on symptoms over the previous 4 weeks.	
Good control	**Poor control**
All of the following features: • daytime symptoms on 2 or fewer days per week • need for reliever on 2 or fewer days per week [NB1] • no limitation of activities • no symptoms during night or on waking.	Any of the following features: • daytime symptoms on more than 2 days per week • need for reliever on more than 2 days per week [NB1] • any limitation of activities • any symptoms during night or on waking.
An ACT score ≥ 20 indicates asthma may be well controlled.	An ACT score ≤ 19 indicates asthma may be poorly controlled, with an ACT score ≤ 15 indicating very poor control.
NB1: Do not include: • SABA taken prophylactically before exercise (record this separately and consider when assessing management). • Reliever use for patients using an anti-inflammatory reliever (ICS-formoterol) in an anti-inflammatory reliever (AIR) only* or maintenance-and-reliever therapy (MART) regimen. *In patients using an AIR only regime, ongoing need for reliever ≥ 3 times per week suggests that maintenance treatment with low-dose ICS-formoterol should be added (i.e. switch to MART).	

Appendix 7 – Program lifestyle prescription

For an editable version, see Asthma program lifestyle prescription template.

Enhanced Access Community Pharmacy Pilot
Improved Asthma Symptom Control Program Lifestyle Prescription

Patient details	
Name:	Date of birth:
Patient support person and/or caregiver:	Name, relationship and phone number of someone who assists the patient with their home care)

Program pharmacy details	
Pharmacist name:	Phone number:
Pharmacy name and address:	Opening hours:

Next Asthma Program appointment:	

Date of enrolment in the Asthma Program:	

My current FEV1:	Date:	Date of last vaccinations: (list all applicable)
Current level of symptom control (including Asthma Control Test (ACT) or Asthma Control Questionnaire-5 (ACQ5) score if known):	Date:	Date next vaccinations are due: (list all applicable)

Healthcare team			
General practitioner and clinic:	Name, address and phone number	Closest 24-hour emergency services:	Name, address and phone number
Dietitian:	Name, address and phone number	Physiotherapist:	Name, address and phone number
Other services:			

Appendix 7 – Program lifestyle prescription

For an editable version, see Asthma program lifestyle prescription template.

Lifestyle prescription	
My risk factors and triggers	▪ List identified risk factors, and triggers and strategies to minimise and avoid exposure
Physical activity	▪ Enter recommendations for physical activity for the patient's age and capability based on the national guidelines: • Informal exercise e.g. building exercise into everyday activities • Formal exercise e.g. walking (moderate intensity) for 30 minutes, 5 days of the week, strength building 2 days per week • Individualised guidance for building up to recommendations ▪ If required: Referral to a GP, exercise physiologist, physiotherapist, or other supports for safe exercise
Weight management, and diet and nutrition	▪ Recommendation for weight loss or gain (if applicable) ▪ Summary of nutritional advice for a balanced diet • more of/ increase… • less of/ limit… ▪ Referral to pilot overweight and obesity management program and/ or other supports e.g. dietitian
Other management strategies	▪ If required: Smoking cessation • Refer to pilot smoking cessation program and/or other supports e.g. Quitline or GP ▪ If required: Referral to a GP, psychologist, or other clinician for mental health support ▪ If required: Summary of advice regarding alcohol consumption

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